Virtuous and vicious practices of the polytechnic leadership on technology transfer to micro and small enterprises in Addis Ababa, Ethiopia

by

WORKISHET DEBEBE ASSAMINEW

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DEDICATION

I dedicated this research to my passed-away wife, my beloved Nigst Gizaw, who passed away to her father, Almighty God, leaving me in intolerable mourning and my mother, Yetemegn Belaineh, and my father Komos Aba Woldemariam (Debebe Assaminew) who devotedly paid all things to bring me up with care and love.

I cannot imagine to what extent they would have expressed their joy had they been fortunately alive here today.

May your soul rest in peace in paradise and later in heaven, as our Almighty God prepared them!

DECLARATION

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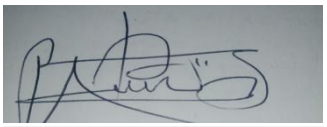
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November, 2025

WD Assaminew **Date**

(Workishet Debebe Assaminew)

LIST OF ABBREVIATIONS

AALSB	—	City government of Addis Ababa Labour and Skills Bureau .
AAMSEDB	—	City Government of Addis Ababa Micro and Small Enterprise Development Bureau
AAMSSEB	—	City government of Addis Ababa Micro and Small-Scale Enterprises Bureau
AATVETA	—	City government of the Addis Ababa Technical and Vocational Education and Training Agency
AATVTTDB	—	City Government of Addis Ababa Technical Vocational Training and Technology Development Bureau
AC	—	Absorptive Capacity
ANOVA	—	Analysis of variance
Cedefop	—	European Centre for the Development of Vocational Training
CEDU REC	—	College of Education Ethics Review Committee
COVID-	—	Corona-Virus-Disease
HoDs	—	Head of Departments
ESC	—	Education Strategy Center
ESDPs	—	Education Sector Development Programs
ETP	—	Education and Training Policy
FDRE TVTI	—	The Federal Democratic Republic of Ethiopia Technical and Vocational Training Institute
GTP	—	Growth and Transformational Plan
HEFCE	—	Higher Education Funding Council for England
MMR	—	Mixed-Method Research
MOE	—	Ministry of Education
MoSHE	—	Ministry of Science and Higher Education

MSE	—	Micro and Small Enterprise
PLT		Polytechnic college leadership team
PolyCO	—	Polytechnic College
PolyCO-MSE TT	—	Polytechnic College (PolyCO)-MSE TT
SPSS		Statistical Package for Social Science
TC	—	Technology capability
TT	—	Technology Transfer
TVET	—	Technical and Vocational Education and Training
UNESCO	—	United Nations Education Scientific and Cultural Organization
UNICEF	—	United Nation Children Education Fund
UNISA	—	University of South Africa

ABSTRACT

The researcher looked at the leadership team's technology transfer (TT) practices from the polytechnic to the MSE in manufacturing sub-sectors in Addis Ababa City, Ethiopia's capital, because there is a lack of research on leadership practices in the TVET sector, especially in TT activities, even though it is currently a top priority. The study aimed to enhance leadership and management of TT activities. A mixed-methods approach with an explanatory sequential design was used to collect quantitative data .Data were collected from a multi-stakeholder sample of 636 participants including polytechnic leaders, trainers, trainees and 172 MSE personnel, 184 trainers, 245 trainees, and 35 Polytechnic leadership teams (PLTs). For qualitative data, semi-structured interviews were conducted with eight deans, 18 department heads, five trainees' representatives, and three senior leaders from the Addis Ababa Technical and Vocational Training and Technology Development Bureau (AATVTTDB), alongside 18 MSE leaders. Data analysis employed SPSS version 26, utilizing descriptive statistics (mean, frequency distribution, grand mean) and inferential statistics (t-tests, ANOVA, Spearman correlation coefficient,) for reporting.Appropriate post-hoc tests were used to compare group means. Among the key findings the study revealed are the improvements in planning, service delivery and logistics and material administration enhancement via KAIZEN, positively impacting MSEs. However, the study found that polytechnic leadership practices related to scheduling, effective communication strategies, creating conducive environments for TT and innovation, and attracting key TT actors across boundaries were statistically insignificant. Despite the PLT's belief in institutionalization of both transformational and transitional leadership styles, essential aspects such as being role modelling, inspiring followers, and providing motivational rewards were not being practiced. Among the significant barriers affecting TT activities, capital scarcity, limited MSE capacity, ineffective communication, and inadequate support for TT were identified as prominent challenges for the leadership to operationalize TT. Significant perception differences among the key TT actors, namely, the PLT, trainers and MSE

personnel, were identified. Regarding TT activities in the context of COVID-19, the current implementation of practices were unsatisfactory despite being viewed as essential ideal prevention platforms by the same respondents. Overall, PLTs faced serious challenges in leading TT activities due to barriers to effective TT that included limited capabilities of MSE, inadequate support for TT and poor governance. Finally, a medium positive association was found between the PLT's planning and communication roles with TCB, TA, and AC, while no association existed between PLT roles regarding the AC. Likewise, a positive correlation was found between PLT's environment-setting and boundary-spanning roles with TA and AC, but not with TCB. Hence, improving leadership capacity building, increasing income generation potential options, promoting collaboration among stakeholders and establishing a strong monitoring and evaluation framework and revisiting motivational measures, are essential to improve leadership practices in TT.

KEY TERMS: Leadership practices, Technology transfer; polytechnic leadership; micro and small enterprises; technology capability, technology transfer activities, technology accumulation; sequential explanatory, key stakeholders perception

TABLE OF CONTENTS

ACKNOWLEDGMENTS i

DEDICATION ii

DECLARATION iii

LIST OF ABBREVIATIONS iv

ABSTRACT vi

TABLE OF CONTENTS viii

LIST OF FIGURES xvii

LIST OF TABLES xviii

APPENDICES xx

CHAPTER ONE 1

1. ORIENTATION OF THE STUDY 1

1.1. INTRODUCTION 1

1.2. BACKGROUND OF THE STUDY 4

1.2.1. Theoretical and conceptual frameworks 6

1.2.2. The current status of the problem and its significance 7

1.3. PROBLEM STATEMENT 8

1.4. AIM AND OBJECTIVES 12

1.5. SIGNIFICANCE OF THE RESEARCH 12

1.6. ASSUMPTIONS OF THE STUDY 13

1.7. RESEARCH METHODOLOGY 14

1.7.1. Research Design 14

1.7.1.1. Research Paradigms 15

1.7.1.2. Research approach 15

1.7.1.3. Research Type/strategy 15

1.7.2. Research Methods 16
1.7.2.1. Selection of participants/sampling 16
1.7.2.2. Instrumentation and data collection techniques 17
1.7.2.3. Data analysis and interpretation 19
1.7.2.4. Trustworthiness 20
1.7.2.5. Ethics-related matters 20
1.8. DELIMITATION AND LIMITATION OF THE STUDY 20
1.8.1. Delimitation of the study 21
1.8.2. Limitations of the study 22
1.9. ORGINAIZATION OF THE STUDY 23
1.10. CONCLUSION 25
CHAPTER TWO 26
2. LITERATURE REVIEW ON LEADERSHIP PRACTICE AND TECHNOLOGY TRANSFER 26
2.1. INTRODUCTION 26
2.2. LEADERSHIP PRACTICE AND THE TT CONTEXT 27
2.2.1. Critical impact of leadership in TVET and TT context 27
2.2.2. Leadership commitment to TT 30
2.2.3. Conceptualising leadership as practices 32
2.2.4. General overview of technology and TT 36
2.2.4.1. The concept of technology 36
2.2.4.2. The Concept of technology transfer (TT) 37
2.2.4.3. General overview of TT 39
2.2.4.4. Change management and TT 42
2.2.4.5. Importance of TT and its place in TVET 45

2.3. LEADERSHIP ROLE AND TT IN THE RESEARCH CONTEXT 51
2.3.1. The place of leadership in the research perspectives 51
2.3.2. Good governance issues in the TVET context 53
2.3.3. The technology transfer in Ethiopian TVET 58
2.3.4. The role and function of leadership in TT project practice 59
2.3.4.1. Function of leadership in the TT process: independent variables 59
2.3.4.2. Impact of TT: Dependent variables 69
2.4. STAKEHOLDERS' PERCEPTION TO THE TT 74
2.5. SUCCESS AND CHALLENGING FACTOR FOR TT PRACTICE 78
2.5.1. Success factors for TT 78
2.5.2. Challenges facing leadership of the TT activities 80
2.6. TT IN THE CONTEXT OF THE COVID-19 PANDEMIC 84
2.7. SYNTHESIS AND RESEARCH GAP 89
2.8. SUMMARY OF THE CHAPTER 90
CHAPTER THREE 92
3. THEORETICAL AND CONCEPTUAL FRAMEWORK 92
3.1. INTRODUCTION 92
3.2 .CLARIFICATION OF CONCEPTS 92
3.3. THEORETICAL FRAMEWORK 95
3.3.1. The theory of transformational and transactional leadership 97
3.3.2. Absorptive capacity theory 101
3.3.3. Change management model 103
3.4. CONCEPTUAL FRAMEWORK 105
3.5. SUMMARY OF THE CHAPTER 96
CHAPTER FOUR 99

4. RESEARCH DESIGN AND METHODS 99
4.1. INTRODUCTION 99
4.2. DESIGN OF THE RESEARCH 100
4.2.1. The research paradigms 100
4.2.2. Research Approach 103
4.2.3. Research type or strategy 105
4.3. RESEARCH METHODS 107
4.3.1. Selection of participants/sampling 107
4.3.2. Instrumentation and data collection methods 112
4.3.2.1. Questionnaire 112
4.3.2.2. Interviews 112
4.3.2.3. Document reviews 113
4.4. DATA ANALYSIS AND INTERPRETATION 114
4.5. TRUSTWORTHINESS 115
4.5.1. Trustworthiness of quantitative data 115
4.5.1.1. Validity 116
4.5.1. 2. Reliability 117
4.5.2. Pilot test 118
4.5.3. Trustworthiness of Qualitative Data 119
4.5.3.1. Credibility (truth-value) 119
4.5.3.2 Transferability 120
4.5.3.3. Dependability 120
4.5.3.4. Confirmability 120
4.6. ETHICAL CONSIDERATIONS 121
4.6.1. Anonymity and confidentiality issue 124

4.6.2. Data fabrication and falsification 125
4.6.3. Reporting, sharing and storing of data 125
4.7. SUMMARY OF THE CHAPTER 127
CHAPTER FIVE 129
5. DATA ANALYSIS AND INTERPRETATION 129
5.1. INTRODUCTION 129
5.2. RESEARCH PROCESS 130
5.3. DATA PRESENTATION AND ANALYSIS 131
5.4. PHASE I: QUANTITATIVE DATA PRESENTATION AND ANALYSIS 132
5.4.1. Biographical Data 132
5.4.2. Analysis of respondents' views on the practices of PLT on TT 139
5.4.2.1. Practices of PLT on TT in Terms of Planning 140
5.4.2.2. Practices of PLT on TT in terms of effective communication 144
5.4.2.3. Practices of PLT in terms of setting environment for TT and innovation 148
5.4.2.4. Practices of PLT on TT in terms of Boundary spanning 151
5.4.3. Practice of PLT on using leadership style in leading TT 154
5.4.3.1. The transformational leadership style in TT leading context 154
5.4.3.2. The Transactional leadership style in TT leading context 157
5.4.4. Perceptions of stakeholders on the practices of PLT on TT 160
5.4.5. Success and challenging factors for TT practice 169
5.4.5.1. Level of TT success factors 169
5.4.5.2. Level of TT Challenging Factors 173
5.4.5.3. Order of the three most serious challenging factors for TT activities 177
5.4.6. Technological capabilities built (TCB), technology accumulated (TA) and absorptive capacity acquired (AC) 179

5.4.6.1. Technology Capability built (TCB) 180
5.4.6.2. Technology accumulated (TA) 183
5.4.6.3. Absorptive capacity (AC) 185
5.4.6.4. Association between practices of PLT and TT in terms of TCB, TA and AC. 188
5.4.7. Outcomes and ideal benefit of PLT's COVID-19 pandemic related TT activities 192
5.4.7.1. Current outcomes of PLT's COVID-19 pandemic related TT activities. 193
5.4.7.2. The ideal importance of PLT's COVID-19 pandemic related TT activities used 197
5.5. PHASE II: QUALITATIVE DATA PRESENTATION AND ANALYSIS 200
5.5.1. Introduction 200
5.5.2. Biographical data of the structured interview participants 200
5.5.3. Generating themes and categories 204
5.5.4. Level of PLT practice in terms of Leadership function 206
5.5.4.1. Leadership Function - planning 207
5.5.4.2. Leadership and effective communication 210
5.5.4.3. Setting an environment and culture for TT and innovative activities .212
5.5.4.4. Practices of PLT on TT in terms of boundary-spanning 214
5.5.4.5. Leadership practice with regard to time usage 216
5.5.5. Leadership style in leading TT activities 221
5.5.5.1. Transformational leadership style in leading TT activities 221
5.5.5.2. Transactional leadership style in leading TT activities 226
5.5.6. Key stakeholders' perceptions towards TT support 229
5.5.6.1. Department heads' opinions on the MSEs' perception towards TT support 230

5.5.6.2. Dean and top leadership respondents' opinions on the MSEs' perception 235
5.5.7. The benefit obtained following TT Implementation 239
5.5.8. Challenge facing the leading practice of PLT about TT 243
5.5.8.1. Lack of integration among stakeholders 243
5.5.8.2. Capacity gap-related challenge 245
5.5.8.3. Promotion-associated challenge 248
5.5.8.4. Regulation associated TT challenge 250
5.5.8.5. Order of three serious TT challenge 252
5.5.9. Strategies to better improve the PLTs' TT activities 259
5.5.9.1. Views provided to enhancing involvement of stakeholders 259
5.5.9.2. Views provided on the criticality of improvement on various issues . 262
5.5.9.3. Views provided on the Ways to improve TT 263
5.5.9.4. Views provided on the ways to improve capability and capacity 265
5.5.9.5. Views provided on improving TT from MSE to PolyCO 266
5.5.9.6. Views provided on the ways to establish motivation system 266
5.6. PHASE III: INTERPRETATION AND INTEGRATION OF QUANTITATIVE AND QUALITATIVE DATA 269
5.6.1. Introduction 269
5.6.2. The practice level of PLT on TT from PolyCO to MSEs 270
5.6.2.1. Practice level of PLT in planning 270
5.6.2.2. Practice level of PLT in terms of effective communication 272
5.6.2.3. Practice of PLT in terms of setting an environment for TT 273
5.6.2.4. The practice of PLT in terms of spanning boundaries 275
5.6.3. The practice level of PLT in terms of leadership style 278
5.6.4. Perceptions of stakeholders on the practices of PLT on TT 280

5.6.5. Challenging factors facing the PLT on the TT activities 284
5.6.6. Interpretation of data in terms of the TT result 288
5.6.7. Interpretation of the outcomes of PLT on COVID-19 pandemic- related TT activities 289
5.7. DEVELOPMENT OF MODEL 292
5.8. SUMMARY OF THE CHAPTER 297
CHAPTER 6 299
6. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS 299
6.1. INTRODUCTION 299
6.2.SUMMARY OF RESEARCH FINDINGS 300
6.2.1. A synopsis of literature 301
6.2.2. A synopsis of findings 304
6.2.2.1. Introduction 304
6.2.2.2. The practice level of PLT on TT from PolyCO to MSEs 306
6.2.2.3. The practice level of PLT on TT in terms of leadership style. 309
6.2.2.4. The practice level of PLT on TT in terms of perception 309
6.2.2.5. The practice level of PLT on TT in relation to challenging factors 310
6.2.2.6. Technological capabilities, accumulation, and absorptive capacity .. 311
6.2.2.7. Association between practices of PLT on TT and TCB, TA and AC. 312
6.3. CONCLUSION 313
6.4. RECOMMENDATIONS 317
6.4.1. Recommendation to the Government and Policy Formulators 317
6.4.2. Recommendation to the AA Labour and Skill Bureau 320
6.4.3. Recommendation to the PLT 324
6.4.4. Recommendation to the MSE owners 326

6.5. AVENUE FOR FURTHER INVESTIGATION 328
6.6. LIMITATIONS OF THE STUDY 330
6.7. CONCLUDING REMARK 331
6.8. PERSONAL REFLECTION 332
7. LIST OF REFERENCES 334
8. APPENDIX 351

LIST OF FIGURES

LIST OF FIGURES xvii
Figure: 3.1. Conceptual framework 107
Figure 4.1 Explanatory sequential designs (two phase's designs 107
Figure: 5.1: The rank of three most serious challenge factors for TT practice 179
Figure 5.2: Model for TT from PolyCO to MSE manufacturing subsectors 293
Figure 5.3: Description of shapes used in model building for PolyCO- MSE 294

LIST OF TABLES

Table 2.1: Eight steps for organization transformation 43
Table 2.2: Technology success factors 79
Table 4.1. Source of data 109
Table 4.2. Questionnaire respondents' population and sample 111
Table 4.3: The distribution of Cronbach's alpha of each factor covered in questionnaires 119
Table 5.1A: Percentage (%) and Frequency (F) distribution of participants by sex, age and education level 133
Table 5.1B: Percentage (%) and Frequency (F) distribution of participant by current job/position, year of service in TVET and particular experience in the context of TT135
Table 5.1C: Percentage (%) and Frequency (F) distribution of trainee participants by sex, age, Education Level and year enrolled 136
Table 5.1D: Percentage (%) and Frequency (F) distribution of MSE participants by sex, age, education level, experience on the current sector and partnership experience 137
Table 5.2A: Views of PLT, trainers and MSE on Practices of PLT on TT in terms of planning 141
Table 5.2B (I): Views of PLT, trainers and MSE on practices of PLT on TT in terms of making effective communication 145
Table 5.2B (II): views of PLT and trainers on practices of PLT on TT in terms of making effective communication 147
Table 5.3A: The mean distribution and the independent T test on the transformational leadership style practiced while leading TT activities 155
Table 5.3B: The mean distribution and the independent t-test on the transactional leadership style practiced while leading TT activities 158
Table 5.4A: Mean distribution and ANOVA test on perceptions 161
Table 5.4B: The mean distribution and the ANOVA test on perceptions of stakeholders in terms of knowledge accumulation 163

Table 5.4C: The mean distribution and the ANOVA test on perceptions of stakeholders in terms of effectiveness and efficiency improvement 165
Table 5.4D: The mean distribution and the ANOVA test on perceptions of stakeholders in terms of cooperation and participation strengthening 167
Table 5.5A: The mean distribution and the independent t-test on success factors practised while leading TT activities 170
Table 5.5B: the mean distribution and the ANOVA test on challenging factors for TT 174
Table 5.5C: Rank of most serious hindering factors for TT 178
Table 5.6A: The mean distribution and the ANOVA test on Technology Capability built / institutionalised 181
Table 5.6B: The mean distribution and the ANOVA test on technology accumulated/ institutionalised 183
Table 5.6D: Association between practices of PLT and TT result in terms of TCB, TA and AC. 189
Table 5.7A: The mean distribution and ANOVA of the current TT performance in the context of COVID-19 pandemic 193
Table 5.7B: The mean distribution and ANOVA of the ideal importance of TT activities in the context of COVID-19 pandemic 197
Table 5.9A: Percentage and frequency distribution of top leaders, PolyCO deans and department head by sex, age qualification and service 202
Table 5.9B: Percentage and frequency distribution of structured interview respondents MSE owner and Trainees council by sex, age, qualification and service 203
Table 5.9: Summary of themes and categories 205
Table 5.10A: Department head suggestions on the rank of the three serious problems 253
Table 5.10B: Dean Suggestions on the rank of the three serious problems 255
Table 5.10C: Mses' respondents' suggestions on the rank of the three serious problems 257

APPENDICES

APPENDIX A: OFFICIAL LETTER OF REGISTRATION CONFIRMATION FOR 2025 351
APPENDIX B: ETHICAL CLEARANCE CERTFICATE 352
APPENDIX C: REFUND/CLAIM FORM-INTERNATIONAL STUDENT'S UNISA REFUND FORM 354
APPENDIX D: INTERVIEW GUIDE FOR POLYTECHNIC DEANS AND DEPARTMENT HEADS 356
APPENDIX E: INTERVIEW GUIDE FOR TOP LEADERS 357
APPENDIX F: INTERVIEW GUIDE FOR STUDENTS' COUNCIL LEADERS IN POLYTECHNIC COLLEGE 358
APPENDIX G: INTERVIEW GUIDE FOR MSE LEADERS 359
APPENDIX H: THE PLT AND TRAINERS' QUESTIONNAIRES 360
APPENDIX I: THE POLYTECHNIC COLLEGE TRAINEES' QUESTIONNAIRES 369
APPENDIX J: THE MSE OWNER QUESTIONNAIRES 377
Appendix K: Support letter from TVT Institution to Addis Ababa Technical and Vocational Training and Technology Development Bureau(AATVTTDB) 384
Appendix L: Support letter from TVT institute to city Government of Addis Ababa Micro and Small-Scale Enterprises Bureau (AAMSSEB) 385
APPENDIX M: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT POLYTECHNIC COLLEGE 386
APPENDIX N: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT MICRO AND SMALL ENTERPRISES MANUFACTURING SUB-SECTORS 387
APPENDIX O: LETTER OF AUTHORISATION TO THE RESPECTIVE POLYTECHNIC COLLEGES 388
APPENDIX P: LETTER OF CONFORMATION FROM THE SUBJECT POLYTECHNIC COLLEGE FOR THE DATA COLLECTED 389
APPENDIX Q: LETTER OF CONFORMATION FROM THE SUBJECT WEREDA ADM FOR THE DATA COLLECTED 390

APPENDIX R: A LETTER ENTREATING POLYTECHNIC COLLEGE DEAN/ DEPARTMENT HEADS/ MSE LEADERS, ADDIS ABABA CITY TECHNICAL VOCATIONAL TRAINING AND TECHNOLOGY DEVELOPMENT BUREAU TOP-LEADERS 391
APPENDIX S: CONSENT FORM FOR INDIVIDUAL INTERVIEW RESPONDENTS393
APPENDIX T: SAMPLE TRASCRIBED INTERVIEW RESULT 394
APPENDIX U: LANGUAGE EDITING CERTIFICATE 402
APPENDIX V: TURNITIN SAMMURY SIMILARITY REPORT 403

CHAPTER ONE

1. ORIENTATION OF THE STUDY

1.1. INTRODUCTION

Today, in most developing countries, the technical and vocational education and training (TVET) sector is viewed as a means of growth and development, as well as an avenue for job creation. Against the traditional thinking of linking innovation and technological issues to universities, companies and government bodies, the TVET sector takes different perspectives of service and scope to engage in a new role of innovation generation and technology transfer (TT). Technology transfer (TT), defined here as the process of disseminating and acquiring technical knowledge and capabilities between organizations (Bozeman, 2000), is now a core mandate of polytechnic colleges. By embracing this entrepreneurial function, TVET institutions participate in local and national innovation systems (Ganter de Otero ,J.P. 2019:12, Marope, Chakroun, & Holmes, 2015:15). Moreover, it further embarks on a new human-centred and economic development paradigm and sustainable environmental development nationally (Marope, et al., 2015: 34). Following these, focus is given to TVET in the direction that could end its century's ups and downs' frog walk.

Research and solutions are crucial in today's fast-paced and ever-changing global and local surroundings. Through applied research and technology distribution, TVET may serve as an intermediate while simultaneously taking the lead in solving immediate practical challenges in the community (Ganter de Otero, J.P., 2019:12). According to empirical research conducted by the Australian National Center for Vocational Education Research (NOVRT), TVET colleges can act as a bridge between companies and services to improve technology transfer and information, which is beneficial to bringing about growth and socioeconomic. When done properly in the direction of fostering the performance of industries and micro and

small enterprises (MSE), the TVET has the potential to strengthen the nation's capacity to achieve development (MoE, 2008:15).

Coordination and manipulation of the environment by leadership are critical in the current millennium for achieving specific goals. Leadership has a significant positive influence on process innovation, which efficiently accelerates production in manufacturing units (Saad, Altheeb, Abbas, & Prince Sattam Bin Abdulaziz University, 2020: n.p.). Collaboration needs to be integrated among stakeholders, focusing on core practices to achieve success. To tune into an innovative culture for effective implementation, the condition depends on the approach and sufficiency of the leadership and management bodies (Ganter de Otero ,J.P. 2019: 18). As far as leadership as practice is concerned, Raelin (2016: 128) argues that leadership should not be seen as detached from the practice. Once the actors commit to the on-going activities or project, they collectively exercise leadership for the achievement of those common goals; thereby, the leaders are needed for their effectiveness in the actual practice that underpins it. Therefore, this research employs the concept of the polytechnic leadership team (PLT) instead of the leadership responsible for leading TVET institutions, as it emphasizes the importance of examining the practice within which leadership occurs.

The criticality of developing the pertinent capabilities for the institution's leadership team is vital to achieving the set objectives. The necessity of having a wider range of competence than in the past for leadership is unquestionable for leaders who are taking the front line in the movement of improvement and change in their institutions (Cedefop, 2010c:19). However, the empirical research held using an interpretive world view by Chauhan (2017:22) reveals that the functions of academic leadership in technical schools are not demarcated with clear direction for the day-to-day activities. Experiencing success on the one hand and discrepancies on the other (the gap between the implementation intention and the real result) is not the exception for the leadership team in TVET sectors. Ethiopia seeks polytechnic colleges to fulfill their responsibilities as a centre for

technological capability, accumulation and transfer, as well as to enhance economic advancement and growth for the country by alleviating problems in rural areas and various regions (MoE, 2008:15).

So far, research has concentrated on the role of technological capability in TT effectiveness (Whangthomkum, & Igel, 2006:33); a definition for the concept of technology transfer (Wahab, Rose, & Osman, 2012); TT and technological capability building at the firm level (Szogs, 2010; Lavoie, 2019); TT effectiveness through international joint ventures (Sardare, 2011); analysis of factors influencing TT among MSE (Muthoni, Omato, & Kithinji, 2013) and technology transfer capability (Fernandes, & Pessoa, 2018).

Locally in Ethiopia, the leadership component is muted as a study issue, and the TT performance at polytechnic colleges is limited. Despite policy recognition of leadership's practice influence the implementation of TT from Ethiopian polytechnic colleges to MSEs creating a gap both scholarly literature and practical guidance. Indeed, existing literature and the researcher's first-hand experience show that TT performance from PolyCO to MSEs is low. As previously stated, available research in the field has been diverted from investigating leadership practices for the successful and efficient implementation of TT.

Against this backdrop, it can be argued that the sector lacks studies on leadership practices in TT, despite the pressing need for such inquiry in today's dynamic and ever-changing environment. It is emphasised how important it is for an organisation's management and leadership teams to have a solid understanding of the situation. This research is important since it addresses the underappreciated aspect of leadership impact; revisiting it via research is a timely concern.

This gap prompted the researcher to suggest a study to determine what current leadership and management approaches TVET leadership teams are practising. Accordingly ,the study aims to develop the TT process at polytechnic colleges and

transfer it to MSE manufacturing sub-sectors. This research provides supportive insights for the leadership and management of TT, which will be of direct benefit to the leadership teams, researchers, trainers, and the recipient MSEs. This input would ultimately bolster the country's larger drive for sustainable growth and development.

The following paragraph provides an overview of the study's background, focusing on both local and global contexts. It also describes the guiding theoretical and methodological assumptions of the research.

1.2. BACKGROUND OF THE STUDY

The study aimed to explore the lived experiences of the polytechnic college leadership team's practice in leading and managing TT activities for MSEs in manufacturing subsectors in Addis Ababa, Ethiopia's largest capital city. Addis Ababa City is also known as the city government of Addis Ababa in its political name and is home to the continent's organisation, the African Union (AU), too. In Addis Ababa, there are 35 TVET institutions that provide education and training from level II to level IV, as well as six polytechnic colleges that serve as cluster centres for the other TVET institutions and provide training up to level IV.

According to global experience, the TVET sector increasingly plays an important role in economic, social and service growth and is encouraged to promote TT activities and promote an innovation and commercialisation culture (Muda & Abdul Aziz, 2020:64), for it is through TT that the technology can be utilised for competitive advantage (especially in rural areas). Three decades ago, the value and focus of TVET were characterised by reduced and diminished focus when general education was brought to the top as a priority, and the interest of the donor community in TVET was low, partly owing to the increasing emphasis on sectoral work (Krishnan, & Shaorshadze, 2013:6). Later, two decades ago, TVET became part of the global agenda linked to the Millennium Development Goals (MDGs) and underdevelopment was perceived because of the resulting skill gap, with TVET becoming critical as a solution.

TVET promotes the competitive capacity of industries and firms by focusing on technology capability, accumulation and transfer at the national level (UNESCO-UNEVOC, 2019: 6; MOE, 2008: 52). Following that, in the process of disseminating and developing applied research ground, TVET centres play the role of taking comprehensive mechanisms of innovation generation, TT and adoption, where they excel as entrepreneurial institutions and colleges (Ganter de Otero ,J.P. 2019: 35). Beyond supporting practices focused on innovation in the training and learning arena, TVET's policy, strategies and action plans have been urged to focus on internationalisation to exert effort for local skills ecosystem engagement (UNESCO-UNEVOC, 2019:7). Finally, among the tasks delegated to the TVET sectors, TT concerns are among those deriving leadership to enter the battlefield.

Leading and managing TT is done, in addition to further upholding other competitive core businesses of TVET/polytechnic colleges, such as coordinating trainees' admission and enrolment, and training and education tasks to produce a middle-level workforce. The practices of polytechnic college leadership in leading/managing technology capability building and TT activities into MSE manufacturing sub-sectors, as well as the challenges facing these practices in the city government of Addis Ababa, are not well understood through rigorous investigation. Moreover, the impact of leadership practice on the success or failure of TT in TVET sectors has not been thoroughly researched in terms of technological capability building and the activities of TT. Therefore, this descriptive mixed-methods study was set out to examine the effects of lived leadership practices on TT from polytechnic college to MSE manufacturing sub-sectors through the lenses of transformational/transactional leadership and absorptive capability theories by collecting the necessary data from the polytechnic leadership layer, trainees' council representatives and MSE personnel.

1.2.1. Theoretical and conceptual frameworks

Theories serve as a guiding tool to help accomplish the expected objectives of academic research. It is the stream into which the researcher can pour phenomena, as well as a guiding path that allows the researcher to act properly, take meaning into account, nurture relationships and take challenges into account (Kivunja, 2018:45). According to Jonker and Pennink (2010:46), theory tells where to look, what to look for, and how to look; a conceptual framework is inescapably based on it. As a result, it may provide platforms for organising thoughts and ideas about the world to generate and explain interrelationships between individual groups and entities.

The present research design invites us to use more than one theory in this part. Firstly, this research is viewed from the perspectives of transformational and transactional leadership theories. Since 1978, the transformational and transactional leadership theories have dominated the world of scholarly leadership (Wolverton & Gmelch, 2002:37). Since this theory is extended from the theory of motivation, it helps to energise followers to overcome challenges and stretch beyond the parochial nature of self-interest for the good of others. Both transformational and transactional leadership are irreplaceable in their functions in the realm of work. Transformational leadership is required to make corrective and transactional actions meaningful and successful for followers. This has been confirmed through repeated scholarly research and empirical tests. In the second place, absorptive capacity theory is defined as the ability to acquire, apply and implement together with the practices already developed and used by the developed world (Criscuolo & Narula, 2008: 2). Having been selected as a guiding tool for this research, absorptive capacity theory is very relevant to frame the TT concept in that it states the necessity of absorbing new knowledge for an organisation to become innovative.

A conceptual framework is a researcher's map of matters to be investigated. Moreover, according to Tashakkori and Teddlie (1998, cited in Teddlie & Takakkori, 2009:285), a conceptual framework is a comprehensive theoretical framework derived from the inductive integration of previous literature, theories and relevant information. Yet, some scholars confuse theoretical theories with a conceptual framework (Ngulube, 2020:18). The difference between theories and conceptual frameworks has been demarcated in that theories are described as the highest level of abstraction, whereas the conceptual framework indicates the relationship between concrete and specific concepts involved in the study (Ngulube, 2020; Cohn et al. 2018: 69). The current study looks at polytechnic leadership practices in terms of TT, using leadership function as independent variables and technology accumulation and capability building as dependent variables.

1.2.2. The current status of the problem and its significance

Globally, as outlined in the 2030 agenda, TVET (generally the focus of the current study, polytechnic college (PolyCO) is found within this sector) is responsible for addressing various issues of the community to prepare them for entrepreneurship and decent work by promoting inclusive, impartial and sustainable economic growth and fostering the shift to a green economy by addressing complex issues of economic, social and environmental matters (Gonçalves, 2019:18). In line with this, casting TVET as a solution holds the attention of many policymakers in various countries, including Ethiopia. In the Ethiopian TVET sector context, the goal concerning TT activities and its supportive role is read as 'Establish a system to enhance TT in TVET to increase competitiveness and productivity of micro, small, and medium-level enterprises/industries' (MoSHE, 2020:40). The policy envisages the integration of the four institutions (research, higher education, TVET, and industry) to support one another.

The Ethiopian government has reflected its transformation passion and interest in the newly revised TVET sector strategy by widening the assignments delivered to

the sectors involving the generation of technology, its accumulation, and its transfer to various firms and industries. Despite the implementation of the TVET strategy in 2008, leadership entities still experience uncoordinated and lose control mechanisms, according to Hagos Baraki and Van Kermende (2013:479). They went on to add that low effectiveness and inefficient performance that emanates from meagre quality management characterise the TVET system in general. To tackle such vulnerable pitfalls, the presence of good leadership, including top management that extends the boundaries to attract stakeholders, all of whom are committed, is critical.

In the trainers' result-oriented appraisal, the issues of TT activities account for 25% of the weight in evaluating planning and execution performance. It has been given considerable emphasis to gain a competitive advantage and increase production for various firms. However, recurrently, during the progressive and summative report time, the results of performance execution in the TT planning part are often received with very minimal results during periodic and annual performance evaluations. In addition, personal field supervision and observation of the researcher and the muted leadership practices on TT performance in the empirical work led the researcher to study this topic area focused on the PolyCO, which is used as an experience centre for other TVET institutions below it.

In the pages that follow, the statement of the problem, aims and effectiveness of the study, the research design and methods are presented.

1.3. PROBLEM STATEMENT

TVET institutions are faced with numerous internal and external obstacles that have hindered their progress toward achieving the targets they have envisioned. To solve the problem, issues related to school leadership in the context of reform and changes have been at the forefront of the platform. According to Cedefop’s (2011:7) description, the world has focused and largely oriented towards general

education, while ignoring the TVET sector, which received marginal attention. The last four decades indicated the importance of TVET sectors. In the MDGs, the sector has received prominent attention as a world of work and employment avenue for the youth, including the development and utilization of technology to its full capacity. Such marginalisation occurs by placing hurdles in the execution of its various core activities. The extant literature has underlined the importance of TT in support of social, economic and human development. However, the process and its management are crucial to its success, rather than describing its importance. Consequently, leadership reform and transformation stem from the challenges that the TVT sector has faced so far.

Local empirical works were done mainly focusing on other issues rather than taking leadership as an important area of focus. The focus rests on the international TT setting that could occur between developed and developing nations, with an emphasis on the legal framework. Using a multi-pronged approach, Mesfin and Niekeng (2019:15) investigated and analysed the extent to which the adopted leadership style of deans affects the perceived effectiveness of the government polytechnic college. In fact, the fast and ever-changing global and local context today makes it imperative for the leadership and management team of an organisation to have good insight into the existing conditions, which are changing dynamically. It is crucial to understand the impact of leadership practices on perceived effectiveness, especially in a local context where real problems are prevalent.

Kedir and Geleta (2017:51) highlight the challenges facing leaders in implementing changes and innovations in TVET institutions, including a lack of professional support, difficulties in securing and utilising resources, and the need for effective leadership. It is argued that ‘Vocational technical and education, without question, will not meet its mandate without effective leadership’ (Boateng, 2012: 4). To this end, they proposed focusing on best practices of leadership, as it could directly affect institutional effectiveness, especially in the management of training institutions to meet the anticipated mandate during the planning phase.

Ethiopia seeks polytechnic colleges to discharge their responsibilities as centres for technology capability, accumulation and transfer to enhance economic advancement and growth (MoE, 2008:15). The presence of the general implementation gap at Polytechnic College, the scarcity of research done on the leadership variable and the low status of TT process performance as witnessed from living reports attract the curiosity of the researcher to determine the existing leadership and management practices of PolyCO leadership on TT activities to the MSE manufacturing sub-sectors. Within this context, this research sought to determine the extent to which prevailing leadership and management practices promote the adoption of PolyCO leadership on TT activities within the polytechnic college and transfer the acquired technology to MSE manufacturing sub-sectors. To that end, the study tried to answer the overarching question, 'To what extent do the leadership teams in the polytechnic colleges of Addis Ababa lead the activities of technology transfer (TT) to micro and small enterprises (MSEs) in the manufacturing subsectors?'

The main question is split into the following sub-questions, where chapters two and three provide a theoretical response to the first sub-question. This sub-question focuses on describing the current state of leadership practices in terms of the chosen role in planning and establishing a conducive environment for the TT project or activity, as well as extending the effort to outside partners through boundary-spanning, well-synchronised and effective leadership communication.

1. **What is the level of Polytechnic College practices concerning the TT process in terms of planning, effective communication, environment setting and boundary-spanning**?

The second sub-question focuses on addressing the theoretical issues depicted in chapters two and three, respectively. The second sub-focuses on describing the current state of leadership practices from the perspectives of using both the transformational and transactional leadership styles in the practices of leading TT in the accomplishment of the TT project or activity.

2. **To what extent do the polytechnic college leadership teams of Addis Ababa use both the transformational and transactional leadership styles in the practices of leading TT?**

The presence or absence of perception differences among participants within the TT team (between the leadership team and the trainers) and across the boundary with MSE practitioners would be assessed using the collected and analysed data obtained from the inferential statistics. The T-test and ANOVA are used to determine the significance of a deviation or association between such respondents' attitudes toward leadership and management practices and the TT activities, whereas Hochberg's GT2 is used to determine the interaction between such respondents' perceptions and leadership and management practices. Multiple comparisons are applied to check such status, which would receive an abridged discussion in chapters two and five.

3. **What are the perceptions of the polytechnic college leadership team, trainers and technology recipients (MSE) concerning the leadership support rendered currently?**

The fourth issue that requires special attention is the hindering factors for TT activities in polytechnic colleges to SME manufacturing sub-sectors. This question is discussed at the end of chapter 2 and analysed in detail in the fifth chapter and the basic question reads as follows:

4. **What are the challenges facing the leading and managing experience of the TT activities in selected polytechnic colleges?**

The final sub-question aimed at this research is designed to develop a framework that can provide polytechnic college leadership with a framework to lead and manage TT activities in a COVID-19 pandemic-stricken landscape. To that end, the question is framed as:

5. **How can the the PolyCO leadership practices for the TT process from PolyCO to MSEs be improved including the context of the pandemic, COVID-19 and related pandemic in the selected polytechnic college?**

1.4. AIM AND OBJECTIVES

The purpose of the research is to determine the practices of the leadership teams of the polytechnic college of Addis Ababa on TT activities to the micro and small enterprises (MSEs) of manufacturing sub-sectors and to seek a solution that expedites the leadership and management TT-promoting roles.

Specifically, the research objectives are:

1. To evaluate college leadership's TT performance level in terms of planning, effective communication, environment setting and boundary-spanning
2. To explore the extent to which the polytechnic leadership team uses both transactional and transformational leadership styles in leading TT activities.
3. To examine the existing perception among the polytechnic college leadership, trainers and technology receivers (MSE) concerning the leadership support rendered currently.
4. To explicate major challenges that can hinder the effective implementation of the TT process.
5. To suggest a feasible alternative framework to improve the practices of PolyCO leadership on TT process including COVID-19 and related pandemic context.

1.5. SIGNIFICANCE OF THE RESEARCH

The significance of a study is the basis for its theoretical framework, which includes three main parts: the problem, the purpose, and the research questions (Grant & Osanloo, 2014, p. 17). According to Ethiopia's TVET policy, polytechnic colleges must serve as cluster centers for technology capability, accumulation, and transfer (MoE, 2008, p. 10). This study looked closely at how polytechnic college leaders handle technology transfer (TT) by using transformational and transactional leadership, absorptive capacity, and change management models. Its importance is explained through theoretical, practical, and policy aspects. The research improves our understanding of TT by applying transformational and transactional leadership frameworks in the often overlooked TVET context It validates the

relevance of both leadership styles for organizational effectiveness (Avolio & Bass, 2002; Boateng, 2012) and addresses a critical gap by identifying the "muted leadership variable" in TT research for both local and international audiences. Furthermore, it extends the university-industry TT experience into the TVET institution and partner MSE context. Methodologically, it advances the explanatory sequential design in studying leadership practices aligned with the global Sustainable Development Goals (SDGs).

Practically, the findings reveal a significant disconnect between the PLT's perception of TT support and the actual needs of MSEs. The study highlights the necessity for adaptive leadership practices that foster collaboration with diverse local stakeholders to sustain TT efforts, identifying trainers as the crucial link between strategic visions and MSE realities.It also identifies prospects and challenges facing TT ,indroducing a framework to improve monitoring and assessment for supervisory and practitioner leaders.

From a policy perspective, the study underscores the inadequacy of current requirements and recommends establishing systematic implementation frameworks and resource-generation platforms. These would better align national TVET strategic visions with MSE needs and inform effective TT models from PolyCO to MSEs. In general, the beneficiaries of this thesis include TVET supervisors, leaders, managers, MSE practitioners, policymakers, researchers, and TT offices.

1.6. ASSUMPTIONS OF THE STUDY

This study is underpinned by a number of foundational assumptions, which are described as follows:

1. Ontologically – It was assumed that the issues of leadership practice within the context of TT activities could be addressed by both objective and subjective interpretation through the perspective of the pragmatic paradigm.

3. Epistemologically – It was assumed that knowledge could be generated through the integration of both quantitative and qualitative data.

4. Instrument efficacy – It was assumed that the research instruments were capable of generating trustworthy and accurate data.

5. Sampling representativeness – It was assumed that the sampling technique yields information-rich participants.

6. Response authenticity – It was assumed that all respondents provided honest, authentic and accurate responses.

1.7. RESEARCH METHODOLOGY

Research methodology is an umbrella term that is always explained by the four pillars of a pyramid that include paradigms, methodologies, methods, and study instruments that represent how to collect, classify and analyse data (Jonker & Pennink, 2010: viii)**.** The methodology outlines the research path that makes things transparent. According to Cohen (2018:43), methodology is a path that follows the research purpose.

The current study attempted to investigate the lived experience of PolyCO leadership practices on TT activities in the Polytechnic College, as well as the transfer of acquired technology to SME manufacturing sub-sectors. The types and methodology must be chosen in accordance with the research purpose and question (Cohen, Ibid). Hence, the sequential mixed-explanation methodology is a widely used research method and is discussed and explained in detail in the fourth chapter.

1.7.1. Research Design

The type of inquiry known as research design provides a clear direction of the procedure that the researcher must use within the three research approaches, namely, quantitative, qualitative and mixed-method approaches (Creswell & Creswell, 2018: chap. 1, research design, para. 1). MMR was chosen for this study because it is appropriate for studying the lived experiences of TVET leadership

practice on TT to MSE since the problem is complex as it needs data collection from the quantitative and qualitative source.

1.7.1.1. Research Paradigms

In this research context, a paradigm is considered a general perspective on the world that the researcher uses as a foundation. It is also thought of as a philosophical orientation about the world (Creswell & Creswell, 2018: chap. 1, "Philosophical Worldviews," para. 2; Cohen et al. 2018: 34). Jonker and Pennink (2010:23) describe a paradigm as the way in which the researcher views reality. The possible worldview for this research is pragmatic because the constituent MSE's leadership practices on TT activity are action-based, problem-centred and real-world practice-centred (Cohen et al., 2018:9).

1.7.1.2. Research approach

This study used a mixed methodology research (MMR) approach, which collects both quantitative and qualitative data, integrates them, and uses different designs. The aim was to study educational issues using both numbers and words, including philosophical assumptions and theoretical frameworks. Almalki (2016) underlines the positive benefit of MMR despite the challenge it imposes.

It is known, by its nature, that the world is not purely quantitative or qualitative. Analysis, as well as interpretation, is the area where the integration of the qualitative and quantitative aspects of the study takes place (Cohen et al., 2018:32). Owing to these established advantages, the MMR approach was deemed suitable for the present study.

1.7.1.3. Research Type/strategy

In this study, researchers use a sequential explanatory mixed method to conduct quantitative research first, followed by document and literature analysis as a basis.

Educational research uses this widely accepted approach. The results of the survey inform the collection of qualitative data through semi-structured interviews, which focus on explaining the selected structures in depth. Almalki (2016:293) asserts that the sequential explanation model is commonly used in educational research.

1.7.2. Research Methods

1.7.2.1. Selection of participants/sampling

The populations of this study are the cluster centre of Government Polytechnic College, the college deans, department heads, trainers, the trainee council, trainees (participating in manufacturing-related fields), constituent MSEs, as well as MSE practitioners. There are 35 government TVET colleges and six polytechnic colleges, which serve as cluster colleges for the respective TVET colleges and are located within the city administration of Addis Ababa. Among these six polytechnic colleges, the General Winget Polytechnic College, the Misrak Polytechnic College, the Entoto Polytechnic College, the Nifas Silk Polytechnic College, and the Tegbare Id Polytechnic College were carefully selected for the study. The community within these institutions can serve as the best informants, representing other colleges under their umbrella, as they are the focal point for sharing experiences.

The researchers planned to collect data from deans, department heads, instructors, trainees' councils, and trainees of the five selected polytechnic colleges, as well as the MSE leadership and management body, representing the target population of the study. In total, using a 90% confidence level with a 5% interval (Cohen et al., 2018, 206), the sample included 10 deans, 20 department heads, 194 trainers, 262 trainees, and 182 MSE personnel. These were drawn from target populations of 671 trainers, 7,593 trainees, and 545 MSE personnel, respectively About 35 available leadership entities were also included as respondents. Moreover, ten deans, 20 department heads, five trainees’ council leaders, four top leaders from

the AATVTDB, as well as 20 MSE leaders were accounted for as the sample for a semi-structured interview.

1.7.2.2. Instrumentation and data collection techniques

Data collection and processing is one of the main phases of research that starts from conceptualizing problems, defining problems, connecting the problem with the existing theories, producing a conceptual framework, creating the research design, interpreting the results and finally reporting (Jonker & Pennink, 2010:71). All aspects of the research would receive due consideration, from data collection to the selection of appropriate statistical tools for analysis. In the present research, the data collection and processing are structured (Jonker & Pennink, 2010:73).

The study used three data sources: document review, survey questions and semi-structured interviews. Data were collected from human participants through questionnaires and interviews. The research followed a clear sequence design, first collecting quantitative data, followed by interviews (Cohen et al. 2018:47). Data collection was done in a connected manner, integrating qualitative and quantitative aspects. This approach differs from a convergent mixed-method design, which merges core designs into complex designs (Cohen et al., 2018; Creswell & Creswell, 2018). The integration of the qualitative and quantitative aspects of the study was evident from various perspectives, including data collection, analysis and interpretation. The data collection instruments used in this study align with the issues and basic questions addressed, as well as the study design outlined earlier. As a result, questionnaires, interviews and documents are used as data collection instruments. A briefing on each instrument is provided hereafter.

1.7.2.2.1. Questionnaire

A questionnaire was used as a data-gathering instrument because it enables to the researcher in collecting data at a convenient time and cost-effectively.

Questionnaires provided the researcher with an opportunity to collect data using standardised and open-ended responses to a varied range of topics from a large sample of the population. A questionnaire is cheap, reliable, valid, quick and easy (Cohen et al. 2018:471). Open-ended questionnaire items were employed to obtain rich and descriptive stakeholder perceptions that closed items may overlook. The open-ended questions were explicitly explained to respondents to reduce the chance of non-response and to guarantee real responses. Follow-up reminders were provided and responses were triangulated with data from interviews.

1.7.2.2.2. Interviews

In this study, as Cohen et al. (2018:506) describe, an interview enables the researcher to collect data that cannot be addressed by questionnaires, allowing for in-depth exploration of issues. The primary objective of qualitative data is to provide detailed explanations of initial quantitative results (Creswell & Creswell, 2018, Chap. 10, sequential design, P. 1). So, semi-structured interview questions were prepared for deans of Polytechnic College, department heads, MSE leaders, and top leadership of TVET sectors that include TT process professionals at the government level .The interview was recorded using a mobile phone for later ease of interpretation, then transferred to an external hard disk and onto a desktop.

1.7.2.2.3. Document reviews

Different Ethiopian government policy and strategy documents concerning TVET sectors in general and TT, as well as leadership development frameworks, proclamations and directives are employed as data sources. Additionally, MSE Development Agency documents, including those from the federal and city governments of Addis Ababa, such as the Education and Training Policy (ETP) and ESDPS, as well as various annual statistics abstracts and literature reviews, were utilized. Furthermore, evaluations of annual and half-yearly reports on TT performance accomplishments were also used as supportive documents.

1.7.2.3. Data analysis and interpretation

According to Creswell and Creswell (2018, Chap. 10, sequential design, para. 4), in mixed-methods design, interpretation begins with reporting the quantitative results in the first phase and is followed by reporting the qualitative results in the second phase. For the quantitative data, both descriptive and inferential statistics were used for analysis and interpretation in the study. SPSS version 26 software was used to analyse the data collected from the respondents. Both descriptive and inferential statistics were used to thoroughly examine the association and differences among the respondent types and to determine the intensity and strength level of their responses to the practice indicators. Practical allocation and the degree of agreement between participants were controlled by the correlation coefficient. The T-test and ANOVA were used to test the significance of differences in respondents' attitudes towards the leadership practice indicators on TT activities from PolyCO to the MSE manufacturing sub-sectors.

A correlation coefficient was used to measure the association between the independent variable—critical components of leadership and management practice, derived from communication, planning, environment setting, and boundary spanning—and the dependent variable: the technological capability built and accumulated within the college and subsequently transferred to MSEs.. Furthermore, Cronbach's alpha was also used to check the reliability of the survey questionnaire items following the pilot tests. Composite reliability was used to assess the internal consistency of each construct. According to Sürücü and Maslakci's (2020:166) suggestion, a Cronbach alpha range of 0.65 to 0.80 is typically sufficient for a scale used in human dimensions research, and this was used as a benchmark to interpret the findings.

Qualitative data, which would be obtained through semi-structured interviews, were coded, carefully transcribed and analysed using ATLAS.ti-9 software, and finally, integration with the quantitative result was made to report it.

1.7.2.4. Trustworthiness

Trustworthiness involves confirming the credibility of the collected data for analysis and interpretation. Validity and reliability depend on the design type and are not found in the same nomenclature; therefore, they differ from design to design. It was necessary for the researcher to apply scientific principles and theories to establish the process of enhancing the quality of research in mixed-method studies, as in the present case. Various forms of reliability, namely, contingent validity, construct validity criteria and reference validity using suitable criteria, were considered. Reliability involves enhancing the dependability and consistency of the data collected. A pilot test was conducted to enhance validity and reliability, utilising the split-half method to assess the reliability and internal consistency of the quantitative approach employed in the present research. More importantly, experts in the field were also consulted for their valuable comments and suggestions. The comments and suggestions were critically used to improve the validity of the instruments

1.7.2.5. Ethics-related matters

Once the research unfolded, the researcher has no further control over it. Since human subjects were involved in research, particularly educational research, the researcher had to consider both ethical and legal factors throughout the entire study process (McMillan & Schumacher, 2014: 407). The researcher should give priority to oversee the ethical issues and dilemma that can surface during the research undertaking (Creswell & Creswell 2018: chap 4. strategic and ethical consideration). In short, the investigator must prioritize addressing any ethical challenges that may arise during the research.

1.8. DELIMITATION AND LIMITATION OF THE STUDY

This section describes how deliberate the study was (delimitations) and possible defects that were beyond the reach of the researcher's control (limitations).

1.8.1. Delimitation of the study

"Delimitation/scope of study" refers to the deliberate decisions made by the researcher to narrow the scope and maintain the focus and management of the study. This study was bounded by the following delimitations:

Geographical boundary

The study was limited to five polytechnic colleges, which are cluster centers in the city administration of Addis Ababa, Ethiopia. These are General Winget, Misrak, Entoto, Nifas Silk, and Tegbare-Id Polytechnic Colleges. The participating MSEs are those operating in the manufacturing subsectors within the catchment areas of the respective PolyCO. Consequently, the results may not be applicable to PolyCO in other parts of Ethiopia.

Time period

The data for the research was collected from 2021 to 2024 to document leadership practices on TT so far. The study is not intended to provide a long-term report on the development of TT practices over a long historical period or to track changes beyond this window. The COVID-19-related TT activities were confined to the pandemic period, beginning in 2021.

Conceptual boundaries:

The study was conceptually limited to analyzing four core leadership functions as independent variables: planning, effective communication, setting an environment for innovation, and boundary spanning. The dependent variables were limited to three issues, namely TT results: technology capacity (TCB), technology accumulated (TA), and acquired absorption capacity (AC). The theoretical framework is limited by transformational and transactional leadership theories as defined by the Full Range Leadership Model (transformational and transactional) and absorption capacity theory. It excludes other leadership theories and does not measure the financial performance of MSEs

1.8.2. Limitations of the study

Limitations are possible weaknesses or limitations of the study that the researcher was unable to control and may affect the results. The following limitations are recognized:

1.Contextual limitation: The research was on the TT from the polytechnic colleges to MSEs, an area that is still in its infancy in Ethiopia. The lack of previous local studies on leadership practices in this particular context limited the availability of comparative literature and prevented the ability to compare findings with existing local empirical work.

2. Generalizability Limitations: The study was limited to Addis Ababa, where five polytechnic colleges were selected through a pre-qualified sample. Therefore, the results may not be fully generalized to polytechnic colleges in other regional contexts in Ethiopia or to TVET institutions that do not work as cluster centers.

3. Respondent-Related Limitation

Although the respondents were guaranteed confidentiality, some may have hesitated to express their candid opinions on the leadership practices of their respective polytechnic colleges. This may have led some respondents to provide socially acceptable answers rather than expressing their true opinions.

4. Limitations of the scope

The study focused solely on leadership practices related to the TT and did not consider other institutional, political, or macroeconomic factors that could also have an important influence on the TT's performance. These factors remain a path to future research.

1.9. ORGINAIZATION OF THE STUDY

The thesis is divided into six chapters, which are arranged in a logical order and guide the reader from the basic context to the theoretical basis, the methodology, the empirical results, and, finally, to the conclusions and recommendations.

1. Introduction & Background

This chapter presents the background of TVET and TT in Ethiopia and the statement of the problem, research aim, objectives, and research guiding questions. The importance of the study is discussed, including assumptions, delimitations, and limitations. The chapter also briefly discusses the introduction to the research design, methods, data analysis procedures, ethical considerations, and issues of trustworthiness. This is the end of the organizational summary.

Chapter 2 .Related Literature Review

The literature on TT leadership practices is critically reviewed in this chapter. This paper examines leadership as practice, how it influences TT in the TVET context, and the roles leaders play in the TT process. The paper provides an overview of TT, including the conceptualization of leadership practice in relation to TT and the factors that hinder effective leadership and management of TT activities; the perceptions of stakeholders on TT yield success, and challenging factors are also explored that reveal gaps this study addresses.

Chapter 3: Theoretical and Conceptual Background

This chapter defines key concepts such as technology transfer, leadership practice, TVET, technological capability, and absorptive capacity and presents the guiding theoretical lenses. The chapter mainly discussed the theories of transformational and transactional leadership and absorptive capacity theory, highlighting the critical

constructs. These theories form the basis of a conceptual framework that depicts relationships between the independent variable.

Chapter 4: Research Design and Method

This chapter describes the methodological approach of the study. This chapter explains the research paradigm, design, and methodology. It describes the mixed methods design, the population and sampling techniques, and the data analysis methods and their philosophical underpinnings. In this paper, justification is provided for the use of the pragmatic paradigm and the explanatory sequential mixed-methods design, and the issues of trustworthiness, validity, reliability, and ethics are discussed.

Chapter Five: Data analysis, presentation, and interpretation

This chapter is structured into three phases of empirical findings. Phase I addresses the quantitative findings with descriptive and inferential statistics regarding PLT practices, leadership styles, stakeholder perceptions, success and challenging factors, and COVID-19-related TT activities. Phase II reports qualitative findings from thematic analysis of interviews. Phase III synthesizes the two datasets and provides an overall interpretation in the context of the research questions and literature. The chapter also proposes a framework to help leaders to lead and manage TT activities from PolyCO to MSEs in the manufacturing sub-sectors.

Chapter 6: Conclusions, Recommendations, and Summary

This final chapter summarizes the study, presenting findings and evidence-based conclusions. It answers the overall question: “To what extent do the leadership teams in the polytechnic colleges of Addis Ababa lead the activities of TT to MSEs in the manufacturing subsectors?” Practical recommendations are offered to the government, the Addis Ababa Labour and Skills Bureau, PLTs, and MSE owners to

enhance leadership practices in TT. The thesis concludes with a personal reflection and avenues for further research.

1.10. CONCLUSION

Managing situations, taking action and leading people are the critical roles leaders play, as is highly dependent on the leaders' ability to inspire and influence key stakeholders, which are critical in the 21st century. Leading and managing TT performance in TVET institutions are no exception. To meet the requirements of the 21st century, as depicted in Ethiopia's education development roadmap, the role and part of educational systems are critical in transforming socio-economic systems (MoE, 2019:3).

The researcher has been on a job related to the current topic under research in the technical and vocational training sector for the last seven years, having been an expert for the school of graduate studies and a coordinator for the continuing education program in the same institute. Such exposure for the sector could inevitably allow the researcher to attend the performance level on various them during annual report reviewing and supervision time in the polytechnic and TVET colleges. Surprisingly, TT achievement in TVET colleges, in general, and PolyCO, in particular, has always had a low status compared to other thematic areas. This prompted me to prepare the present research and to probe the reasons behind my Ph.D. thesis from a leadership and management point of view.

CHAPTER TWO

2. LITERATURE REVIEW ON LEADERSHIP PRACTICE AND TECHNOLOGY TRANSFER

2.1. INTRODUCTION

In this chapter, the issue of leadership practice and technology transfer (TT) is presented. The concept of both technology and TT, an overview sketch of TT, the change management and TT, the conceptualisation of leadership as practice, and the leadership issues in the TVET sector context are briefly described. Following this leadership as the independent variable through its function and TT process in the form of technological capability building and accumulation in the college context and transferring it to the micro and small enterprise (MSE) is treated as the dependent variable. Finally, good governance in the TVET context and challenges facing the leading and managing of the TT activities are presented.

This chapter is divided into seven sections which start from the impact of leadership practice and the TT context in the seventh section, depicting the experience of TT activities in the context of COVID-19 pandemic. The outline of the chapter is presented as follows, based on the respective status:

2.2. Leadership practice and the TT context

2.2.1. Critical impact of leadership in TVET and TT context

2.2.2. Leadership commitment to TT

2.2.3. Conceptualizing leadership as practices

2.2.4. General overview of technology and TT

2.3. Leadership role and TT in the research context

2.3.1. The place of leadership in the research perspectives

2.3.2. Good governance issues in the TVET context

2.3.3. Ethiopian TVET and TT

2.3.4. The role and function of leadership in TT project practice

2.4. Stakeholders' perception to the TT support

2.5. Success and challenging factor for TT practice

2.5.1. Success factors for TT

2.5.2. Challenges facing leadership on the TT activities

2.6. TT in the context of the COVID-19 pandemic

2.2. LEADERSHIP PRACTICE AND THE TT CONTEXT

The following section presents a review of the related literature on leadership and TT.

2.2.1. Critical impact of leadership in TVET and TT context

Leadership is crucial for managing and implementing change in culture, processes and strategies, including TT. The leadership in higher education, of which the TVET sector is not an exception with its peculiar nature, is responsible for demarcating goals, implementing administrative and leadership action, and managing and leading the academic communication system (Basham, 2010:142). To fill this gap, Pitsoe, V.J. and Letseka, M. (2021:666) emphasize the need for diversity management, which is a paradigm in which a gradual change of policies is important to transform the patterns and boundaries of thoughts. Consequently, studying leadership and leaders is critical. Furthermore, these tasks have been enhanced by the overarching need we have in our society since leadership has a high ability to bring about greater effectiveness and improvement via policy and the commitment of the specified leadership (Kedir & Geleta, 2017:50). Leadership matters in the process of TT for each incidence of duty, thereby requiring attention

and focus. Regarding TT, UN-ECA (2014:12) underscores the substantial costs linked to its deployment, taking into consideration expenses connected with its use, upkeep, service and training. This highlights the idea that any technology has a significant number of embedded relationships that could integrate tacit knowledge from cultural issues that need critical adjustment. In these situations, leaders need to exhibit more life-changing and entrepreneurial leadership behaviours (Maalouf 2018:2). Practitioners are often tempted to use a ‘one-size-fits-all’ solutions for various problems, stressing the ineffectiveness of using the same solution modality in addressing problems, including governance challenges. Leadership’s role in TT has been undervalued, leading to a neglect of policy expertise (HEFCE, 2016:4). Hence, in line with these, Manabete and Umar (2018: 24) concluded the need to employ appropriate management, leadership and strategic direction to organise people management and other resources to achieve the development of productivity to meet the identified needs.

The leadership team of the university is responsible for determining priorities and deciding what components are essential for successful TT. The main responsibility of the leadership of an organisation would be to establish an atmosphere that is conducive to the generation of ideas, adoption and development of knowledge, implementation of innovation, and enhancement of the institution's overall performance (Girdauskienė & Savanevičienė, 2012:23). Regular contact between the leaders and the employees would facilitate the acquisition of knowledge. The Higher Education Funding Council for England (HEFCE, 2016:32) articulates that leadership from higher education institutions participating in the TT process must have a clear commitment to delivering impact, including how it supports effective TT, with a strong emphasis on governance.

This is useful for the leadership group at TVET College, which oversees technology accumulation and transfer, as these responsibilities are more or less the same because the government has assigned them to this group. This aligns

with what traditionally entrepreneurial universities have done in the university-industry linkage arena.

In aggregate, research indicates that the research and development (R&D) leaders perform essential roles within the project groups that contribute significantly to performance. Leadership teams need to not only help facilitate the collaboration with various firms around them, attracted as partners, but also proactively seek ways to bridge the connection established by finding various strategies like joint research platforms, identifying potential partners and areas of a downstream licensing relationship (Chu, 2013:60). In addition, the issue of performance improvement is a catchy phrase in the overall effort of leadership and management in any day-to-day and project implementation to foster innovation and then properly transfer it to users.

Defining the role of the leadership entities is critical. To that end, Elkins and Keller (2003:593-594) identified four roles played by leaders in the operating team that improve incremental products and focus on the development of new products: communicators, climate defenders, planners and interfaces. The results show that the effectiveness of leadership behaviour depends on the ability of leaders (Elkins & Keller, 2003: 594). In addition to the internal leadership activities of the project group members, the researchers emphasised the importance of cross-border actions for the project leader group to facilitate effective linkage with other constituencies within and outside the company.

The TVET sector, as a field of study, faces challenges in its role of preparing the young generation for careers in various sectors, both currently and in the future. The TVET sector is being pushed to take on a significant functional role in addressing environmental issues. It must respond appropriately to the challenges at hand to prepare individuals to take advantage of the opportunities for the type of workforce necessary in today’s world of work. Much is also required for the TVET sector to fulfil the newly assigned responsibility of being a centre for technology

accumulation and transfer. Hence, leadership is an essential variable in the new context of vocational education (Boateng, 2012:52). The success of leadership in TVET has a significant influence on how the environment is in change.

Girdauskien and Savaneviien (2012:23) found that the influence of leadership on knowledge transfer is low and affects its success. Despite no consensus on leadership qualities, the fact that leadership is crucial to any organisation (Boateg, 2012:52) has been agreed. This led to a study of the personal characteristics and behaviours of effective leaders, which introduced a new characteristic of leadership: vision and its importance. The study showed that effective leaders must have visions, facilitate the development of common visions and value the human resources of organisations.

2.2.2. Leadership commitment to TT

The leadership commitment is crucial in lessening the common resistance and opposition to the programme introduced as a change agenda, such as TT.The TT can only be implemented if the green line is switched on through leadership commitment and coordination efforts. There are complex interactions between the commitment of senior management and the social capital (trust and organizational culture) of stakeholders. Programme managers and social scientists are often criticised for being resistant to TT unless the leadership team indicates their commitment to its implementation (Torgas, et al., 2004:16). From the TVET perspective, Al-Ali (2021:175) notes that the success of TVET would depend on the management's strict commitment to address any ethical misconduct that faces the sectors in distorting the image of the target institution. The effective implementation of the set goals and objectives are critically based on the practice of leadership. The leadership group may move forward dynamically and persuade partners, employees and stakeholders to put forth more effort to achieve the common goals of the TT.

Leadership commitment adds value to organisational performance by communicating a sense of energy and motivation to the general execution climate of TT. It drives effort to enhance mission accomplishment. In relation to the effectiveness of TT, the research conducted by Soliman (2020) concerning the relationship between the empowerment of leadership and process performance revealed that there was a positive and significant relationship between the construct elements, which can be reflected in process achievement, business achievement, human resource achievement, and the effectiveness of TT as a result. The study also discovered that the flow-up and monitoring of employees have received little attention in their operations, although monitoring activities are of critical importance, which in turn has an impact on the success of TT. The study suggested the need to broaden its scope by including more Egyptian industries and academic fields.

Another factor indicating leadership commitment is the location of the office, where leaders are readily available. “Locating offices close to the highest levels of the organization is important because it provides visibility to the TT programme in order to promote it and sell the rest of the organization's leadership priorities," (Torgas, et al., 204:16) credo. he significance of the technology transfer (TT) programme requires proper elaboration, outlining the benefits and improvements it would bring upon successful completion of its mission.

According to Torgas, et al. (2004: 36), the four essential elements in developing a capable leadership team in transferring technology are leadership commitment, customer service, competent people, and platforms that may attract outside talent for the staff. These demonstrate the necessity of bringing people with related research profiles and talents to the platforms (Omelyanenko et al. 2018:455). in line with leadership commitment,the devotion from the stakeholder is also mandatory.stakeholder engagement intensity varies accordingly.For instance. Sgarz (2021:7) categorized stakeholders at macro, meso, and micro levels, underscoring their participation in quality identification, priority setting, and

integration of new qualifications into training,When there is leadership commitment in an organisation, TT usually guarantees a sufficient budget for patenting and licensing and the personnel with the necessary capabilities for successful TT performance. When total quality management is practised (Bolatan, G.I.S., Gozlu, Alpkan & Zaim, 2016), TT performance would result in higher quality performance, which helps to achieve the objectives demarcated in this case by TT implementation for competitive advantage. For the leadership/management body assigned at a lower or senior position, the relationship among TT performance, total quality management, and the successful result of the management entity is directly affected. In general when leadership is committed, it secures necessary resources for effective TT, leading to improved quality performance and competitive advantage through total quality management practices.

2.2.3. Conceptualising leadership as practices

Leadership is often regarded as one of the most important and effective responses to challenges and opportunities presented in the global context. In practice, leadership is seen as a common phenomenon among collective members that fosters learning, as knowledge is closely tied to practices and actions. In explaining effective leadership, Basham (2010:144) has described group and individual leadership qualities. From the group qualities perspective, he underlines the necessity of shared purpose among the members, collaboration, division of labour, disagreement with respect, and the issue of creating learning environments as critical steps from the individual leadership qualities point of view, to nourish the qualities important in the team, such as commitment, empathy, competence, authenticity, and self-knowledge, are critical.

Leadership practice is a process issue, proposing the focus based on the nature of an issue and the goals to be achieved through a specific strategy (Sahyaja et al., 2018:258). As a result, a more precise understanding of current practices and a more practical understanding of organisational dynamics must be taken, and leadership must be considered as a collective and cultural phenomenon that

transforms the meaning of leadership from an isolated individual perspective into a collective one. Leadership practice encompasses understanding, presenting, and operationalising leadership tasks, ranging from the micro to the macro level within the organisation, where this involves actively coordinating and participating in various activities. Leadership is associated with various meanings, such as influence (Spillane et al. 2001:1). Chauhan's (2017) findings also frame leadership as an opportunity, one whose nature is an emergent and complex fusion of various styles.The conceptualization of practices inherently entails deviation from conventional approaches.

Leadership behaviour has often been conceptualised in terms of the ‘traits’ and 'styles’ of individuals, characteristics that have proven to be problematic and elusive objects of study. To take leadership conceptualisation in research and practice beyond the individual leader-centred tendency, some authors suggest the necessity of challenging the existing tradition of conceptualisation. Crevani et al. (2010:78) underscore the importance of making the abstract notion of leadership a reality by bringing followers into shared goals, achieved through redefining the leadership concept as a process and practice organised through people's interaction in a specific context. Villas-Boas et al. (2018:32) suggest taking the meaning of leadership out of an isolated, single and individual concern to define it as a collective endeavour that can be reflected at various layers. Currently, researchers' and practitioners' contributions, such as Raelin et al.'s (2018:2) contribution in describing leadership as "practice," have brought "movement." They contended that leadership does not reside in the traits and behaviours of the participant being either a leader or a follower, but rather in an emerging "collection of practices."

Practice is a set of relationships between people and material elements, which emerge from the interaction between actors through various forms of communication during the completion of a key activity, although there is no consensus on its definition (Villas-Boas et al., 2018:7).The practices of educational

leadership and management have been given due emphasis in South Africa and other countries that seek to implement their policies and school acts towards the realisation of self-management (Bush, 2007:393). Therefore, it can be considered a level of analysis in itself. It directly involves demarcating where the work of leadership is done, who and what non-human actors are involved, and how such issues are organised, communicated and assimilated.

The concept of leadership has evolved into being viewed as a process and interaction organised by people, rather than focusing on the abstract aspects of leadership (Crevani et al., 2010:77). Moreover, Raelin et al. (2018:3) buttress that the theory of leadership has been dominated by propagation to redirect the thinking of leadership that governs in a time frame where most of them have advent on the scene without enough critics. The study emphasises the importance of analysing the social constituency as a practice and object of analysis and applying best practices in leadership planning, design, delivery and management (Crevani et al., 2010; Raelin, 2016). They suggested a perspective on leadership research that focuses on leadership as a practice, a collective process in daily interactions, rather than on individual leaders. This approach aims to understand how leadership activities are created and how institutionalised concepts are reconstructed through such activities, occurring within a specific context. Therefore, it aims to strengthen the empirical study of leadership as a process.

For instance, from the school arena perspective, the principal can initiate changes in activities such as the implementation of a new programme, initiative, reform, planning, and daily monitoring of implementation, which are the responsibility of the school staff through shared and distributed leadership responsibilities, harvesting participation and commitment to expected changes; therefore, the likelihood of success increases (Judkins, Bosworth, & Garcia, 2019:409). The complex nature of schools and TVET sectors, therefore, highlights the importance of shared, distributed, and collaborative leadership, in which these leadership teams, composed of administrative and professional leaders, accelerate the

implementation of initiatives, reforms, organisational changes, and programme implementation. They further strengthen their ideas in that such an approach is highly implemented to ensure the effective and efficient implementation of educational programmes.

Research on leadership as a practice is scarce (Vilas-Boas et al., 2018:2). Focusing on practice as an area of investigation helps, in the first place, understand organisational phenomena, as it enables access to action, agencies and agents. Secondly, practice is used to actualize the creation of meaning, delimit the formation of identity, and plan the production of activities. It is time to give it a shot, where the criticisms and outcomes of deviation are not ignored. In summary, leadership study has been put under the umbrella of practices that bring practitioners to various activities, and the study gives due consideration to existing activities of leadership prevailing on the ground (Vilas-Boas et al., 2018:8). In line with this, Davis (2014:108) has also focused on the "application of best practices to hold leadership research by relying on leadership planning, design, delivery, and management with which the current project is concerned."

Research conducted regarding the issue focused on one practice is found fundamentally scarce (Vilas-Boas et al., 2018:3). Indeed, there is a tendency, albeit limited, to reflect the leadership entities from the group's point of view. The research practice and the theoretical works have paid little attention to the leadership that it makes and its interaction with the human and non-human elements; rather, the leadership research focuses on the figures of the leadership. Meaning comes from practices and is distributed to all layers of employees, rather than restoring the deeds (what has been done) on top of the hierarchical leadership and management teams.

It is undeniable that the conceptualisation of leadership practice is problematic when there is no unified understanding of leadership activities. There is a scarcity of research on leadership as a practice, and to truly understand leadership in such

context, one must examine the leadership process. Scholars and practitioners define leadership as a practice, emphasising that it cannot be fully reflected only through traits and behaviour because it is a relational process. Theoretical work has dominated research, with a strong emphasis on the leader's figure rather than the situations in which the leader interacts with human and non-human actors.

To sum it up, leadership is a crucial response to opportunities and problems on a global level, and it is frequently viewed as a shared occurrence among members of a group. The practice of leadership concerns the process of addressing problems to achieve broad goals in challenging conditions using scientific strategies. The vital role of leadership lies in employing appropriate methods to tackle challenges, focusing on contemporary practices and strategies. The concept of hero leaders, which often views leadership as the core of all possible phenomena in culture and organisation, was surpassed in this regard. Hence, various issues matter in the process of leadership rather than as a hero leader. Leadership practices incorporate the issue of understanding, giving and carrying out various micro tasks in the realm of interaction with other entities.

2.2.4. General overview of technology and TT

Technology and TT are both dynamic, which has led to the emergence of several definitions. The works of literature have documented much of the change seen in the definitions of the concept of technology and TT. Depending on the viewpoint from which it has been employed, TT has entailed several meanings and understandings, much like the idea of technology. The concepts of technology and TT are briefly reviewed in the next subsection.

2.2.4.1. The concept of technology

Defining the technology concept is not easy, especially since it has been defined in various ways by different authors (Mamat, 2012:165). Technology is the process of transferring scientific and technological innovations from sources to recipients

through human activities for clarity and continuity(Nicodemus, T. and Egwakhe, J.A. (2019).There is no clearly unified and consistent definition for the conceptual understanding, which evolves over time in response to advancements in implementation practice (Al-Ali, 2021; Edson, 2020; Archibugi & Coco, 2004). Research on such issues have attracted from the various fields of study involving organisational management, political science, sociology, anthropology, economics, marketing and, most recently, from the emerging management of technology and innovation (Wahab et al., 2012:62). However, the definition of technology is broad in the sense that different scholars give different meanings based on interest they are dealing with owing to its varied inter-disciplinary nature.

Technology includes both hardware and software, including the knowledge required for the production and use of technological tools. One of the key features of technology is its dynamic nature, as technology evolves constantly, and new technologies replace older ones over time,(Grübler,1998:19). Technology, as defined by Liu, Fang, Shi, and Guo (2010:2), is expertise in producing goods and services using human-developed methods and skills to meet societal needs. It involves the integration of tools, techniques, products, services, or processes, including physical equipment, to broaden human potential (Gunsel, 2015:779). Technology that can reduce economic vulnerability and increase adaptive or transferable capacity exists and is being developed.

2.2.4.2. The Concept of technology transfer (TT)

There are a number of definitions of TT but its concept is still evolving. It has often been taken as a fully developed construct from a theoretical point of view, which is not the case. Within the scope of science and technology, there is a wide range of research (Liu et al., 2010:5). From the background and definition perspectives, most researchers on the field came into agreement that TT is closely associated with the transfer of information, expertise and local knowledge which can be embedded with products, process and managing process.

TT is a progression that introduces a new process or approach in a new socio-political context (Wahab et al., 2012:62), involving the transfer of science and technology results, information, ability, transplantation, import, promotion, and popularisation (Liu et al., 2010:3). According to UNCTAD (2014:1; Al-Ali, 2021), TT involves various stages and requires investment of time and effort to access, learn, understand, adapt, and use technology. The objectives of TT are perceived to be the acquisition of new techniques through investment in plants, the improvement of existing techniques and the generation of knowledge (Wahab et al., 2012:63). The process of technology transfer (TT) is attracting attention because of its potential to stimulate business innovation, increase competitiveness, create employment opportunities, and promote socioeconomic development.

The university established a TT office to promote entrepreneurship, disseminate research results and support scientists in bringing their research results into commercial use (Algieri, Aquino, & Succurro, 2013:394-395). TT is defined locally by MoSHE (2020:13) as "the process of transmitting discoveries arising from scientific and technical research to the marketplace and wider society, together with accompanying skills and processes, and is as such an important aspect of the technological innovation process."

Locally, here in Ethiopia, transfer of technology is customised as the movement of scientific knowledge, technology and technological expertise from one person to another, resulting in capability to manufacture goods. It also involves the transfer of service delivery mechanisms and the improvement of various processes in a manner comparable to the original status of the technology. This process, therefore, presupposes both a transferor and a transferee (Yohannes Hailu, 2016, p. 150). As a result, the common concepts in all definitions are the movements of manufactured material, plants, know-how, and leadership characteristics from the source (individuals, laboratories, training, and higher education) to the receiver (companies, firms, or other entities) via various channels.

Functionally, TT provides firms and companies in developing countries by situating the condition by leapfrogging the development path that the developed countries have experienced to reach today. It needs to be the issues that grab the attention of the leadership; hence, such a study may provide some innovative suggestions for future research directions in order to better recognise, interpret and comprehend the underlying theories and viewpoints that have a significant impact on the past, present and emerging conceptions of TT.

2.2.4.3. General overview of TT

Technology transfer is the application of technology and the use of knowledge. It may be thought of as a process whereby technology created for one purpose is utilised for another, or by a new user in a different setting. Muthoni, Omato and Kithinji (2013:172) define TT as the process by which colleges or other organisations that serve as research hubs give the recipient access to technology. It may also be divided into three easy steps: first, there is a problem with a source; next, the technology must be created; and last, the technology needs to be applied or employed in some way, enabling movement or transfer from one industry or function to another, and so on.

TT is a term used to describe a process by which technological knowledge moves within or between organisations (Sahyaja, Rajeshkumar and Sekhararao, 2018). They do it by means of several different techniques and issues, including market engagement with transaction operations in industrialised nations. As a result, such diverse approaches and gradual development demonstrate the complexity of the technology issue, which TT developed over time.

According to Purushotham, Sridhar and Sunder (2013:422), TT is a complex and dynamic process whose success depends on several factors flowing from its various stakeholders.It is necessary to identify the hindering factors and their contribution to understand and control the TT process. TT is often considered to be a one-way process if the hardware aspects of technology are taken into full account. When such hindering factors and their contributions need identification to

understand and manage the TT process effectively, while hardware aspects of technology are given due consideration, TT is seen as a one-way process from donors to recipients, and with the advent of software, TT has become a two-way communication (Gunsel, 2015:778). The latter author defines TT as a combination of tools and techniques, as well as the production process. TT is used to improve the organisation's ability to provide products and services or to achieve a particular objective; it initiates technology capability, i.e., the movement of technology.

Technology transfer significantly impacts economies and societies, enhancing socioeconomic value (Liu et al. 2010: XVII). Practitioners and researchers conceptualised it in various ways, following the scope of the process and its purpose. Hence, various pathways create a platform in which stakeholders can interact to transfer technologies, depending on the context of sectors at the lower level and countries at large. According to Liu et al. (2010:45), TT processes can be ‘vertical transfer as well as horizontal transfer’, where the vertical one refers to the transfer of technology between the developed and developing countries, while the horizontal one happens among countries at the same level. Types of TT such as intra-firm, taking place between a foreign multinational and its subsidiaries in developing countries; inter-firm technology, where a subsidiary of a foreign company buys technology from another company (foreign or domestic), and where technology is transferred from government research institutes and laboratories to the private sector’ (UN-ECA, 2014:10).

TT is related with production, transitioning from a production-oriented environment to other application-oriented institutions for diverse goals, and the spread of science and technology via human endeavours are some of these activities. This, in turn, shows that, despite the existence of certain similarities, there is no precise definition for TT when it is seen as an innovation process where an idea, practice or aim is implemented for the first time (Al-Ali, 2021:185). TT is used as a "blanket" for many different activities, including the transportation of information from the source to the region of destination (firms, businesses, and industries), and it is required for a variety of applications.

Liu et al. (2010) assert that there are five channels and two broad categories of transfer theory: "inner transfer" and "a transfer issue for production applications" are the "so-called two types" of TT. The five routes, they said, are the transfer of technology from the lab to the manufacturing floor, from military to civilian use, from advanced to less developed entities (regions, sectors, or industries), from urban to rural areas, and from domestic to foreign nations.

Six general steps are involved in the process of TT, according to Farhadikhah and Hasan (2015:175):

- **Phase 1: Technology selection and acquisition**: The process of technology selection between existing technologies and the negotiation and completion of the acquisition contracts.Agostini and Nosella (2021:734) observed the need for the process to audit different capability statuses of the TT participants.Amoako et al. (2022) posit that the ability of an organization to audit and leverage superior human capital directly expedites its capability building process for new technological services and products
- **Phase 2: Import technology adaptation:** A process that closely complies with the needs of the system and the sources and conditions of the country.Lepore and Spigarelli (2021:85) highlighted the importance of identifying organisational culture, management practices, employee skills and the capacity to adapt technologies introduced through TT.
- **Phase 3: Attraction of imported technology**: The process of complete consciousness of the receptor towards all components of the acquired technology.
- **Phase 4: Application of transferred technology**: The process of use of acquired technology.
- **Phase 5: Expansion of imported technology:** The process of applying, utilising and implementing technologies, applying the knowledge, skills and findings of internal research to expand the technology to processes and improve processes.Lepore and Spigarelli (2021:87) highlighted the

importance of the government in creating a conducive environment for the acquisition, adaptation, expansion and use of technology through its policy instruments

- **Phase 6: Dissemination of imported technology:** The process of deepening and expanding the components of technology acquired at the national level.The delivery of technology to rural areas, especially MSEs in developing countries is intertwined with hurdles such as the problem of acceptance, TT complexity and sustainability (Bhattacharjya et al., 2018:3).

Soliman (2016:143) reviewed the literature of various works and came up with the findings that the studies on the effectiveness of the TT ignore discussing the effect of leadership styles as one of the factors affecting TT effectiveness.

Concerning the Ethiopian context as depicted in MoE (2008), the concept of TT from TVET colleges is to get the ideas, innovations and technologies developed into the hands of the private sector as quickly as possible and in forms useful to the community. For the transfer of technology to happen effectively, variables such as inter-organisational dynamism in the realm of trust and strong social ties are needed.

2.2.4.4. Change management and TT

The main objective of change management is to ensure the success of implementing a new process. By managing change effectively, products and business strategies can minimise the negative result. TT practices could be put under the umbrella of change management. Implementation of TT is an issue of organisational change. As a result, the existing organisational change model can be used to manage TT. Nowadays, countries at large scale and companies, firms, and enterprises use TT in a limited scope as a process use TT as the main instrument to achieve change However, to develop a flexible workplace culture, organisations should follow a systematic approach to managing

major changes.As a result, the existing organisational change model can be used to manage TT.

Organisational development experts have developed methods for successfully navigating changes. The number of interconnected players on different levels makes the situation more complex, making the change process increasingly unpredictable and beyond the control of any individual or group of players (Kraak, 2016:75). Having the right leadership and the consent of the executive team is essential to unify the organisation behind a common strategic direction. Unfortunately, many managers are not experts in change management. A lack of change management skills by managers makes change initiatives difficult to achieve.TT is used as the main instrument to achieve change by countries, companies, firms and enterprises (Õzçatalbas, O. 2020:4).

Based on his extensive experience and consultation with numerous organisations, Kotter distilled themes and developed an 8-step change model. This is a widely used approach for managing organisational change that is more prescriptive in addressing issues that leaders and managers face when leading and managing change (Tang, 2019:53).

Table 2.1: Eight steps for organization transformation

1	Establish a sense of urgency	The urgency motivates subordinates and produces a sense of realism in terms of the goals of change efforts. It is also essential to achieve the right combination of chemistry and mix among team members, allowing the highest level of emotional commitment to be closely involved.
2	Forming a powerful guiding Coalition	The formation of a powerful guiding coalition is the most important element in the gathering of powers, senior management and key influences within an organisation and encourages teamwork and unity throughout the process.
3	Creating a vision	The creation of this vision serves as a roadmap for the change effort, developing strategies to guide each step of the change.

4	Communicating the vision	The leaders should involve key influencers from as many facets of the change process as possible for their acceptance and communicate clearly and thoroughly throughout the process.
5	Empowering others to act on the vision	It involves an elimination of change barriers, anticipates and looks forward, and focuses on the system and changes structures that are resitting g change. Risk-taking is also encouraged in the form of activities and ideas.
6	Planning and create short term wins	Breaking up overall change initiatives into smaller, manageable fragments that can be measured for completion and success. Leaders should be rewarded for their efforts to lead to overall changes in initiatives.
7	The consolidation of improvements and the implementation of further changes.	The focus is on changing systems, policies and procedures that hinder vision, hiring, promoting and developing subordinates who can implement vision.
8	Institutionalising new approaches.	Clarifying the relationship between new behaviours and organisational success. The development and succession of leadership are also important.

In conclusion, the nation's socioeconomic development is largely determined by the strength and facilitation of the TT activity process via leadership commitment and development. TT is a genuine provider of this development package by introducing the management of expertise and know-why issues. (Jagoda et al., 2011:30). Practitioners and researchers on TT issues unanimously agreed on its importance and its long presence on the world's platforms, despite the apparent definition variance and confusion. It has been a fact that TT offers a valuable tool to firms, for they have increasingly relied on it to bring about enhanced productivity and improved customer service to tackle pressing competition tormentors. A description of the TT trends is presented in the following section.

2.2.4.5. Importance of TT and its place in TVET

2.2.4.5.1. Importance of TT

As noted in the previous section, TT plays a vital role in socioeconomic development through the introduction of management expertise and know-how. Practitioners and researchers unanimously agreed on its importance and its long presence on the world's platforms, despite the presence of apparent definition variance and confusion (Lavoie& Daim, 2017:247). In modern conditions of the 21st century, TT is an essential source and centre for the creation of innovation (Omelyanenko, Semenets-Orlova, Kushiti, Leona, & Yulia Medvidieva, 2018:454). It covers a wide range of activities, including the flow of information from the laboratory to various departments within the company for various applications (Al-Ali, 2021:175). It is the means that enable firms to enter a new stage of their development trajectory within a short period of time, from science to business and vice versa. To improve the productivity and values of investment organisations and communities, TT can implement new technology, goods and services (Muda & Abdul Aziz, 2020:65; Owusu-Manu et al., 2017:182). In fact, TT offers a valuable tool to firms, for they have increasingly relied on it to bring about enhanced productivity and improved customer service to tackle pressing competition tormentors.

TT has become a remedy for acquiring economic growth and competitive advantage for various enterprises in rural and urban areas (Omelyanenko et al., 2018: 454). When the TT project is carefully planned (Jagoda, Maheshwari, & Lonseth, 2010:366), it is given a critical place as an economic driver in MSE and other manufacturing sectors because it is instrumental in attracting and dissolving the youth to the "world of work." With a learning process in which technological knowledge is continuously accumulated by human resources, it helps to capacitate key personnel engaged in production activities (Wahab et al., 2016:64). In the Japanese case, the importance of TT is depicted in the way that it serves three purposes: to foster innovation, to save the Japanese economy for development

and to obtain management benefits in bringing about sponsored research and starting up as well as licensing businesses (Hatorim, & Hishida, 2013:10). It offers the beneficiaries three options: sponsored (joint or contract research), licensed and started up to provide a valuable service to society.

It is an income source for universities and other companies like TVET institutions that use scientific principles to solve practical problems. Moreover, it has emerged as an expertise and knowledge exchange and capacity building hub for TVET trainers as well (Wahab et al., 2016: Muda & Abdul Aziz, 2020). TT could do much for the quality of TVET systems. TT is considered a "golden gate" opportunity not only for the trainers in the institution but also for the students who would graduate to join the real world of work acquiring the knowledge, skills and attitudes needed in enterprises, industries and in the business world. It is used as an open container to acquire the knowledge and why contained in the technology package. To such end, according to partners' (Al-Ali, 2021:193) suggestions, a clear philosophy is required to situate the TT actors' platforms of participation in the college as the technology receivers and donators, as well as constituent firm. This can enhance the endeavours of the institutions to obtain income from it.

Although TT frameworks have been developed in the past, their relation to and applicability for TVET are hardly possible because the context in which they are fabricated is different (Muda & Abdul Aziz, 2020:64). Successful technology because of TT in one way or another will finally lead to a deeper and wider accumulation of knowledge in certain organisations, which highlights the importance of activities vested in such entrepreneurial activities. Companies are tempted to experience failure in their attempts at TT. Importing new technology processes into different sectors becomes a complicated task and results in significant financial loss or insufficient processes (Omelyanenko et al., 2018: 455). It is important to note that the end-use should be, but is not always, the principal consideration in the design of technologies" (Johnson et al. 2007), to be transferred to the destination where it is needed.

2.2.4.5.2. The development direction of technology transfer

Trends in TT research have shifted from academic institutions to other stakeholders such as companies and private industries (Necoechea-Mondragón, Pineda-Domínguez & Soto-Flores, 2013). From a research point of view, existing literature has shown that cross-nation TT research has focused on pointing out solutions based on one-way TT from developed countries to developing partners (Jabar, et al., 2011:30). Globalisation has helped to break barriers between countries and continents and has made TT more open and cross-border (Liu and others, 2010; Ernst & Chrobort-Mason, 2011). Universities have been criticised for being better at developing new technologies than at transferring them to private sector applications (Siegel, Waldman & Link, 2003:27). However, such criticism prompts government bodies to respond to encourage universities.

Increasingly, economists' attention has been diverted not only to thinking about and initiating technology from the traditional ‘innovation and developed world’ (Crupi, 2002:260), but also to relying on general talents to become innovation suppliers in the international market arena, which in turn promotes other platforms for the development of TT. On the contrary, such issues are tempted to be viewed through a different lens that can create a new international landscape for TT activities. Administrators from the university use such a motto to break the challenge of tightening the budget by mentioning TT activities in their project (Siegel et al., 2003:28). In addition to education and research accomplishments as a core business since the universities' foundation, nowadays, reality has witnessed that the third mission of "translating the value of academic institutions into benefits for society" has been added to the mission of universities. This "third mission" includes the social, entrepreneurial, and innovative activities that universities carry out in addition to their educational and research activities to solve problems in the real world (Madl, 2021).

The other challenge facing research output has been an issue of impracticality that caused the finding to remain on the shelf, waiting for decay. Many factors have both direct and indirect impacts on the success of TT for competitive advantage as well as for socioeconomic development. However, from a management literature perspective, boundary-spanning activities are critical in managing and leading to the completion of cross-boundary tasks and connecting the assessed and found organisation to the platforms for transferring technology. It is an issue involving building advantageous linkages with the external organisation (Crupi,2021:43). Therefore, other means of recognising the TT process have been made through establishing and expanding the activities of TTO to facilitate the diffusion of technology via strengthening licensing of industry inventions or intellectual property (Siegel et al. 2003:28).

In the same era, TT can be imagined in the following three modes:

- Materials, final products, components, equipment, and control and/or manufacturing equipment.
- “Design,” “blueprint and know-how, which provide the basic information, data, and guidelines necessary to create the desired capabilities.
- The know-why and soft spaces necessary to adapt existing technologies and innovations (Saad et al., 2002:619).

In summary, existing literature indicates that the type of cross-national TT research is based on a one-way transfer of technology from developed countries to developing partners. However, globalisation and the types of leadership functions that extend beyond borders shattered this state and increased the transboundary transfer and growth of technology (Liu et al., 2010; Ernst & Chrobort-Mason, 2011). In addition to educational and research achievements since their foundation, the third mission of converting the value of academic institutions into the benefits of society has now been added to the mission. The trend of TT has deviated from the traditional definition of TT from developed to developing countries,strengthening the position of developing countries in generating innovations in the international market.

2.2.4.5.3. The Role of TT in TVET sector

The role of TT in TVET is significant because it provides the trainers and trainees with updated knowledge, which in turn leads to innovation and knowledge creation (Al-Ali, 2021:174).TT is one of the tools that TVET institutions are using to update and maintain their system to make it fit for the purpose(McCallum, E. (2019:7). Appreciating the importance of TVET as a centre for innovation and knowledge creation, at least in the long future, Singh and Tolessa (2019:3526) have underlined the necessity of building closed linkage with the world of work to obtain benefit via activities like practical training, donations of equipment and tools, staff exchange programs, and placing trainees on work experience attachment with industries. It is also deduced that TVET institutions have long been a platform for knowledge creation and accumulation. Furthermore, it allows for a bridge to be built between what is being learned, what is available at the TVET and what exists in the real world of work. Hence, for the success or failure of the TT practice, the contribution of management work is crucial.

Although the focus on the TVET sector has been pushed to the marginalised corner and even fluctuated in its consideration for the last three to four decades, now that its importance has been increasing as a solution for socioeconomic development and to fill the gap available in the youth unemployment. It is considered as a solution to address structural problems of unemployment and other Achilles heels of developing countries in Africa, including hunger and disease, highlighting the need for government and the private sector to work in cooperation to employ people in need of jobs. Factors preventing TVET graduates from progressing include poor planning, socio-cultural factors, lack of credit facilities, availability, and spare parts costs (Manabete, & Umar 2018:21). Moreover, Manabete and Umar (ibid) suggestthe need to set up small and medium-scale enterprises in various sectors on the part of the TVET graduate. In 2007, the issue was reflected in the World Development Report. The African Union (AU) has also recognised TVET as a means of empowering individuals to take control of their

lives in its second-decade education plan (2006-2015) and has recommended that it be integrated with general education, although it remains a challenge on the continent.

Mulugeta and Mekonnen (2016:57) reported that the importance of technical and vocational agricultural education and training (ATVET) in technological transfer and other related issues, such as productivity improvement, agricultural commercialisation, rural economic growth and environmental protection. They also indicated that the role of TVET stretches to contribute to structural transformation from agriculture to industry, TT for innovation creation, poverty reduction, and rural economic growth. To achieve effective and efficient TT, the technology recipient must ensure the incorporation of callouses or "corn bumps" in the agreement that allows academic staff, the recipient, to take advantage of various opportunities to acquire the technology embedded in the agreement as a learning platform.

The interaction between TVET and the industrial and commercial sectors has been extensively documented, which has resulted in positive results in joint research, consulting, problem-solving, curriculum development, industrial training programmes, intellectual property, and licensing. This relationship benefits the industrial sector by providing skilled and semi-skilled labour, solving production problems, achieving profits, reducing production costs by changing products, and contributing to the development of the country's workforce to a greater extent (Al-Ali, 2021:174). According to surveys, various TVET institution see the government, MSEs and other TVET institutions as partners in the development and implementation of innovative practices via various frameworks and models. TT has neglected the TVET entity as the important actor in practice, and Ganter de Otero.J.P., (2019) has mentioned the Triple Helix Model, which neglects incorporating the TVET sectors in the theoretical discussion. The scenarios suggest a need to better include TVET institutions in the models of innovation development (Ganter de Otero, J.P., 2019:26). Skills such as negotiation skills, innovation, marketing skills, and the ability to close the gap between technical and

vocational education and graduates are vital to the effectiveness of leadership and management teams.

Al-Ali (2021:175) describes TT as a double system that allows the transfer of knowledge, skills and attitudes through appropriate and effective TT, channels, which in turn have a positive impact on teaching and learning, workshops and laboratories, R&D, student assessment schemes, curriculum development, and finally the production of high-quality graduates. On the contrary, this "dual system" permits significant integration into the workforce arena by generating a world of work for youth and facilitating skill acquisition. The significance of a dual system extends to positively influencing various perspectives on job creation for youth. Moreover, it works by intensifying the facilitation of knowledge, skills and attitude acquisition.

In conclusion, as the existing literature revealed, the quality of teaching and learning, curriculum development, research and development, workshops and laboratories, student assessment programmes, apprenticeships, and the overall quality of the graduates would all suffer if the TVET sector ignores the TT activities from their priority menu of the activities.

2.3. LEADERSHIP ROLE AND TT IN THE RESEARCH CONTEXT

2.3.1. The place of leadership in the research perspectives

The need to emphasise appropriate management, leadership and strategic direction are crucial to organise people management and other supplies to achieve the development of productivity to meet the identified needs. The advent of ideas that bring the consensus of educators and policymakers is the need to change the current education system by bringing a suitable route to prepare the leadership to confidently meet the challenges they are facing now and, in the future (Basham, 2010:142). The theoretical approach that views the leader as an individual figure dominates the field of leadership research (Vilas-Boas, Davel, Bispo, 2018: 6). It always emphasises the qualities of leaders including trust, optimism, uncontrollable

change, the expansion of new technology that would enable to win the fierce competition, and the highly demanding task of orchestrating oneself with the context that is prevailing in the real world. Managing such challenges is undeniably the sole responsibility of organisational leadership and management entities. The activities are critical to the organisation because, as it is known, the issue of leadership is central to its existence. Hence, Whangthomkun and Igel (2006:33) argue the criticality of underscoring such capability-building skills to adapt and modify the technology to the local context.

Future TT project planning would benefit from an evaluation that looks at how the TT affects output, quality, productivity, costs, profits, process performance, skill development, customer happiness, etc. Recently, TT research has mostly concentrated on various themes, leaving the leadership issues as follows: the role of technological capability in TT effectiveness (Whangthomkun, & Igel, 2006:33); a definition for the concept of "TT" (Wahab, Rose & Osman, 2012); TT and technological capability building at the firm level (Szogs, 2010); TT effectiveness through international joint ventures (Khan, 2011); and an analysis of factors influencing TT. Moreover, TT was seen as a movement of experience from the industrialised countries to the developing nations. This prevailing research experience on TT has been focused on cross-national issues since the 1980s. Apart from that, Ganter de Otro.J.P., (2019:18) has underlined the importance of the integration of innovation in the TVET internal arena, thereby requiring the leadership to reflect the focus through planning, communication, financing, and internal monitoring.

The first advantage of the Stage Gate method is to offer institutions a standardised framework for organising and supervising a TT project, underscoring the contribution of the top management role. The problems facing the accomplishment of TT are diverse. As a solution to take preventive measures and ease difficulties, the project planner of the TT project seems to adopt various alternatives, like a stage-gate sequence (Jagoda & Rananthan, 2009:380). Moreover, carrying out the

activities as per the specified chronology is another important task of the leadership entity. Some issues, such as leadership conceptualisation as practice, leadership commitment, good governance and leadership affairs, and the impact of perception and attitudes toward the current implementation of TT, are reviewed in the next subsection.

To conclude the topic, it is worth mentioning the place of leadership in similar developing countries .Academic leadership in Kenya is decisive in creating dynamic linkages with industries (Gachanja, 2023). However, Gebremariam et al. (2025) find Ethiopian leadership is trapped in a top-down transfer approach. Their findings suggest leadership impact depends on institutional flexibility. Leadership matters, but how much is a function of institutional flexibility. Leadership depends on the flexibility of institutions. Do (2023) further adds that management support interacts with dual institutional contexts between host and home countries—a dimension missing in Ethiopia. This contradiction implies that in rigid bureaucratic settings like Ethiopia, leadership rhetoric is decoupled from practice, whereas in Kenya, where universities are given greater autonomy, leadership translates into tangible TT results. is disjoined from practice, is dissociated from practice... Ackah et al. (2024) nuance this picture further by showing that, in Ethiopia, the nationality of the managers of FDI companies (Chinese vs. non-Chinese) is a significant determinant of TT success, indicating that who leads may matter more than how one leads in low-capacity contexts.

2.3.2. Good governance issues in the TVET context

Good governance and leadership are critical. Therefore, both the governance and leadership are essential for the achievement of results (Sharon, David, Oladele & Oladele, 2016:37), for they are the necessary catalysts to the satisfactory development of any society. According to Nakpodia (2009:n.p), a strong foundation built by leaders via better democracy can aid the organisation in fostering action growth, However, the opposite would occur if a ‘beleaguered polity’ is kept down by manipulative and corruptive methods. To differentiate an effective leadership style

from one that fails, it must be displayed with enough review. According to Sharon et al.'s explanation, good governance and leadership are measuring instruments of the government's credibility in caring for the process, where they have an important catalyst in information dissemination. Good governance becomes a strong agenda to seek what employees seek to obtain.

With the advent of TVET's agenda into the focus of global platforms, it becomes the avenue for various factors like skills, attitudes, cultural issues and policy issues. Therefore, these factors are expected to flow in an orchestrated manner. To that end, the issue of good governance is a critical factor in determining the general behaviour and effectiveness of TVET institutions in achieving the mission assigned. According to Voehl et al. (2018:184), good governance often emerges as a model for comparison between effective and ineffective economic and political bodies. Extant studies have shown that governance is one of the influencing factors in determining the behaviour of TT participants (employees) towards the core activities of TT (Muda & Abdul Aziz, 2020:65). Sharon et al. (2016:38) have underlined the role of good governance, saying that "development will be a mirage where good governance is lacking." In building the governance that drives action forward, education leaders, teachers, and trainers are critical actors in implementing the policy and curriculum frameworks that address the issue (UNESCO_UNEVEC, 2019:18). The necessity of developing an exploration of three particular theoretical approaches—human rights, capabilities and integrated human development—came to the forefront. The shortcomings indicate that the issue of good governance is critically important in determining the demarcated intent to advance forward or to remain in failure status.

The presence of a significant relationship between leadership planning and the way forward for governance is essential when its harvest is restored through active participation. On the contrary, if the complex interplay of various factors in the TVET context intensified the challenge that distracts from the smooth flow of TT, the failure of the conceived project would be aborted. Hence, good governance

ingredients that incorporate the elements of leadership issues, organisational structure setup, policy issues, guidance and regulation, financial directives, and systemic elements need to be given attention to positively impact TT activities (Muda & Abdul Aziz, 2020:71). Concerning innovation activities, seven attributes of good innovation governance are mentioned, which consist of accountability, transparency, following the rule of law, responsiveness, equity, inclusion, efficiency and effectiveness and participatory (Lavoie, 2019; Voehl et al., 2018). The type of governance structure influences the relationship between leadership and performance. To achieve change, leaders must have a vision for change and be backed by the knowledge and skills necessary to lead change. Furthermore, good governance is a capability that helps a specific organisation move forward by ensuring the involvement of trustworthy stakeholders.

Good governance should be prioritised at Polytechnic to enable systematic TT efforts. The absence of governance is one of the critical issues that thwart the operationalisation of effective TT (Muda & Abdul Aziz, 2020:71). With the local context, Ethiopia, the country is currently evaluating the past policy document to conceive the new road map. According to Teferra, Asgedom, Oumer, Dalelo, and Assefa (2018:93), the management of the TVET sector lacked political authority, limiting its ability to promote the interests of the sector and its stakeholders before the reform. As a result, bad governance and inefficiency among TVET leaders have contributed to widespread unemployment in many places (Teferra, et al., 2018:81), and the administration of Addis Ababa City is not immune to similar difficulties.

According to Teferra et al.'s (2018:95), clarification in the TVET roadmap documents is illustrated as follows: TVET is also responsible for delivering training, acting as a technology centre for the local communities and enterprises, and on assignment that can bring about positive impact on industry productivity and enhancement. Despite such intention and the presence of policy and strategies in the sector, it requires the introduction of comprehensive policy and strategy to empower it.

- Establishing offices that determines the standard quality type and identifies its status, whether better or worse, while also promoting it to society as a whole, particularly to various MSE targets and forms that are already defined as potential clients.
- Promoting ICT as well as virtual platforms to share, arrange and disseminate the technology to the planned entities, etc.
- Check and balance activities are required to identify the strengths and weaknesses of the various leadership teams in their respective avenues, which are determined at the grass-roots level among TVET trainers, MSE leadership and upper leadership at the woreda and sub-city levels.

Leadership involves the willingness to see various alternatives for the success of TT activities through consideration of other approaches to reject de-emphasising statements that drag back the progress, which can be uttered as 'we have already tried, and it has not worked,' and to freely take the risk to admit mistakes (Gmelch, & Buller, 2015:61). In accordance with the foregoing description, the leadership activities of the teams have an impact on TT. Therefore, elements of good governance, such as leadership, organisational structure, policy, regulation, finance, and systems, should pay special attention to the positive impact of TT activities (Muda & Abdul Aziz, 2020:71). In addition to the necessities of strengthening the partnership among the trainees or graduates, the polytechnic college and the industry in the context of the real world of work were underlined in the investigation in Malaysia. The new demand for students' growth, in accordance with science and technological advancement, is for the learning institutions of higher education to greatly upgrade the soft skills of the graduates. The comments and the need of industries on the status of graduate skills and attitudes urge us to build transparently the tripartite partnership relationship among these three stakeholders (Zainuddin& Abd Aziz, 2012:517). They further assert that the partnership among the students, the polytechnic and the industries need commitment and strong follow-up. The improvement of the partnership is essential to ensure the benefit of all participants and a final result that impacts the development of the community in general and the widening of opportunities for

polytechnics and industries in particular, through equipping the graduates with the necessary skills and attitudes.

In summary, Voehl et al. (2018) identified seven attributes of good innovation governance: accountability, transparency, following the rule of law, responsiveness, equity and inclusion, efficiency and effectiveness, and participatory. Innovation requires delivering something to the customer, which requires a tool or methodology. The challenges faced by TT will be discussed in the next subsection.

2.3.3. The technology transfer in Ethiopian TVET

The Ethiopian TVET sector can play a crucial role in the nation's socioeconomic development. In 2011, the industry extension was established to enhance TT in TVET, increasing competitiveness and productivity of micro, small, and medium-sized enterprises (MoSHE 2020:39). The extension has four linkages: technology capability development, technical skills development, entrepreneurship capacity development, and Kaizen capacity development, aimed at improving quality and productivity in MSE. Ackah et al. (2024) further demonstrate that TT success in Ethiopia is achievable but only within FDI enclaves (Chinese-owned firms with 73% training rates), leaving the vast majority of informal MSEs and state-run TVET institutions untouched by technology spillovers. The strategies that can enhance and strengthen TT in the TVET sectors are elaborately outlined in strategic and policy documents as follows:

1. Encourage, strengthen and recognise those who have transferred problem-solving technologies to their performance achievements.
2. Encourage the activities of more TT between TVET and technology receivers like MSE and other firms.
3. Create a system that situates a framework that capacitates the TVET institution to deliver advisory and consulting services for industries and firms.
4. Support TVET institutions in acquiring the skills and capability to transfer technology to their subsequent firms and industries.
5. Create an environment that encourages TT between TVET trainees and trainers.

In practice, the TT status in Ethiopian TVET sectors is still at a very low stage. The only available option for the leadership of TVET sectors that touch TT is leading it and transforming the institution through the very unfriendly competitive world of the 21st century.

2.3.4. The role and function of leadership in TT project practice

The practices that are expected from leaders and managers, which are treated as independent variables for the present research, are reviewed focusing on planning, climate setting, communication and spanning boundaries. The researcher then reviews the function of leadership in undertaking the TT activities as a project as independent variables and the TT activities results (technological capabilities, technology accumulated, and absorptive capacity acquired) as dependent variables in detail.

2.3.4.1. Function of leadership in the TT process: independent variables

Leadership entails the process of impacting followers for the attainment of certain goals, and it is central to all organisations and all sector types. Though there is no consensus on which leadership trait, behaviour, or situation effects success, there is strong agreement on the fact that leadership is critical to any organisation through sufficient management and a leadership body approach (Boateng, 2012:46; Ganter de Otero, J.P.,2019:18). Leaders are required to put their organisation on the track that will lead to the accomplishment of the shared vision. Leadership attempts to build social capital to develop a sense of allegiance and organisational norms in their organisation (Morphet, 2015:39). Leadership occurs in malevolent situations or on the "dark side" of the organisation, where opaque organisational allegiances and associated behaviours are prevailing. One of the core responsibilities of the leadership team is to attempt to influence the activities of followers using effective communication processes. Leadership involves inspiring people, motivating and coordinating team members, and organising projects as well. These are key activities associated with moving in the same direction as the project-leading role (Gmelch & Buller, 2015; Elkins & Keller, 2003).

Good leaders are adept communicators, efficient organisers, careful planners, and successful motivators and these do not require a genius to learn beyond learning

and practising them. The objective of leadership is to support each subordinate in seeking and describing the position that the participants are searching in the wider community (Gmelch & Buler, 2015:35). Though leadership is a bridge between academia and industries, a presupposition that requires functional institutions, argues Gachanja (2023). Gebremariam et al. (2025) described that a rapprochement is possible only after Ethiopian leaders clarify roles and rethink organization within the “development army” structure. Do (2023) also comes with the idea that leadership is key in developing knowledge-sharing systems and creating a culture of sharing, which requires organizational trust that is lacking in Ethiopia. Yet another function identified by Ackah et al. Al (2024) in Ethiopia is the designing of human resource practices (hiring, training, and promotion) as the most important leadership activity in FDI firms. This stratification implies a sequence of development. Ethiopia needs human resource leadership and clarification of roles, while Vietnam needs to focus on culture and trust-driven leadership. Yet, Kenya needs bridge-builders in leadership, and Colombia seeks leadership that can emphasiise inclusive governance.

The prime function the leadership entity and management group of TVET in Ethiopia would be briefed in the section that follows. The discussion focused on describing planning, leadership effective communication, setting the environment favourable for change, and spanning the boundary beyond the compound of the institution under focus.

2.3.4.1.1. Planning

Planning is one of the traditional functions of leadership and management, and its activities require the strong coordination and management promoted by an organisation's top management on the part of the leadership entities (Muda & Abdul Aziz, 2020:65). As a result of meeting the TT vision, planning aims to guide the direction, reduce resource waste, avoid duplication of activities and establish standard for monitoring and controlling TT project proceedings. Leaders must establish a comprehensive framework and plan for the development and future

operations of an institution, and regardless of its size or governance arrangements as well (Gmelch & Buller, 2015; Pettigrew et al. (n.d.).

Planning aids in the establishment of benchmarks for TT projects, which promote management and provide progress monitoring (Jagoda et al., 2010:370). The initial stage of planning is to create a mission statement, which should address several issues such the purpose of the company, its goals and the services it provides (Rothwell, 2010:143). The initial stage, planning, of Jagoda's stage-and-gate model provides the leaders (the TT and receivers) with a developed ownership status of the TT project through related activities. According to Jagoda's (2010) explanation, the interrelated activities of the project include the following processes: scanning local capabilities (knowledge resources to bargain), fixing intellectual property rights, setting effective communication channels, ensuring the project progresses in accordance with government policy and strategy, fixing appropriate methodologies for the implementation of the work force, as well as establishing milestones to strengthen its overall control system.

In planning, deans make sense of the means and ends of college business. They set goals and determined how the college would go about achieving those prioritised set of activities (Wolverton & Gmelch, 2002:6). Following the intensive review and assessment of both the internal and external issues, strategic planning involves leaders analysing an institution, developing a vision and setting a timeframe to achieve the goals, demarcating, establishing feasible milestones for achievements, designing a framework and establishing processes for review. Leadership needs to engage their staff and stakeholders throughout the planning process and communicate the developing vision prior to its approval. If not, there will be little "ownership" of the plan by those who must put it into action (Voehl et al., 2018:181).

Muda and Abdul Aziz (2020:71) point out that the polytechnic leadership team should use both short-term and long-term activities to design a coherent and

sustainable planning model because the sustainability of the implementation and monitoring of TT efforts depends on consistent planning and effective engagement with industry, agencies and communities.

2.3.4.1.2. Leadership effective communication

Communication is the primary aspect that determines social systems in general and organisations in particular. To effectively lead or manage the negotiation activities in TT, both parties, the donor and the supplier, must communicate frequently and constantly (Jagoda et al. 2010:369). Effective communication, being essential for leaders and managers to perform well and achieve assigned tasks, is crucial for both individuals and organisations. It is a foundation for development progress and success because it allows employees to obtain the necessary information, knowledge and to be motivated in general for better practice. Furthermore, it is used to eliminate misunderstanding to incrementally maintain better understanding, (Dahiya & Luthra, 2018:128). It is a complex phenomenon that occurs when groups or organisations jointly process knowledge about knowledge management (Maier, 2007:26).

Understanding the organisation's purpose, behavioural rules and direction is crucial for stakeholders. Hence, a well-communicated plan is essential to avoid the organisation's goal of going nowhere, as without direction, which could contribute to its effort of achieving its objectives (Voehl et al., 2018:385). Effective communication is essential for leaders to do their duties in various capacities. First of all, by breaking down barriers to communication in the workplace, leaders may better educate their staff by outlining expectations of the company to the employees about the company they are there to lead and manage. Second, leaders can let their employees recognise what is expected of them to make the organisation successful and how to get an advantage for their personal benefit individually (Safari & Azadehdle, 2015:62). An issue of identifying the intended message and clarifying misunderstanding is the prime responsibilities of the leadership team.

Listening and relaying are the characteristics of effective leadership in communication duty. In the process of relaying in communication to the subsequent needs care from the part of the leadership side. Through continuous training, it is possible to update the staff and stakeholders to enhance the updating process through the effective communication strategy. Such good communication platforms keep the momentum going forward (Woldveton & Gmelch, 2002:8).In communication strategies, formal communication systems can be divided into oral communication systems such as meetings, briefings, groups, and public address systems, and written modality, which includes magazines, newsletters, bulletins, notice boards, and email systems. According to Voehl and others (2018:30), the most important element of innovation communication is "walking the walk": leaders demonstrate curiosity and openness, and they inform that leadership communication does not mean "black turtleneck and jeans."

Effective communication cannot ever be completely free from obstacles. Distinction in the interpretation of the message could be the liable result attributed to the loosely and negligently transmitted message, which needs correction before it ruins the reputation of the leaders and the organisation. Fixing the wrongly disseminated rumours may be difficult to bring it back to the normal condition. The saying that underscores "if nature abhors a vacuum, then so do the organisations", highlights that if there are no appropriate communication platforms that clear off and inform the intended objectives, the condition would be conducive to transmit rumours and related negative impacts that ruin the working arena (Duignan, 2006:30). Leaders should be conscious of the obstacles that impede organisational progress and, conversely, change into ineffectiveness and how poor communication escalates and multiplies the hurdles.

Effective communication is essential for successful leadership in role-discharge activities and management. In truth, far too many institutions and universities are still thought to have poor communication abilities. Consequentially, the barriers remain facing the leadership via information-interpreting hurdles to effective

communication (Colman & Glover, 2010:46). The barriers to interpreting the information that we receive can be listed as follows: Hearing what you want to hear, ignoring relevant information, being aware of your perceptions of the communicator, recognising words that have different meanings for different people, and knowing that there is usually little awareness and understanding of non-verbal communication, even though responsible scrutiny of leaders is needed.

To summarise, precise, effective communication is needed for both individuals and groups to articulate and transmit one's vision and mission. Many organisations fail to perform a proper transfer process owing to their inability to make a proper plan (Kavousi, 2015:123), which could result from the lack of a supportive team, evaluation, assessment and weak prediction processes. Many important ideas based on research suggest that the appropriate observation of both internal and external factors is the cause of the success or failure of the TT process (ibid.). To use the stage-gate model for TT projects, it is divided into three stages: start, planning and implementation. Each is based on key management team factors. These stages are divided into three sectors in each stage, ensuring the success or failure of the TT process.

2.3.4.1.3. Setting the environment and culture for TT and innovative activities

It is the leadership and managers' task to create latitude that enables the participants to get things done and to create an environment that motivates initiation, development and goal achievement on the part of the individuals in the institution. From an operational standpoint, incorporating people may encourage involvement from various stakeholders (particularly those who will oversee implementation later) and throughout the planning stage for the proposed goal's execution (Wolverton & Gmelch 2002:8). At the local level, it is stated that the importance of creating a favourable context for TT is "created to engage TVET students and trainers in TT as a key strategic declaration for the implementation of policies" (MoSHE, 2020:40). The most important factor in fostering an atmosphere that is conducive to TT and innovation on the continent of Africa is the encouragement of a culture of taking risks and fostering entrepreneurship

(UN_ECA, 2014:13). Conversely, when it comes to TVET, in today's rapidly changing environment, successful deans must go above and beyond the normal stretch with commitment and every endeavour to dictate the college's future. Leaders of change have an integrative, operational and structural way of thinking.

Elkins and Keller (2003:596), in their extensive literature analysis of leadership research, noted that the problem of creating an innovation climate depends on two questions: What aspects of the organisational environment can influence innovation, and what is the role of leaders in this relationship? In the first case, innovation and creativity, such as vision, participation, safety, an excellence climate, standards of support for innovation, operational autonomy or freedom, good project management, encouragement, organisational resources, recognition, time, challenges, and pressure, are identified. Secondly, leaders can influence innovation by creating an innovative climate through both structure and behaviour, such as providing subordinates with multiple tasks, time constraints, administrative and technical tasks, technical cooperation with colleagues, and clarity of compliance between work and organisational goals.

Leadership is responsible for situating the culture and environment of the organisation to continue to be competitive in the face of scourging change. Because leadership style influences an organisation's ability to thrive in an innovative culture, fully aware, innovative and technology-minded leaders are required for successful innovation (Maladzhi et al., 2012:10439).

However, resources cannot be assumed to be given. The challenge lies in fostering long-term technological change and updates, rather than just short-term productivity enhancement, to bridge the gap between technology importers and the global technological frontier, rather than narrowing it. The leadership needs to focus on incentivizing the participants with the necessary resources and establishing a supportive environment as well (HEFCE, 2016:33). The scene focuses on the key stakeholders, both academic and professional, in the institution.

Organisational success relies on creating an effective environment for knowledge creation and application, which involves recruiting, developing and retaining talent to provide value through innovation, rather than relying on traditional production factors (Maier, 2007:3). Recognising the synergy between the knowledge disseminator and receiver is critical role of the leadership team. Understanding and predicting, on the other hand, the likely of unpredictable nature of rapid and turbulent change in the external environment are the major challenges that face effective TT in the face of global merciless completion is also imperative (Mamat & Roslan, 2012:163). The following section focuses on bringing one's organisation's effort into the new partnership relationship beyond the internal arena, boundary spanning and championship.

2.3.4.1.4. Boundary-spanning and championing roles of leaders

The technology itself enabled us to cross the boundary and interact with people far away, thereby expanding and scaling up human cooperation in some way. According to Ernst and Chrobort-Mason (2011:7), there are five types of boundaries: vertical, horizontal, stakeholder, population, and geographical. The goal of the leaders is to bring together several groups in emerging new directions to cross borders and allow a reinvention (Coleman & Glover, 2010; Ernst & Chrobort-Manson, 2011). However, when transformation occurs across boundaries, there is always good news and bad news; so, caution is required.

Spanning boundaries could be used in a variety of directions and contexts. In the first place, the leadership activity could be stretched out through a vertical boundary, focusing on various levels or layers in the larger institutions' case. For instance, the PLT can span boundaries within their own city and at the city administration level. The second option would be to stretch the hands so that they are at the same level as their horizontal partners. Third, the boundary spanning may be extended further to reach various stakeholders in various industries and governmental organisations. Fourth, another destination point for bridging

boundaries would be the geographical entity that invites diverse friends from adjacent and distant avenues (Ernst & Chrobort-Mason, 2011: 248).

When establishing the culture and style of leadership that transcends the limited arena of organisational influence, Coleman and Glover (2010:40) point out that it is a vital part of organisational life, while communication within and outside an organisation takes place through the role of the leadership team in extending the boundaries. Leadership entities could attract people separated by various boundaries into an important landscape that can achieve a common good and a common objective (Ernst & Chrobort-Mason, 2011:15). This includes communication between internal and external stakeholders. Border coverage is an important capability over all layers of leadership. The conclusions of the White Paper indicate that when the leadership entity was asked to assess the importance of border scanning, the response rate was 97% at the executive level, 91% at the medium level, and 43% at the entry level of the leadership (Yip, Ernst & Campbell, 2016: 3). It demands the leadership entities to seek various ways to achieve spanning boundaries in various ways using vertical, horizontal, stakeholder, demographic and geographical boundaries to enhance the effectiveness of their organisations.

To reach several constituencies, the project leader must push upward and outward impacts across borders and frequently serve as a project advocate (Elkins & Keller, 2003:595). Nowadays, shifting leadership landscapes require thinking critically ahead of space and time, where an avenue is a place of collaboration full of wide-ranging expertise, diverse values and identities (Ernst & Chrobort-Manson, 2011:18). Moreover, they have gone on to observe that shifting leadership involves rocky and jagged terrain filled with many turns and sharp curves and is constantly in flux. To proceed, leaders must be aware of the types of spanning boundaries—vertical boundaries and horizontal boundaries—to reflect the difficulties of the situation when the decision is diversified, resulting in a diminished nexus effect even when the decision is reached. According to the authorities, spanning

boundaries involves creating vertical boundaries between the hierarchical organisational level, horizontal boundaries between functions and stakeholders, demographic boundaries and geographic boundaries. More importantly, boundary-spanning leadership has the potential to ignite the atmosphere of creativity and innovation by integrating diverse experiences, views, and backgrounds from multifaceted sources (Ernst & Chrobort-Manson, 2011:30).

A top-down approach to corporate entrepreneurship can be most effective for top management, which plays a critical role in innovation probing (Glaser, Fourné, & Elfring, 2015:305). To reach multiple constituencies, project leaders must exert upward and outward influences and act as project champions (Elkins & Keller 2003:595). Effective communication is facilitated through meaningful engagement and dialogue with staff in their daily working lives (Duignan, 2006:30). When characterised by conflict, division and isolation, the leadership context is shifting into a different landscape to make collaboration and breakthrough possible, which in turn dictates the necessity of bringing groups together for the achievement of higher goals to assist the school or college in regularly transferring the ethos to people who may only get textual information or attend open days and public meetings. Visual symbols can also convey messages that reflect the community's ethos to both internal and external stakeholders (Coleman & Glover, 2010:40). In addition to internal leadership activities with project group members, leaders in R&D organisations must not only lead within their project groups but also cross boundaries.

Operating divisions are essential for transferring technological innovations into new products and processes (Elkins & Keller, 2003:595). It ignites motivation for renewal, such as creativity, product development and service enhancement (Glaser et al., 2015:309) and can bring new partners. The project leader must exert influence across boundaries and act as a project champion to reach these constituencies. The pressing challenge of crossing boundaries is more psychological in nature and eventually involves loyalty, pride, respect and trust. In

other words, as it was said previously, authors suggested that for effective corporate entrepreneurship, the top-down approach from the upper layer managers is most effective, with boundary-spanning activity being an essential factor in project success.

2.3.4.2. Impact of TT: Dependent variables

Technology transfer is a complex concept that is difficult to define in a unified manner. Various models and frameworks have been developed concerning various TT types observed in international TT, TT among various institutions within the same nation, inter-firm TT, and intra-firm TT. In the investigation, the pathways and methods of TT, as well as its nature and relevance, have all been explored.

Buratti and Penco (2001:36) have broadly described it as instrumental for firms, which can be seen as a process that aims at moving technology expertise from the donor (a university, a research centre, or the R&D departments of firms) to one or more recipients, for whom it may directly use or co-develop the technology. Technology capability, technology accumulation and built-in absorptive capacity in the TVET college could be considered both precondition capacity and result/outcomes of TT in polytechnics, and when transferred to the SME, they will be treated as dependent variables and are reviewed briefly in the subsections.

2.3.4.2.1. Technological Capabilities built

Technological capability (TC) is a crucial aspect of economic growth and welfare, encompassing an organisation's ability to deploy, develop, and utilise technological resources (Archibugi & Coco, 2004:629). The term “capability” is a widely used and ambiguous term in academic literature, mainly used in business literature to refer to intangible assets that allow organisations to manage resources and gain a competitive advantage (Mormina, 2019:678). It includes information, skills, technical, managerial, and institutional capacity that enable firms to effectively utilize equipment and technology (Zawislak, et al., 2014; Omar et al., 2012). TC

integrates complementary resources to provide differentiated products and services, making it a key element in the operationalisation process of TT issues.

Technological capability refers to a firm's ability to utilise technological resources, methods, processes and techniques to create and maintain innovative offerings. This is primarily reflected by skills, experience and personnel knowledge. It is pivotal for a firm to gain an advantage over competitors over time (Zawislak et al., 2014:133) and comprises four complementary capabilities, namely, development, operations, management and transaction capabilities.

These perspectives are intertwined and represent both a technological and a business driver. Technological capabilities come from various sources of invention and innovation, some of which are incorporated into new acts and inventions and others are alive in human abilities. Other materials are found in equipment, machinery and infrastructure (Archibugi & Coco, 2004:630). In addition, Archibugi and Coco (2004) argue that the source of the technology capability is complementary rather than interchangeable. The creation and improvement of TCs are considered to be an essential component of technological efforts. Access to advanced technology is also an important indicator, as it contains the necessary investment for the appropriate occurrence of TT and the intended process of absorption, adoption, and learning of the specific technology.

TC encompasses more than just employee education and training; it involves the learning process and how an organisation motivates individuals to function (Omar et al., 2012: 212). It can be divided into strategic capabilities, core capabilities and enabling capabilities. Strategic capabilities focus on creating the future and delivering results, core capabilities focus on delivering products and services and enabling capabilities support functions. This process of accumulating technical knowledge is essential for organisational success (Pratt & Horn, 2015:13). Empirically based on the case study, Saad et al. (2002:620) highlight that TT was made without appropriate training for the technology recipients' managers, leaders, and workers. As to Saad et al. (ibid.), TT not accompanied by necessary training, in turn, leads to continual reliance on technology suppliers and culminates in

inefficient operation owing to deficiencies of skills and experience on the part of technology recipients. Hence, the transfer process is successful in an environment with sufficient skills, experience and knowledge.

The focus is now on building local technological capabilities to guarantee a successful TT. The formation of a strong contractual agreement between the technology supplier and technology recipients should not be overlooked. The content shall clearly reflect what the supplier dispatches as the necessary procedure for TT recipients and, in return, the level of not only technology acquisition but also the necessities of achieving the higher-order level of absorptive capacity (assimilation, adaptation, and improvement) on the part of the technology receiver in the Algerian context (Saad et al., 2002, 620). Technical competency (TC) can be evaluated through three pillars of a firm's ability. The evaluation focuses on weighing the extent of its identification and selection capabilities of the appropriate technology to fix the specific and local problems.

The ability to operate, maintain, modify and improve the technology selected to make it fit for the local gap and at last the ability to promote technical learning is the subject of technical capability evaluation and assessment activity (Kumar, Kumar & Persaud, 1999:82). They have gone on to introduce models of TC that postulate that TT contributes to improved TC, which leads to economic performance. The developed model emphasises that TC is an on-going process of learning. Moreover, Kumar et al. (1999, ibid.) further argue that these three interventions can be obtained from a single TT agreement, while these are critical in the TT process.

In general, dynamic learning capability is acquired through various learning processes, including learning-by-doing, learning-by-using, learning-by-interacting and learning-by-searching (Omar et al., 2012; Kumar, et al., 1999). TC is a crucial skill for effective application of technology. A meaningful, manageable and sustainable strategy is essential for high performance and consistent growth. Effective leadership is crucial for high-performance strategic innovation and human

skills (Archibugi & Coco, 2004:635) are strongly associated with this capability. Leaders should focus on executing the TT experience, ensuring that technology generators transfer necessary resources and capabilities to their receivers for successful diffusion.

2.3.4.2.2. Knowledge and technology accumulated

Technological accumulation has been extensively investigated in the firm environment where technological learning and technological change are taking place. Furthermore, technological accumulation has so far been researched in the milieu of firms, where the focus has been on the learning and acquisition of technology for change (Criscuolo & Narula, 2008:2). They continue to observe national knowledge accumulation in terms of knowledge accumulation and absorptive capabilities. Knowledge accumulation primarily occurs through the absorption of trade and/or inward FDI-related R&D spillovers. According to Kirshin's (2014:482) technology and knowledge accumulation model, the analytical set of tools foresees the presence of the existence of dynamics relating to the usefulness of information.

The movement of technology from the source entity to the receiver is not that important to the TT process unless it is nurtured with continual accumulation through organisational learning (Wahab et al., 2012:64). The TT process does not only concern the transmission of knowledge but also the avenue that embarks on a learning process where technological knowledge is continually accumulated by human resources that are engaged in production activities.

Criscuolo and Narula (2008:2) distinguish and highlight four stages of knowledge accumulation: the pre-accumulation stage, the catch-up stage, the pre-border sharing stage and the border sharing stage. However, effective implementation of TT would not be the exception, though it is not verified individually, and this motivated the researcher to determine existing leadership practices and their impact on the effective process of TT concerning accumulation in one’s institute

and transferring it to the constituent SME. However, this would only happen if there is an "appropriate" minimum level of absorption capacity in the company. The role of absorbent capacity in the company's innovation performance was considered instrumental.

2.3.4.2.3. Absorptive capacity acquired

Absorptive capacity has been defined as the ability to learn and implement technology. It entails the ability to adapt and implement technology as well as the experience gained in developing countries in the context to which one wishes to adapt (Criscuolo & Narula, 2008:2). Absorptive capacity refers to the ability of technology recipients to absorb, integrate, transform and finally utilise the technology, exasperated by the external partner. It enables the development of a competitive advantage in the market realm. Existing literature has shown the criticality of these constructs to determine its success or failure of the technology in a queue for the transfer process.Florêncio et al. (2026) corroborate this, providing solid empirical evidence that absorptive capacity is a fundamental dynamic capability, with positive and significant impact on the efficiency of the technology transfer processes. Furthermore, it implies that it could be an important input as well as an important result or outcome of TT. The effectiveness of TT is determined by AC, and their relationship is positive (Whangthomkum, 2006:37).Importantly, Florêncio et al. (2026) claim that this performance advantage is not automatic, but only fully realized when the organization actively transfers and adopts relevant technologies through effective mechanisms. Hence, absorptive capability implies that the leadership or managing entity of the polytechnic college needs to assess its status of availability before the implantation and to what extent it is improved after the implementation.

AC is the combined ability of a company to improve its ability to recognise the value of external technology and to improve its technical capabilities sustainably. It has four dimensions that can be reduced from the lowest to the highest level of capabilities. It requires recognising the value of evaluated external technologies

and having the ability to acquire them to the next level of assimilation and application of these new technologies in the socioeconomic environment of the real world where these technologies are required (Whangthomkum, 2006:37). Importantly, Florêncio et al. (2026) claim that this performance advantage is not automatic, but only fully realized when the organization actively transfers and adopts relevant technologies through effective mechanisms. Consequently, this research tries to investigate how the leadership considers the AC and its dimensions in their coordination plan. The leadership team is expected to engage in nourishing the activities of TT by fixing the various issues both in the internal context and out there in the MSEs.

Previous studies have highlighted some important external, absorbent capacity, and leadership results in organising innovation and TT processes efficiently in sectors and countries (Nguyen & Nguyen, 2013:50). In the works of Criscuolo and Narula (2008:2), it is demonstrated that in the path of technological learning and technological change, technological accumulation has been thoroughly studied for the role of absorption capacity in the inundation of innovation in enterprises. The commitment and capability of the companies to innovate are important. Wahab et al. (2012) subscribe to the organisational learning perspective. Therefore, they have highlighted the critical importance of absorption capability as one of the most important factors that influence TT in the part of the technology receiver.

2.4. STAKEHOLDERS' PERCEPTION TO THE TT

Stakeholder attitudes and perceptions regarding the activities are crucial factors that influence effective implementation. The perception of both the technology donor and the receiver is highly important in determining the progress of the aforementioned TT activities. Positive attitudes of leaders lead to success, while negative ones lead to failure (Lai & Tsai, 2008; Al-Mobaideen et al., 2012), along with the presence of a strong correlation between institutional perception and organisational readiness for change. The organisational readiness was uncovered to be low and requires improvement. The empirical works witnessed the presence

of an attitudinal gap in the TT narrative across regions, demonstrating the importance of environmental context (Livesey, 2014:11).

From a vocational education context, a survey made by Northeast University Finance and Economics in 2015 in China has confirmed the criticality of the problem stemming from negative attitudes towards VET. Only about 5% of parents want their children to attend a VET school. Yet 7.5% of one-child parents believe that sending their children to VET would ruin their children's futures (Zhao & Liu, 2019:50). Hence, the empirical work indicates the negative impact of traditional and cultural organisations as the most critical problem, and consequently, this affects the core business, like TT, that could be done in TVET colleges.

The perception of technology complexity as a barrier is further exacerbated by non-technical challenges, such as a lack of awareness and knowledge about technology selection and implementation, which accounts for 80% of the barriers to adoption in SMEs (Kristiyanto, Anggraeni, and Sailah 2025:224). These findings resonate strongly with the Ethiopian PolyCO-MSE partnership context, where the MSE owner lacks awareness of the long-run benefit of TT and prefers to fulfill immediate routine income rather than technology investment. The dominance of non-technical over technical barriers underscores the critical importance of perception-shaping and awareness.

Leaders' attitudes have an important influence on student and staff mobility, arranging international and national events, and participating in international forums. As the focus of attention in TT planning, determining the perception of TT subordinate groups is essential. The perception could focus on the relative advantage of the technology candidates, resting on their compatibility, tri-ability, observability, etc. (Capps & Fairley, 2003). A study examined perceptions of leadership and subordination across several European countries to assess whether expectations of leadership in Estonia differed from those in other European and neighboring nations. The findings indicated that the working

environment during Estonia's transformation period was characterised by a team-oriented and participatory approach (Cedefop, 2011:23).

Empirical studies in Australia have also witnessed the presence of a gap between leaders' and teachers' perceptions concerning leadership effectiveness. The result has indicated the criticality of continuous and substantial improvement from time to time (Cedefop, 2011:33). The research also revealed that a lack of support, inadequate training, and heavy workloads significantly affect gender dynamics, whereas seniority appears to have no impact. Cedefop (2011:50) has further continued to emphasise the criticality of VET leaders' attitudes. Proper motivation and supporting elements can decisively influence the working conditions of staff in both curriculum and methodological development. In orchestrating performance forward, leaders' attitudes towards students' and staff mobility are critical factors. It accelerates the implementation of successful projects and jeopardises the projects if the attitude is deviant towards the emerging progress. Leaders must support staff in the development of their professional identity and in the treatment of increasingly diverse stakeholder motivation. Cedefop (2011) highlights 25 entrepreneurial competencies as essential in sectors such as knowledge, skills, attitudes, networking skills, risk, understanding, and collaboration. They suggest that preparatory programmes should promote sensitivity and attitudes to change, progress, and success for all students and mentoring as an effective induction strategy.

Considering the quality and quantity of work, planning and organisational issues, initiative and commitment, teamwork and cooperation, and communication as important variables, Mary, Al-Rifai, and Almomany (2015:128) empirically studied the attitudes of administrative leaders and employees regarding the impact of training on performance. The survey questions covered issues such as the method of identifying training needs, trainee selection from the standpoint of administrative leaders, training content design, and, finally, the impact of training on workers.

In a series of studies on stakeholders' perceptions in different countries, Gachanja (2023) notes that the managers in Kenya feel that university researchers are too theoretical and irrelevant to practical industrial problems, thereby leading to a horizontal mistrust between academia and industry. In Vietnam, Do (2023) identifies a unique problem of the proprietary attitude of developed-country partners towards knowledge, while local firms prefer open knowledge sharing, which causes cross-cultural frictions. According to Gebremariam et al. (2025), Ethiopian farmers perceived the extension services as prescriptive and often unresponsive, showing a vertical perception problem from state to farmer without mutual mistrust. According to Bui (2021), Vietnamese SMEs specifically viewed digital transformation as a threat to job security, a perspective not seen in other studies. Moreover, Gachanja et al. (2020) argue that perceptions of leadership support influence employees' involvement in innovative activities in Kenya, hence underlining the importance of internal perceptions. Finally, Valencia-Arias et al. (2025) report low trust between academia and industry among Colombian stakeholders, similar to Kenya.

Cultural norms and perceptions are major factors in technology adoption. According to Md. Faudzi, Abu Bakar and Ahmad (2024:129), there is an increased openness and readiness to accept technical developments in some societies, which might influence people's attitudes towards technology adoption. The context of technology transfer (TT) from PolyCO to micro and MSEs in Ethiopia is significantly shaped by traditional attitudes and limited exposure, which in turn influence the MSEs' perceptions and engagement with TT.

From the significance of perception perspectives, Pereira and Franco (2026) underlined that the perception results of cooperation are used for the qualification of human power and increase the liveability of being accessible to new knowledge in the regional context.

This analysis indicates that the democratisation of Ethiopia's extension governance

is essential for effectively addressing the perception issues identified. In summary, donor and recipient attitudes towards certain implementations are critical to the success of TT projects. Positive attitudes create more calibre, widening the opportunity for success, while negative attitudes lead to failure. Institutional perception and organisational readiness for change are crucial factors that determine the success or failure of the TT project.

2.5. SUCCESS AND CHALLENGING FACTOR FOR TT PRACTICE

2.5.1. Success factors for TT

Success factors help the participating parties to accelerate the TT from the supplier or donors, as usual, from the government source (laboratories and academic centres) to the private firms.Success factors are an impressive topic that attracts researchers, yet few of them have even developed an extensive framework to analyse an array of them (Chiș & Crișan, 2020:52).Frameworks have been developed for TT success factors, focusing on the provision of valuable insight on key factors impacting TT. Chiş and Crisan (2020) have also developed five categories of technological success factors, assessing technologies, organisational context, collaboration factors and absorption capacity as critical elements.All the listed factors are seen from the supplier point of view except absorptive capacity, which rests from the technology receiver perspective.

Kumar and Uruthirapaty (2007) have identified three success factors of TT, namely, technical, organisational, and people factors, when these are contributing factors for the acceleration and effectiveness of the implementation of the intended TT. Technical factors involve the consideration of the technology dimension (technology itself as a facilitator of TT), matching statistics (matter of interest coincidence among the supplier and technology receiver), past transfer inspection, decision checklist, protection of IP and commercial assessment initiatives. Organisation factors, on the other hand, include proof of concept, market access and advertisement intensity through various channels, transfer as a goal, facilities

and collective action. Thirdly, people factors extend to analysing the role of human beings in the TT process. This involves the people factors dimensions as leadership and championship factors; alignment of interest dimension (govern the interesting relationship between the TT and receiver level of interaction dimension) and team dimension (Kumar & Uruthirapaty, 2007:1–5).

Table 2.2: Technology success factors

Technology success factor in the literature	source	Success factors considered in the model
Intrinsic technology capabilities of the product ➢ The technical capabilities of suppliers/producers to maintain the same level of technical competence throughout the supply chain; ➢ Providing superior unique products—with unique advantages and an attractive value proposition for the customer ➢ Technology suitability; ➢ compatibility; ➢ functionality; ➢ reliability; ➢ testability; ➢ observational capability; ➢ resource availability; ➢ value of technological application; ➢ industry and technological context influences entrepreneurial innovation ➢ to provide to customers the complete product value chain positions of material products, intermediate products, equipment, and final products	**Cooper, 2004** Kumar et al., 2015 Ahmad Mallana et al., 2013 Arora et al., 2013 Wei and Kivioja, 2013 Autio et al., 2014 Hansen and Ockwell, 2014 Kirchberger and Pohl, 2016 Shapira et al., 2016 Zhang et al. 2016 Cooper 2019	Technology-related resource availability; Technology value for customers Technology: adaptability, compatibility, and reliability A total product value chain position

In summary, the critical value of the success factor in TT activities is underscored by mentioning some important factors such as incorporating technology suitability, compatibility, functionality, reliability, trialability, observabilityy, applicability and the

extent of sourceability. Researchers have tried to develop frameworks to analyse factors such as technology, organisation, contextual conditions, collaboration issues, and absorptive capacity. In alignment with this, Kumar and Uruthirapity (2007) insisted on highlighting technical, organisational and people factors.

2.5.2. Challenges facing leadership of the TT activities

Nowadays, both science and TT are recognized as the critical cornerstones of development in socioeconomic advancement. Hence, the importance of TT is undoubtedly defined. As a result, identifying the problematic elements influencing TT procedures and activities is a worthwhile endeavor. However, , the delay in agreement drafting and the inflexibility of technology donors (universities) are identified as challenging factors in the TT process (Toman & Clámová, 2020). The growing complexity of management and leadership, which allows for innovative, diverse, and unexpected responses to college situations and issues, necessitates a tough approach to education management. TVET leadership is expected to overcome challenges in the tumultuous and continuously changing environment that awaits TT implementation performance.

Empirical studies have identified several internal barriers: in the first place, lack of time, resources, or staff scarcity; secondly, internal resistance to changing teaching methods and pedagogical experience; and thirdly, lack of access to the pedagogy and technology needed, as well as a lack of a shared vision on innovation (Ganter de Otero ,J.P. 2019: 35). Yet considerable resistance is also coming from TVET managers, teachers, and students to adopt new learning approaches.
In a broad sense, from Tanzania's experience, Mwabukojo (2020:26–30) has discussed key obstacles to successful TT, including the inadequacy of human capital; the limited role of private sectors in R&D; the inadequacy of collaboration among stakeholders in a research project; a lack of funds to finance R&D as a TT; the absence of an official bridge between the innovation instrument and the foreign instrument; and the inadequacy of TT readiness. In particular, the TVET institution

in Malaysia faces difficulties in keeping up with rapid technological progress, with key challenges including a lack of business management competence, leadership transitions, insufficient education and training, limited market and technological expertise, a weak entrepreneurial drive, and resistance to change (Muda & Abdul Aziz, 2020: 65).

It is common to experience failure with a certain project. Some of these errors may be traced back to the TT process. In addition, Kraak (2020) has identified the difficulties that arise when there is a mismatch between community needs and the service provided by the college, wherein in this case the polytechnic college is found in a disruptive position. A major obstacle to the collaboration process is the difference in understanding the goals of an RD&I project, especially when one partner does not know the expectations or values of the other partner (Rossoni, Gondim de Vasconcel, and Rossoni, R.L., 2024). They identified three types of barriers in the triple helix model: (1) barriers in the context of relationships, due to the different work cultures of the partners; (2) issues related to the university, in the context of the university's status and capabilities; and (3) political issues, related to the integration of work activities, knowledge development, and the commercialization and/or the protection of intellectual property. These findings are incongruent with hindering factors found in Ethiopia when PolyCO-MSE partisanship is ineffective due to institutional dereference, characterized by complex issues owing to a mismatch between community needs and campus facilities. Campus management and lecturers face difficulties as TVET colleges must account for their communities (Kraak, 2016).

Additional barriers identified by Kristiyanto, Anggraeni, & Sailah (2025) include resource constraints, perceptions of technology, and organizational and institutional pressures that impede technology adoption. They continued their description of the finding that in developing countries, where financial and technical barriers are more pronounced, government support is often the determining factor in whether SMEs can adopt and implement new technologies effectively or

not (Kristiyanto, Anggraeni, and Sailah, 2025:220). In one way or another, this identification is pertinent to the Ethiopian case, where the PLTs are facing such problems. Furthermore, loose cooperation among SME members and their lack of upkeep and maintenance of the cost rendered by their overarching organisations are the most influential barriers that obstruct high-level digital technology adoption among them .(Susanty, Puspitasari, Anindyanari, & Jie, 2025). Kraak (2020) identified the difficulties arising from misalignment between the campus service and community needs, placing the PolyCO in a dilemma. Kraak (2016) also underlined the hurdles that face the planning operations of TVET. Based on these facts, the need for competent leaders to lead the transformation process as it was depicted in South African SMEs, particularly after 1994, is evident (Maladzhi et al., 2012: 10438).

Innovation performance is one of the most important drivers of other functional aspects of organisations (Safari et al., 2015:1), with an emphasis on continuous efforts to improve, renew, explore, learn from mistakes, and navigate competitive environments. As a solution to overcome the barriers, human expertise characterized by a well-trained and knowledgeable workforce was underscored. It was highlighted to enable the integration of technology to bring about competitive advantage and value creation activities in MSE (Kristiyanto, Anggraeni, & Sailah, 2025).

According to Soliman (2016:143), there is a plethora of models depicted, such as knowledge models, perceptual models, and TT effectiveness models, to demonstrate TT effectiveness. However, most of the models ignored the leadership role as a factor , with models by Bozeman (2000), Waroonkun (2007), and Wangthomkun et al. (2006) omitting it from their works despite its influence on TT effectiveness. Linking vision to practice seems to be a vital component in the relationship between the leader and followers in TT context.

In general, it is essential to have a clear understanding of the barriers to technology transfer (TT) for effective communication to take place. The more

clearly the barriers are defined, along with the relevant success characteristics, the greater the likelihood of achieving favorable results.ll-defined, the more likely it is to achieve results and ensure the commercialisation of these technologies (Estep 2017:4). Barriers in Kenya include bureaucracy, inertia, inefficiency, cognitive dissonance, and low R&D activity (Gachanja, 2023). Weak intellectual property awareness and enforcement are Vietnamese-specific barriers in cooperative contexts (Do, 2023). Gebremariam et al. (2025) point out the specific challenges of Ethiopia, such as the disconnect between the training content and the needs of farmers and the lack of understanding of other innovation models by the extension agents from agricultural perspectives—these are more fundamental barriers than in Kenya or Vietnam. Valencia-Arias et al. (2025) report institutional fragmentation, insufficient R&D investment, lack of incentives, and declining budgets for science ministries in Colombia. Ackah et al. (2024) include a structural barrier specific to Ethiopia: weak local supplier linkages prevent technology spillovers from reaching domestic firms. This barrier—the lack of a dense local supplier ecosystem—is not present at any other source. This suggests that Ethiopia has a structural economic constraint that Kenya, Vietnam, and Colombia have partially overcome. Ethiopia's TT challenge is thus not only one of capacity or coordination but also of economic structure: TT cannot diffuse without inter-firm networks, remaining confined to FDI enclaves and failing to reach domestic MSEs. The intense competition in the market compels the company to consider technological upgrades to maintain its competitive edge. However, the risks associated with the technology's complexity and the need for skilled labor pose significant barriers to adoption (Kristiyanto, Anggraeni, and Sailah 2025:222). The empirical evidence has shown that leadership as a variable in TT research has been muted. The criticality of trying various frameworks and models to lead the TT process for the leadership team to bring about change is underlined.

2.6. TT IN THE CONTEXT OF THE COVID-19 PANDEMIC

Like other activities, TT has been obstructed by the severe COVID-19 pandemic. The COVID-19 pandemic has compelled entities from companies, firms, and enterprises to a larger national context; thereby, these entities have developed various mechanisms to face the pandemic through different mechanisms, both the old and the newly introduced solutions during the pandemic era. The COVID-19 pandemic affected global educational systems and almost closed schools, universities, and TVET colleges (Okoye et al., 2021). This led to the use of electronic learning as an alternative method of teaching and learning, as it reflected the characteristics of no contact, which predicted the safest attempt to reduce the spread of COVID-19. TT activities would not be an exception to such an opportunity, which protects all actors from COVID-19 pandemic infection (Madimabe & Omodan, 2021:83).

The pandemic outbreak created many liabilities and prompted various academic institutions in different countries were at different levels of adoption of e-learning (Bawa'aneh, & Muhammad, 2021:1). According to Alekseieva, Novikova, Bediukh, Kostyuk and Stepanova (2021:261), companies that have a propensity to serve as global hubs for knowledge transfer have significantly contributed to the enhancement of high-tech industry growth across Asia and particularly in Korea.

Statistically significant differences in the mean across groups were found as a result of empirical research on students' perspectives, focusing on their satisfaction, attitudes and challenges during distance learning. These findings have indicated the presence of a high level of satisfaction and a positive attitude. As a result, the students' challenges were significantly reduced (Bawa'aneh, 2021:1).

In most of the literature that appeared immediately after the occurrence of the pandemic, distance learning has been fully equipped, and training related to online issues has come into strong focus. The internationalisation of TT using Enterprise

Europe Network tools in a pandemic, which includes intensifying business activities using cyberspace, changing existing forms of organisation, and innovation for small businesses, has been devised in response to the outbreaks of the COVID-19 pandemic (Alekseieva et al., 2021:261). Moreover, at the end of the first semester in 2020, the United Arab Emirates (UAE) government had fully adopted distance learning by the end of the second semester for the remainder of the 2019–20 academic years. It is confirmed that changing the technological order and deepening the uneven development of technological leapfrogging scientifically is necessary.

The literature emphasises the importance of locating oneself in a turbulently erratic, changing world with an accelerating TT (Fu, Buckle, Sanchez-Ancochae & Hassan, 2021). As an exit mechanism, the authors proposed a joint venture between a global COVID-19 Pandemic vaccine manufacturer and local pharmaceutical companies to create a regional manufacturing hub. Beyond protecting the global community from COVID-19, this is a once-in-a-lifetime opportunity to accelerate the "life sciences industry" in global growth and development. Fux et al. (2021) further explain that successful TT and local production capabilities are being built based on compulsory licensing of strong TC in the host countries. This could help to transmit those very essential capabilities into locally beneficial capacities. As a result, developing countries receiving refugees, particularly African nations, face significant challenges. Consequently, this highlights and urges the use of TT in building the capabilities of local manufacturing sectors to produce equipment and tools, which is expedient in protecting against COVID-19. Social media events make use of internet platforms to bring people from all over the world together for communication and information access. Though challenging in developing countries like Ethiopia, the use of the Internet is "an educational solution to unexpected challenges such as community unrest, blockades and natural disasters, as seen in the COVID-19 pandemic" (Madimabe & Omodan, 2021:83).

From the open distance learning perspective, by focusing on student support, Pitsoe (2016) underscores the necessity of reengineering student support in the digital space from an open distance learning perspective, which could bring a dynamic shift in the service to address the students' specific environment by pursuing ways to respond to the challenge-inflicting conditions of the students' environmental context. He insists on showing the fluid nature of student support because it needs to seek diverse ways to meet the dimensions of the challenge it faces. By the same token, the overall needs of the students should be rethought to implement the proper response to the COVID-19 pandemic crisis in the current situation.

Investigation revealed that the TT process has received limited focus in preventing the fatal and deadly disease. The latent activity was seen in one of the typical examples of the pandemic, COVID-19. Even though it is important, the TVET sector underscores its crucial role in creating fresh knowledge and effective methodologies, ensuring a swift response to these crises (Śledzik et al., 2023:3). For instance, COVID-19 pandemic is a typical example of the pandemic. Considering its importance, the TVET sector underscores its crucial role in the treatment and prevention of pandemic.

To use TT as a vehicle for responding to pandemic risk and gaining enriched experiences from its progression, it is critical to consider its social situation's complexity and multifaceted dimension. So, it could be argued that implementing a flexible framework that helps to reasonably diminish the potential danger of pandemic contamination is a timely and vital task. In relation to the study conducted to evaluate the TT process in the field of modern diseases, of which the COVID-19 pandemic was taken as a member. TT was viewed as an important tool in that it makes new information and effective ways of doing things happen (Śledzik et al., 2023:3). Pitsoe (2015) also argues that managerial leaders are required to think about reengineering the conventional structure of the organisation, which is responsible for delivering the service. A “one-size-fits-all” approach is outdated and

could twist a real-life problem-solving mechanism. Therefore, liberating oneself from it is the first step that the leadership team must consider in pursuing a solution to the crisis, such as COVID-19.

Deriving the gained experience into one's context could be a coping mechanism in the TT process in general and in polytechnic colleges in particular, for they are the centre of technology capability building, accumulation and innovation. The leadership teams need to plan beyond their day-to-day routine activities to acquire the technology that could be a remedy during an emergency occurrence like the COVID-19 pandemic. It is time to provide the partner MSE access to the new technology so that it may be used by the larger community.

Lecturers can avoid this threat by preparing and arranging courses that pique students' interest and encourage engagement. Operative educators must be topic experts who understand how to effectively disseminate knowledge using various electronic channels. The polytechnic college leadership team can overcome the threat of the pandemic through various measures focusing on the wider community through MSE partners. These measures can be served by arousing the MSE's curiosity to focus on manufacturing tools and equipment in the local context.

Levin, Santos, Weber and Hoftijzer (2020) have provided a comprehensive description of the TVET system's response in assisting the community at large and academia in a specific context as follows:

- As the COVID-19 pandemic crisis continues, television technology can play an important role at different stages of the crisis:
- TV technology can be well equipped to develop important skills that are used to mitigate the impact of the COVID-19 pandemic.
- TVET's concern for practical skills and capabilities creates challenges for distance learning, both during the crisis and during the gradual reopening of training centres. Nevertheless, there were also opportunities to gain relevant skills through work-oriented learning during the pandemic.

The COVID-19 pandemic has impacted businesses of all sizes, but small and medium-sized enterprises (SMEs) are especially vulnerable. This increased susceptibility arises from three main factors. Firstly, SMEs are frequently concentrated in industries and regions that have been most severely impacted by the crisis. Secondly, SMEs are more susceptible to the pandemic effect than the larger firms, and finally, they have typically fewer resources and strategies to adapt to the challenges posed by the pandemic (Adian et al., 2020:4). These factors significantly contribute to the heightened risk faced by small and medium-sized enterprises (SMEs) during the crisis. When the economy began to recover, the TVET sector could take action to help the economy bounce, establish a stronger program, and implement a better skill development system. TT is crucial in the prevention and development of civilizational illnesses, such as the COVID-19 pandemic outbreak. TVET has the potential to enhance programs and systems for skills development and aid in the economic recovery in the early stages of the crisis fixation period and recovery that involves the COVID-19 pandemic outbreak, TT is crucial to the prevention and management of civilization laden catastrophes.

Overall, this study contributes to the dominant global TT discourse, which has been largely shaped by university-to-industry transfer in industrialized nations, by framing the unique context of ineffective communication and rigid bureaucracy as a mandate that falls on the hands of developing-world TVET leadership. The 'so what' is that the leadership models that work best and are effective in those developed economies' contexts may not be practical in developing arenas where institutional resources are scarce and informal MSEs are dominant. When institutional arrangements are largely absent in the context of a developing nation like Ethiopia's TVET landscape, the gap intensifies the problems at hand. Gebremariam et al. (2025) offer direct evidence that Ethiopia’s agricultural extension system, which, like TVET, is state-led, resource-constrained, and hierarchical, continues to depend on top-down transfer approaches to participation. This study therefore argues that the dominant TT leadership literature, foregrounding boundary-spanning, communication, and strategic planning functions, needs to be fundamentally rethought when applied to ineffective

communication, rigid bureaucracy, and low-resource, informal-economy contexts. In this case, the main role of leadership might not be to connect academia and industry (Gachanja, 2023) or to facilitate the conversion of knowledge across cultures; rather, it needs practical moves to solve the systemic problems and scarce resources through well-designed policy statements that focus on urgent, creative, and sustainable migration and the identified hurdles.

2.7. SYNTHESIS AND RESEARCH GAP

The literature explored in this chapter shows that there are no empirical studies that examine the links between leadership styles and TT practices in the TVET sector, specifically from a multi-stakeholder perspective with the "voice" of the MSE owner. Although current studies have highlighted the importance of leadership for technology transfer in the university-industry setting (Boateng, 2012; Gachanja, 2023), there appears to be no critical research on how leadership is implemented in TVET institutions, where the context, mandates, resources, and configurations differ from those of the university-industry setting. Structured university-industry linkage mechanisms that allow for peer-to-peer collaboration are found to be effective in comparative evidence from Kenya; in Ethiopia, the opposite is true in that the leadership is hierarchically laden and, most of the time, muted the activities of TT with the full participation of the recipients and other partners who act on peripheral platforms. Furthermore, the study highlights the significance of transformational and transactional leadership in the practice of TT. For similar reasons, Vietnam's findings show that the establishment of knowledge-sharing systems and the building of organizational trust are good indicators of TT success, but these are not present in Ethiopian PolyCOs; the study revealed that joint knowledge planning with MSEs does not exist, and communication is inconsistent.

This literature synthesis uncovers three specific gaps that are addressed in the present study. To the best of the author's knowledge, this is the first study that investigates the difference between transformational and transactional leadership styles as separate constructs to explain the outcomes of TT in a low-income

context of the TVET-to-MSE pathway. Second, the COVID-19 pandemic greatly disrupted the TT activities, but there is no empirical account of how TVET leadership practices responded, or did not respond, during this period. Third, and most importantly, current TT research focuses almost exclusively on the views of institutional actors (leaders, trainers, MSEs) as a valid source of evaluative judgment by migrating the traditional university-industry TT into the present emerging TT and innovation process from PolyCO to the MSE, which were underscored in the previous studies. This study addresses the methodological and epistemological gap that arises from the lack of voices of the MSE owner and the voices of PLT members, trainers, and trainees because it integrates the two voices to get a more complete and democratized understanding of the effectiveness of TT.

2.8. SUMMARY OF THE CHAPTER

In this chapter, different forms of related literature to current research were discussed. The discussion focused mainly on issues of the impact of leadership practices and the TT context including leadership roles TT issues from a research perspective, the perceptions of stakeholders of the available TT practices; success and challenge factors for TT practices and the prevailing accomplishments and importance of TT activities in the context of the COVID-19 pandemic.

In brief the chapter addressed critical impact of leadership on TT; commitment to TT; the conceptualisation of leadership as practice; an overview of the concept of technology and its general overview within the overarching idea of the impact of leadership practice and the TT context. Secondly, the topical sentence on the leadership role and TT in the research context has tried to see the place of leadership in research context, the issue of good governance, the Ethiopian TVET and its TT in very brief, and the role of leadership in the TT project. The stakeholder perception towards the TT practice and the success and challenging factors in managing and leading TT have also received significant description in

the chapter. Finally, the practice of leadership on TT in the COVID-19 pandemic and related pandemics was discussed.

The leadership team role in TT activities highlighted in the review literature as it is the determining factor for the success and failure of the TT project. In addition, the accomplishment of the goal set in general and the TT project as it is conceptualised in the present research need the commitment of the leadership team. The discussion appreciated the idea that advocate that the leadership is required to shoulder the activities by maximising the benefit of opportunity and fixing the source of hindering factors. The leadership team is to situate the conditions for the involvement and engagement of both key stakeholders and distant partners for success of the TT project accomplishment. It has also explained the advent of TVET sectors into the forefront position as an important driver of socioeconomic growth as well as the world of real work for the youth citizen. The chapter highlighted the advantage of TVET for capacitating industries, firms and especially MSE, which are in proximity of the community, to secure the competitive advantage and capability for the firms.

Considerable place was given for discussing the leadership function (planning, effective communication, setting environment for TT and innovation and boundary spanning) in detail as the independent variables in this research. The benefiting factors that can facilitate and accelerate issues for the TT implementation together with the challenging factors were also discussed, citing the importance of being causation to use the opportunity and fixing the hindering factors by involving key stakeholders. In the leadership practice process, apart from the available strategic and routine hindering factors, the epidemic like the COVID-19 Pandemic was the prominent occurrence, in late 2019. So, the issue of COVID-19 pandemic and the related outbreaks of related epidemic have been given place in the review related literature highlighting the focus the government has given in the policy statement.

CHAPTER THREE

3. THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1. INTRODUCTION

To outline the context and direction of the study, this chapter presents the clarification of the concept, theoretical framework and conceptual framework. In the first place, after giving short clarifications for concepts, under the theoretical and conceptual framework, a guiding roadmap for the study is presented. Various theories related to the study have received a description in that the characteristics of good theories, followed by a brief explanation of the theoretical and conceptual framework, received an abridged explanation. This sheds light on the available theoretical positions of the change model, absorptive capacity theory and the dominantly studied theory of the transformational and transactional leadership, taking it as lens for the study.

3.2 .CLARIFICATION OF CONCEPTS

3.2.1. Technology Transfer

The varying definitions provided by different authorities make it difficult to define TT in a unified manner. As a result, no agreement is reached to define it clearly. TT entails the introduction of a new process or approach in a new socio-political context (Wahab et al., 2012:62). According to Liu et al. (2010), it is "the transfer of scientific and technological results, information, the transfer of ability, transplantation, import, promotion, popularization, and so on." In line with this, Mwabukojo (2020:7) has also defined it as the movement of both the physical technological results and the soft entities like knowledge, skills, design and education. Furthermore, MoSHE (2020) defines it as the process of transferring the results of scientific and technological research to markets and societies, together

with the associated skills and the actual procedures; it is considered to be fundamental to the process of technological innovation and creation.

3.2.2. Leadership practice

Practices are a series of meaningful actions and activities that can be carried out by individual leaders or the leadership team in a specific context. Of course, leadership practices and approaches vary depending on the specific context and the actual realities of the actors involved (Nawab, 2011: 182). Instead of singularising individual leadership in the form of traits and behaviours, leadership practices focus on the experiences lived by the leadership in a team. The marginalised research focus on leadership from a practice perspective necessitated confronting the scarcity of frameworks for studying leadership in such a context (Spillan, Halverson & Diamond, 2015:107).

3.2.3. Technical and Vocational Education and Training (TVET)

Technical and vocational education and training (TVET) is an educational system that combines formal and informal learning to develop practical skills and understandings in the classroom and workplace to equip students with the skills and knowledge they need for success in the workplace. According to (MoE, 2008), the TVET sector is expected to respond to the labour market's competence needs, fostering a skilled, motivated and adaptable workforce capable of driving economic growth and development in Ethiopia.

3.2.4. Technology capabilities (TC)

Technology capability (TC) involves the ability of an organisation to arrange, deploy and develop technical resources acquired through various means. It focuses on harmonising varied resources to introduce and supply newly orchestrated products and services. Not only are workers' knowledge and abilities represented in the technological system, but so are in the administrative system, values and standards (Omar et al., 2012: 211-213). Voehl et al. (2018:179) maintain that leadership is one of the most important technological capabilities.

3.2.5. Technological Accumulation

Criscuolo and Narula (2008:1) examined knowledge accumulation in national-level absorptive capabilities and developed the concept of how accumulation occurs in an organisation. According to them, the knowledge accumulation process predominantly happens through trade contacts and related research and development activities, with the idea that the accumulation of knowledge in the organisation occurs predominantly via the engagement of transaction and trade or inward foreign direct investment (FDI) and research and development.

3.2.6. Micro Enterprise

Micro-enterprise refers to an enterprise with a total capital of not exceeding Birr 50,000 in the service sector or Birr 100,000 in the manufacturing industrial sector, and employing five workers, including the owner and family members (Abagissa, 202; MoSHE, 2020). According to Muthoni, Omato and Kithinji (2013:171), in Kenya, experience and MSEs are institutions that could be characterised by limited capacity, liable to be victims of tough competition in the real world, as they produce inferior quality products owing to the use of outdated technology.

3.2.7. Small Enterprise

Small enterprise shall mean an enterprise having a total capital, excluding buildings, from Birr 50,001 (Fifty Thousand and One) to Birr 500,000 (Fifty Hundred Thousand) in the case of the service sector, or from Birr 100,000 (One Hundred Thousand) to Birr 1,500,000 (One Million and Fifty Thousand) in the case of urban agriculture, artisanal mining and construction, which employs between six and 30 workers, including the owner, his family members and other employees (MoSHE, 2020:12–13).

3.3. THEORETICAL FRAMEWORK

Theories are crucial tools in academic fields that help to achieve many important results and objectives. Theories assist researcher(s) in understanding phenomena by considering meaning, nature relationships and challenges (Kivunja, 2018:45). Theories aid in organising our thoughts, explaining relationships among individuals, groups and entities, improving predictions and expectations, and achieving a better understanding of the world (Hambrick, 2007; Miles, 2012:1) and this includes understanding problems in various disciplines, including educational and social science contexts (Kivunja, 2018:46).

A clear theoretical and conceptual framework is essential for the researcher to use as a guiding lens for emergent design, rationale and a clearly described research plan. Concerning the essentiality of a theoretical framework for a dissertation, Grant and Osanloo (2014:12) defines theoretical framework as a blueprint when the structure and vision of the studies are unclear without it. A research plan guided by the theoretical framework can have a strong and organised flow from chapter to chapter, serve as the guide for the entire inquiry of the study, provided the study utilises a structural form to define philosophy, epistemology, methodology, and the analytical approach for the research on progress.

Theoretical framework of a study can stem from previous theory or theories that have received validation by other scholars following repeated testing. The focus of the present research rests on the leadership entities practices within the context of TT activities in the technical and vocational education sectors as well as in general and specialised education are being analysed in polytechnic colleges in particular in Addis Ababa city. Though the 2008 TVET policy envisions strengthening TVET institutions as a means of building technology capability, accumulation and TT, its implementation has always been minimal. This fact has been evidenced by the appraisal and report proceedings. The research held on TT so far has been far from the local context, focusing on the international arena, which is prominently scarce in the local context, to determine the TVET sector and firms' integration as

far as TT is concerned. Moreover, local empirical work was done mainly focusing on other issues, leaving leadership variables in a muted corner.

The research is specifically narrowed down to rely on investigating the polytechnic college leadership practices on TT activities to the micro- and small enterprises manufacturing sub-sectors and tries to answer the general question:

- To what extent do the leadership teams in the polytechnic colleges of Addis Ababa lead the activities of technology transfer (TT) to the micro- and small-enterprises (MSEs) manufacturing sub-sectors?

Based on the problem, purpose, significance and research questions of TVET leadership practice in TT activities, the following two theories are taken as pillars for a theoretical position, namely, the transformational and transactional leadership theory. The research is also underpinned by the theory of absorptive capacity for TT activities, both in the donor polytechnic college and the recipient MSE manufacturing sub-sectors.

Theoretical frameworks are essential to identify and construct epistemological and ontological worldviews and approaches to research (Grant & Osanloo, 2014:16). The choice of a framework is based on understanding the four constructions, including problems, objectives, meanings, and research questions, is the basis of design and data analysis. These four constructs, including methodology and data analysis, are used to explicitly connect all the elements together to deliver power throughout the thesis as electric current flows through all rooms to supply all with the necessary power.
On such a foundation, the present research design invites us to use more than one theory in this part. Theories and organisational change models that would contribute to this study are discussed in the next subsection.

3.3.1. The theory of transformational and transactional leadership

The theory of transformational and transactional leadership has been used repeatedly in many studies and has been tested empirically. Hence, it can be taken as a guiding framework for the present study. Since 1978, two rubrics—transactional and transformational—have dominated the world of scholarly work on leadership (Wolverton & Gmelch, 2002:37). Leaders are expected to have their own profiles. Avolio and Bass (2002: viii) claim that better leaders practice both the theory of transformational and transactional leadership styles, while the best ones tend to be more transformational leaders.

The authors accept that these leadership theories are extensions of the theory of motivation. According to Burns' definition of transformational leadership, Boateng (2012:46) argues that transformational leaders motivate followers by appealing to strong emotions, regardless of the ultimate effects, and do not necessarily prioritise positive moral values. Transformational leadership energizes followers to overcome challenges and stretch beyond the interests of their own benefits for the good of others. Unlike transformational leadership, transactional leadership focuses on achieving the goal demarcated on the principle of ‘give and take’ which depends on the results of the followers as per the agreement fixed between the leadership and the followers. Leaders can possess varied leadership styles in various proportions. Surprisingly, a large extent of effort felt that effectiveness accompanying innovation, risk-taking and satisfaction would be there if it were properly orchestrated with transformational leadership (Avolio & Bass, 2002:2-3).

Transformational leaders surpass expectations of performance based on transactions between the leader and followers. Superior performance is the result that swings from the transformation environment in which the leaders are situated. Moreover, transformational leaders add to transactional leadership by attracting action verbs that motivate partners, associates, followers, the client, and even

‘bosses upward’. To tell the truth, the transformative leaders go beyond their own interests and commitment, highlighting the moralistic values and principles for two reasons: practical or moral convictions.

According to Gelard et al. (2014), the presence of a positive relationship between the transformational leadership and knowledge management has been found. They used the methods of Spearman correlation coefficient (0.074). As for them, the transformational leadership does not replace the transactional leadership. A constructive leadership style that involves a transactional leadership strategy could not be effective without using it in combination with one or two of the transactional leadership components.

Transformational leadership is a value-driven style, aiming at setting high standards for empowering employees through inspiration, collaboration, trust and being a role model. It is highly important for organisation development and helps to harvest survival advantage in turmoil conditions. Leaders, who are in favour of a transformational leadership style share power, learn from others, set high expectations for followers, and consider individual achievement and development with empathy (Basham, 2010: 145). This helps to sustain the advantage obtained from the set on TT. Hence, the transformational leadership style, consisting of idealised, inspiration, intellectual stimulation, and individual consideration, should be combined with transactional leadership components for effective results in the TT process. The comparative summary of both transformational and transactional leadership components is given in the following paragraphs (Avolio & Bass, 2002:2–3).

The main issue that matters for transactional leaders is the accomplishment of specified objectives of the institution by leaders to followers and colleagues. Therefore, its completion would culminate either in reward or in discipleship. Followers know what the result will be for them if they achieve or fail to meet their goals (Avolio & Bass 2002:1). To strengthen the work of the transformational element of leadership style, it needs a larger quantity of work in the transactional

leadership atmosphere. Transactional leadership, particularly contingent rewards, offers a wide foundation for effective leadership (Avolio & Bass, 2002:6). Shared understanding is emphasised in the context that the prevailing leadership style is transactional.

Transactional leaders focus on maintaining the status quo because it concentrates on maintaining the institution stable and effective while executing everyday tasks smoothly. This, in one way or another, restricts the scope of leadership practice for change and innovation. Giving specific aims and objectives under legally enforceable instructions that probably will not pay as much attention to environmental change is how this is accomplished (Basham, 2010:143-146). To sum up, the sole intent of transactional leadership is to maintain the quality and standards of certain demarcated objectives of performance; hence, it is crucial to take it as the subject of research. Basham suggests that the distinction between transactional and transformational leadership is not clearly defined, as they are often referred to by word of mouth.

Avolio and Bass (2002:2–3) provide a summary of the components of transformational and transactional leadership as follows:

- **Idealised Leadership:** Behaving as a role model for their follower's entity, leaders' own admiration, trustworthiness, and respect are springboards for motivating to the maximum. Leaders in these categories are consistent in their moves, with the highest moral standing in front of their followers.

- **Inspiration Motivation:** This involves where these true transformational leaders inspire their followers by providing measuring, at the same time challenging but achievable, by tough effort to heighten the work spirit. They display enthusiasm and energy, insisting on cultivating a bright future. Effective communication about followers' goals and commitment is crucial for successful leadership.

- **Intellectual Stimulation**: The transformational leaders encourage innovation and creativity in their followers by challenging assumptions, reframing problems and enhancing rethinking situations on the part of followers. Creativity is at the centre here, where there is no criticism for mistakes. Deviation from the leaders' ideas and stands does not attract action, and this can fuel the creative power of the followers.

- **Individualised Consideration:** Transformational leaders empower their followers by addressing individual needs through coaching and mentoring. A positive climate is established for followers to use the platforms. Two-way communication would also be there to foster differences and needs-variants. The strategy that has been developed is the liberation of individual ideas, regardless of the differences and deviations that followers have from their leaders and direct colleagues in the workplace.

- **Contingent Reward**: This constructive transaction is reasonably effective in motivating others, though it is not as effective as any of the components in a transformational one. It can develop and perform by agreeing on what must be achieved as goals.

- **Management by Exception**: This is a corrective platform based on the context. Following the management by exception, a correction will be there. If the participation is active, the leaders arrange to actively monitor; if it is passive, the leaders wait for the deviant mistakes and errors to be corrected.

Direct mentoring from leaders is crucial for transforming subordinates' innovative performance into institutes' capabilities for sustainable change for competitive advantage and innovation improvement. In terms of leadership experience in leading and directing change and related issues in TVET sectors, Kedir and Geleta (2017:49) assessed the extent to which the aforementioned institution's leadership was practising transformational leadership style in Ethiopia, based on sectional

surveys, and discovered that the five models of transformational leadership were practised at low or below-average levels in the TVET institution. However, respondents ranked the leadership behaviours of motivating, sharing vision, questioning the present process, and encouraging followers' hearts as low, but the characteristics of enabling others to behave appropriately were scored high in the relative other model.

In general, the transformational and transactional leadership theories are believed to be used as a supportive guiding framework to study the practice the TVET leadership teams undertake while providing leadership and management functions for the TT process.

3.3.2. Absorptive capacity theory

The theory of absorptive capacity postulates that the absorption of new knowledge can lead to innovation and sustainable competitiveness. Criscuolo and Narula (2008:2) define it as the ability to acquire and implement technology and related practices. This theory consists of four dimensions of capability: acquisition, assimilation, transformation and exploitation. These categorisations are derived from extensive observation of prolonged observation throughout the process. Florêncio et al. (2026) provide strong empirical evidence for this multi-dimensional view, showing that absorptive capacity has a significant effect on both technology transfer and organizational performance, including customer satisfaction, market performance, innovation and financial outcomes. However, opponents argue that the theory lacks an adequate definition or uses different definitions. The limited development of this theory highlights the need for more research and development (Miles, 2012:19).

This theory delivers various assumptions for both organisations probing technology and innovation production and firms that receive it. It witnesses that having higher absorptive capability will provide an opportunity for a competitive benefit (Miles,

2012:17). As Miles (ibid) says, firms can gain technical knowledge from four sources, namely organizations' R&D, manufacturing operations, borrowing from other partners and purchasing. Prior knowledge is required to absorb the necessary technology. Prior research indicated that it is empirically tested that the richness of transmission alternative channels, the motivation of the knowledge receivers to acquire that knowledge, and its prevailing capacity to absorb that ready knowledge are positively associated with the inflow and outflow knowledge from and to the subsidiary, for it is tested empirically (Gupta & Govindarajan, 2000:473). Building on this, Florêncio et al. (2026) demonstrate that technology transfer is a key channel through which absorptive capacity of a firm is fully mediated in performance gains. Their findings offer a significant warning: a strong capacity to absorb external knowledge may not translate to better organizational outcomes without well-developed transfer processes.

Conversely, the underpinning criticism behind the theory rests on three issues. According to Miles (2012), the opponents of absorptive capacity as a theory strongly argue the need of removing it from the list of theories, highlighting a number of reasons, which include the idea of the incorporation of complex ideas that need very comprehensive analysis in that the potential absorptive capacity (acquisition and assimilation) leads to the realised absorptive capacity (transformation and exploitation). In the first place, it is criticised for not defining or assigning various meanings to the concept of absorptive capacity, while this extends to challenging the measurement validity. Secondly, the opponents criticised it for the fact that it considers the existing connection. Thirdly, the criticism insists that the theory should include a feedback loop.

The learning intention and absorptive capacity of the recipient and the willingness on the part of the giver of the technology are the sole contributors (Khan, 2011: ii). The theory posits that absorbing new knowledge can enhance an organisation's innovation, flexibility and performance. Firms with higher knowledge absorbing abilities have a competitive advantage than the firms with low ability. Absorptive

capacity, a crucial factor in the success of technology leapfrogging, is a major barrier to technology diffusion unless well managed and improved. Absorptive capacity is considered irreducible prerequisites for success in technological leapfrogging (Steinmüller 2001, 194), making it a critical factor in determining the success of technological transfer leapfrogging. It could be gained as byproducts of the organisation's research and development as well as from the training given to the working force (ibid.).

The present work proposed in the study (leading and managing the TT process, which goes deep into technological capability building, technology accumulation, and transferring it to the technology receiver (MSE)) involves change, and the constructs under them can be located in the conceptual framework to which this theory contributes. The selected leadership functions—planning; climate setting, communication, boundary-spanning, and critical practice constructs—can be used as a lens to frame the research. To narrow the scope, these selected leadership functions can be seen through the very dominantly studied leadership theories of the transformational and transactional leadership perspectives in the next sub-section.

3.3.3. Change management model

The turbulent and dynamic nature of the environment in which we live makes it important to consider change and its management platforms. "Digitalization accelerates human communication and overcomes previous geographical limitations." Change and change management should become the core principles of modern society and its businesses at such a fast pace (Dievernich, 2015:11). Change management initiatives, from the programme's point of view, give enterprises the ability to manage the implementation of new procedures to improve the attainment of commercial advantages. Systematic changes across the organisation and specific internal change management strategies are the two categories of change management strategies (Tang, 2019:48). Although specific

internal change management, as its name suggests, refers to partial and specific change, systematic organisation-wide change initiatives include overall organisational change.

As previous experience shows, leaders use various forms of leadership change for effectiveness in that leaders are used to using educational commitments, forms of participation, negotiations and agreements, reconciliation, manipulation and cooperation. Even leaders cover forms of coercion, which can be reflected in implicit and explicit intimidation as a model to lead the organisation forward during change. The model begins with the education of people, their participation and their possibility to negotiate with followers of resistance types, which includes empowerment and the cultivation of participation. In contrast, in the latter two cases of the model, when the former attempts fail, leaders automatically move to coercive status, from the use of power to the use of threats and penalties to control the process of change (Schedlitzki & Edwards, cited in Tang (2019:3).

Since the purpose of the leadership and management framework is to provide a clear set of standards and expectation for applying the appropriate practice to meet the goal, it is logical that the study focuses on TVET leadership practice in the TT process, which relies on change-related management theory from which the study derived its conceptual framework.

Change management involves effective communication and relations between leaders and employees, emphasising the importance of human involvement in the process (Dievernich, 2015:11). Therefore, one of the factors that would be primarily a focus in the future of change management is the management of interactions between managers and employees, as it affects the process of any form of change or reform initiated. Change management enables leaders to help their followers succeed by showing the direction in which to address the problem and measuring progress. In addition, change and leadership are closely linked to leading academics based on the assumption that the concept of leadership creates useful

change (Tang 2019:3). Taking this into account, the researcher has used change management theory as one of the lenses to ensure that this research moves smoothly towards its objectives.

3.4. CONCEPTUAL FRAMEWORK

A "consistent and comprehensive theoretical framework emerging from an inductive integration of previous literature, theories and other pertinent information" is referred to as a conceptual framework (Tashakkori & Teddlie, 1998, cited in Teddlie & Tashakkori, 2009:285). Within the context and direction of the study, the conceptualisation of leadership practices and TT is the entity within which the leading and managing practices are lived. These shed light on the available theoretical background, and they describe how a conceptual framework is conceptualised through time and reached at last to such a current conceptualisation of the broad TT into technology capability building and technology accumulation for further use. Concepts and relationships are the axes that the presentation of the conceptual framework focuses on as an object.

The conceptual framework is a logical structure of connected concepts that helps to visualise the relationship between ideas in a study within a theoretical framework. It is the logical conceptualisation of a research project, including metacognitive, reflective and operational elements, serving as the logical master plan for the entire project (Kivunja, 2018:47). Therefore, the development of a conceptual framework for this research aims at capturing the selected constructs suggested as being seen under leadership practice as far as leading and managing polytechnic college-MSE manufacturing sub-sectors TT is concerned.

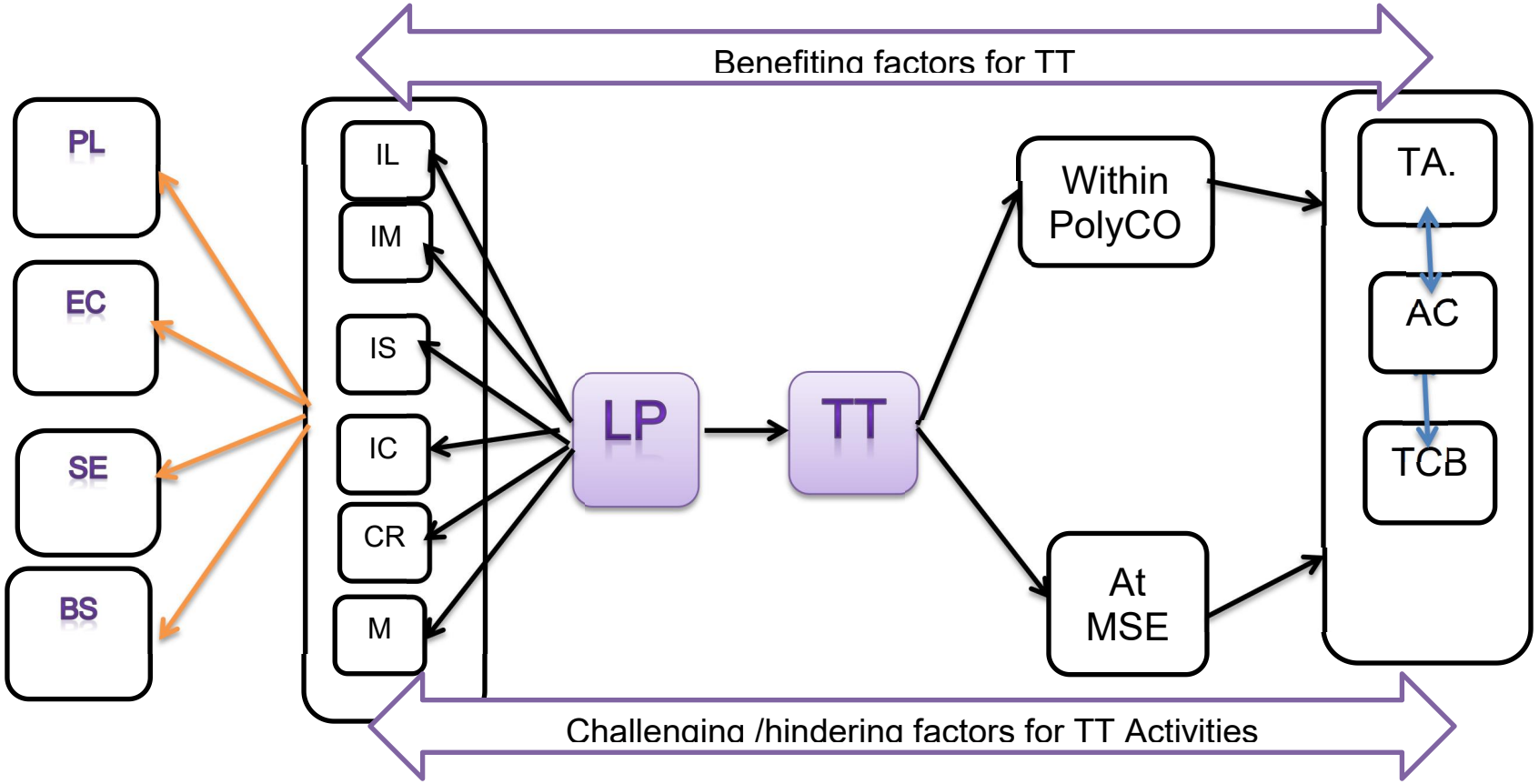
As depicted in Bozeman’s (2000:637) model, the research thesis explores the impacts of TT on individuals, processes, and recipients, focusing on four dimensions: planning, effective communication, setting the environment, and boundary spanning. The leadership and management team view the TT process as

project execution, ensuring effective communication and understanding of the transfer process. For its execution, the leadership team would focus on initiating and supporting TT practices in the polytechnic college. These dimensions of leadership functions are found to have a contribution to positively fastening the TT process.

The research focuses on selected functions that have contributed to laying a strong foundation in searching out appropriate technology for the local needs from the start-up phase. This entails communicating it for the beneficiary via setting a friendly environment to going out from internal confinement to the wider partnership arena to bring about a felt positive impact on the accumulation of technological capability for further learning to survive in the face of unavoidable harsh competition.

In the polytechnic college (PolyCO)-MSE TT research, a technological capability built and technology accumulated internally in the PolyCO and the destination constituent entities, MSE, externally are taken as dependent variables (DV). Conversely, the leadership practices reflected in the form of planning, communicating effectively, setting the environment for innovation, and boundary-spanning practices are independent variables (IV). As a result, for PolyCO-MSE TT, the next section presents a conceptual framework to model the role of Polytechnic College leadership in leading and managing TT for the constituent MSE manufacturing sub-sectors.

The conceptual framework, presented in Figure 3.1 is based on various forms of extant literature searched for this research and an integration of mainly the work of several researchers (Saad, et al., 2020; Sahyaja, et al., 2018; Omar et al., 2012; Zawislak et al., 2014; Elkins, & Keller, 2003; Purushotham, et al., 2013).



Source: Researcher own generation depending on extant literature

Figure: 3.1. Conceptual framework

Leadership practices (LP) dimensions: PL=planning EC= effective leadership communication SE= Setting-environment and BS= Boundary spanning; Transformational and transactional leadership dimensions: IL=Idealized Leadership, IM = Inspirational Motivation, IS = Intellectual Stimulation, IC=Individualized Consideration, CR=Contingent Reward, ME= Management by Exception

TCB = technological capability-built AC= Absorption capacity TA = Technology accumulated

As shown in the Figure 3.1, the transfer of technology in TVET is described in the context of PolyCO, basically focused on the transfer of technology from PolyCO to MSE. It attempts to incorporate theoretical positions, the transformational and transactional leadership theory as lenses to guide the prevailing practice of PLT. As it can be seen the block that starts with leadership practice (LP), which is mainly based on role (function) of leadership in terms of planning (PL), effective communication (EC), setting environment for TT and innovation (SE) and boundaries spanning (BS). The leadership function, namely, PL, EC, SE and BS are considered as independent variables in the research process.

Leadership practice is conceptualised and determined through the main components of transformational and transactional leadership, i.e., idealised leadership (IL), inspiring motivation (IM), intellectual stimulation (IS), individual consideration (IC), contingent reward (CR), and exception management (ME). Leadership is established as the basic entities that lead the TT companies in PolyCO and its activities of transfer from TVET in general and especially from PolyCO to the various companies, in particular MSE. The framework has tried to show that TT activities are carried out both inside the source of technology PolyCO and at the technology recipient entities, MSE. In the framework, both the challenging forces and the benefiting factors are placed in the opposite position, highly indicating that these needs the critical and strategic move of the leadership entity to lead the TT activities effectively. Finally, as TT impacts, three constructs, namely, technological capability built (TCB), technology accumulation (TA), and absorptive capacity acquired (AC) are incorporated, which are used as dependent variable in the research.

3.5. SUMMARY OF THE CHAPTER

This chapter mainly focused on discussing the theoretical and conceptual frameworks that guided the study. It started clarifying certain prominent concepts in the research such as TT, leadership practice, TVET, development of technological

capabilities, technological accumulation, micro enterprise and small enterprise in the beginning of the chapter, the discussion extended to include the three theories selected for the research.

The central idea of this chapter rested on discussing the three theories that were chosen for the present research are transformational and transactional leadership theory, as well as change management. Change management model and absorptive capacity theory believed in having relation with the practice of leadership of PolyCO on TT activities. The discussion cited the difficulties of defining TT in a unified manner and singling out one known definition. However, in its conceptualisation as most authors put it (Chapter 2) denotes the transfer of scientific knowledge, technological products, information, managerial skills, methodologies, strategies and way of improving service from the source of technology to its recipients. In describing leadership practice, the chapter rested on clarifying leadership practice as a series of significant actions and activities that can be carried out in a specific context by individual leaders and leadership teams. Of course, leadership styles and approaches differ based on the unique setting and actual circumstances of the individuals involved.

In discussing the transformational and transactional leadership theory, the chapter focused on highlighting the transformational and transactional leadership theory selected as a guiding framework for the present research since it has received repeated research and tests empirically. Transformational leadership theory can help the leaders to motivate and energise by appealing to strong emotion to overcome hurdles in the process of coordination objective accomplishment, such as TT. Transactional leadership addresses the weaknesses of transformational leadership by encouraging employees to agree to submit results under specific conditions, potentially leading to rewards and penalties depending on the outcome.

In the second place, the chapter discussed “absorptive capacity theory,” which focuses on advocating the importance of technology absorption to further enhance the innovative capabilities. This, consequently, enables one to gain a competitive advantage sustainably. This theory was conceptualised as an ability to acquire and

implement the technology and the associated practices that the donor of the technology can originate and attach. Higher absorption capacity can maximise competitive benefits. Furthermore, the chapter emphasises that acquiring new knowledge enhances an organisation's innovation and flexibility, leading to higher performance levels.

The chapter also discussed the necessity of a change management model in the turbulent world of the 21st century, which aims to control the implementation process of new experiences such as TT activities. Of course, this model is strongly related to the previously discussed transactional and transformational leadership theories and with absorptive capacity theory. It helped to conceptualize different forms of new experience implementation that could be taken from the leadership entities, such as educational commitment, engaging the subordinates for involvement, using the negotiation and agreement properly, and yet using overt and covert coercion mechanisms to get the demarcated change implemented successfully. Hence, this theory helped the leadership entities to equip them with various tools in navigating the TT activities.

CHAPTER FOUR

4. RESEARCH DESIGN AND METHODS

4.1. INTRODUCTION

Research methodology is explained by the four pillars of the pyramid: paradigms, methodologies, methods, and instruments that guide data collection, classification and analysis (Jonker & Pennink, 2010: VII). The methodology is a clear and transparent outline of the research path, providing clear direction for both the researcher and the readers. The sequential explanatory mixed method is a common research style; however, it may not be suitable for some situations to implement it (Bowen, Rose & Pilkington, 2017:11). Hence, the methodology underpinned by the four pillars as mentioned offers a straightforward structure for data collection, analysis and further interpretation to reach a conclusion for a plausible recommendation.

The study aimed to investigate the practice of polytechnic college (PolyCO) leadership on TT from PolyCO to MSE manufacturing subsectors. Owing to the presence of strong debate between the quantitative and qualitative researchers from the perspectives of epistemological, ontological and axiological issues concerning adoption of either of such methods (Subedi, 2016:570) and the repetitive focus of highlighting the shortcomings and benefits of the method of quantitative or qualitative research (Rahman, 2016:102). Therefore, to resolve this dilemma and to select the research approach that is contextually appropriate to overcome the weaknesses of either research approach (quantitative and qualitative approach), mixed methodology research, known as the pragmatic paradigm, was used. Therefore, in the next section, detailed parts of the research methodology and its design are described one by one, including the research paradigm, research approach and research strategy, and the research methods that were

categorised into their constituents: sampling, data collection, data analysis, reliability, and in-depth ethical clearance issues.

4.2. DESIGN OF THE RESEARCH

The design of the research provides a clear direction for researchers to apply techniques within three research methodologies: quantitative, qualitative, and mixed methods approach (Creswell & Creswell, 2018). According to Jonker and Pennink (2010), descriptive research design is a flexible set of assumptions and guidelines that connect theoretical notions to a specific inquiry strategy, supported by methods and techniques for empirical material collection. In this research, mixed methods research (MMR) was selected because it is appropriate to study the lived experience of PolyCO leadership practice on TT from the colleges to MSE. In this part, research paradigms, research approaches and research strategies and types are described in order in the following sections.

4.2.1. The research paradigms

This study is located within the pragmatic research paradigm, which legitimises the use of a mixed-methods research approach . The concept of paradigm, which has been polarised since 1962 by Kuhn (1962), is characterised by its peculiarity of providing the approach how the world is viewed. Ngulube (2020) & Cohen et al., 2018) determine it to incorporate a set of concepts and practices ranging from a definition of certain particulars at a certain time, a way of having reality, and a way of seeing live experiences and social systems with a sense-making method to a higher philosophical worldview that essentially conceives research approaches, designs and methods of research in it. In this research context, a paradigm is thought of as a general perspective of the world that the researcher takes as a foundation. Paradigm is a way of seeing or researching reality (Ngulube, 2020; Cohen et al., 2018). It is a philosophical orientation about the world that could be taken as a strategy of looking at the existing reality by the researcher (Creswell &

Creswell 2018, Philosophical Worldviews; Cohen et al. 2018:34; Jonker & Pennink, 2010:23). It is further used to examine the study, including its ways of data analysis to reach the credible recommendation.

Various types of research are currently existing, which range from positivist, post-positivist, interpretivist, transformative, and indigenous, where each of these is informed by its own ontological and epistemological to influence further the axiology and methodology. Concerning the available debate on paradigm determination, Creswell & Creswell (2018: Philosophical Worldviews, 2) have underlined the four prominent paradigms: post-positivism, constructivism, transformative and pragmatism.

The positivist research paradigm sees the world as a standardised and objective system with invariable, universal laws and behavioural patterns. A traditional approach to research, rooted in the scientific model of conducting research, uses observation and reason as means of understanding behaviour, which the verification is gained through scientific description (Ngulube, 2020; Cohen et al., 2018). It is characterised by ontological realism, where its epistemological root is objectivism that sticks to studying reality with measurement and observation. Its main critics lie in that it lacks comprehensiveness owing to the complex nature of the reality, which is difficult to create perfect understanding by the methods only post-positivism brings to the table.

Transformative theory comes in response against both post-positivism and positivism that fundamentally focuses on highlighting the issues that cannot be studied only through post-positivism and positivism using the quantifiable parameters and via scientific methods. The advocates of transformative theorists believed that reality could not be independent of human beings, for it is shaped by context and the social customs prevailing there, taking the historical realism as their ontological base (Ngulube, 2020:249). He went on to describe that researchers in this category insist on believing that collaboration, participation, action research, emphasis on transaction epistemology, dialogic methodology and respect for cultural norms through interaction with participants are critically

important. Transformative approaches rooted in political and ideological programmes of empowerment, liberation, equality and social justice have several ties and can be referred to as critical theories (Cohen et al., 2018:34). They focus on transforming society to bring about social justice, and then the post-positivist and post-positivist philosophies are left behind, according to their views, in the same way.

The constructivist theory (interpretivism) directly impresses and prints (Cohen et al., 2018:23). This theory opposes both post-positivism and positivism, highlighting that reality is socially constructed, resulting in multiple realities. It does not accept that the external entity determines shapes. Researchers in this category do not stick to accepting the knowledge and reality; they rather try to coin various interpretations via the participants' perspectives (Ngulube, 2020; Cohen et al., 2018). The theory rejects the notion of researchers as objective observers and encourages participants to speak for themselves, allowing them to interpret their thinking and a meaning about social phenomena.

Pragmatism: Pragmatism is a research approach that focuses on using quantitative and qualitative data to describe and address research questions or problems. pragmatism It is eclectic in design and methodology and uses both inductive and deductive reasoning to investigate several perspectives on problems and research questions (Cohen et al., 2018:34). It also involves a combination of approaches to enhance the quality of answering questions from either perspective. The foundations of MMR are formed by various alliances, including worldviews, ontologies, epistemologies and axiology. Pragmatism is found in many forms that arise out of actions, situations and consequences, unlike the post-positivism that needs antecedent conditions for its emergence (Creswell & Creswell, 2018). The type of paradigms is determined by their ontological and epistemological nature. So, it is important to consider these concepts before concluding the section in the following lines.

Epistemology as a concept is a philosophical theory that studies the nature, beliefs, values and methods of knowledge derived from its perception,

interpretation and approach (Ngulube, 2020:248). It focuses on how people learn about what exists, and methodology describes methods and mechanisms of research or process of research (Cresswell & Cresswell, 2018). In other words, epistemology studies knowledge generation and acquisition, while methodology includes research designs, methods and analyses. **Ontology** investigates the nature of reality and asks what exists and how. The areas discussed are interconnected and related, addressing various aspects of understanding reality and knowledge (Ngulube, 2020:165; Creswell & Creswell, 2018). Ontology refers to how one views the world or beliefs about reality, which determine the understanding of what exists. Axiology refers to the morality or ethics of a researcher regarding research management, research implications and the research itself.

Worldviews and paradigms determine which approach (quantitative, qualitative, or mixed-method approach) is used in the study. According to Cohen et al. (2018:34), MMR has several foundations that stem from its positivism and post-positivism paradigms from the quantitative root; interpretive and transformative paradigms from its qualitative characteristics; and these make it have multiple allegiances. The current research adopts a pragmatic worldview, focusing on leadership practices in managing TT activities and transferring them to the MSE. This perspective is characterised by action-centred, problem-centred, and real-world practice-centred endeavours. Creswell and Creswell (2018) argue that this pragmatic perspective helps researchers navigate to the end of the research by addressing what and how questions.

4.2.2. Research Approach

In this study, MMR approach was used. MMR is a research approach that includes both quantitative and qualitative data, integrates two forms of data for interpretation and further discussion, and uses different designs that may include philosophical hypotheses and theoretical frameworks (Creswell & Creswell, 2018). This research, as previously mentioned, aimed to investigate the practical application of TVET

leadership practices in leading and managing TT to the manufacturing subsectors of MSE.

The outcomes expected from the study determine whether to choose the MMR approach, and the other reason to choose this research approach lies in the interest of explaining quantitative results using qualitative data (Creswell & Creswell, 2018). Several reasons have been given for choosing mixed methods research as an approach. The use of mixed methods research as a research approach was supported by several arguments. One of the main advantages of this approach is that it increases the likelihood of being perceived as flexible in data collection and analysis. The other main justification for the choice of MMR is to make up for the shortcomings of the mono-research technique by fusing the strengths of the qualitative and quantitative approaches, and vice versa (Ngulube, 2022: 150).

The research clearly described the reason that pushed the researcher to use the MMR methods, rather than solely demonstrating the presence of multiple research collection and analysis methods. Merely arguing that MMR is comprehensive is not enough; rather, it needs further clarification of the actual benefits according to a study (Ngulube & Ngulube, 2022:3–4). It must be thoughtfully and effectively used with clear justification for its selection. Similarly, the other advantage that the MMR can provide to the researchers is the opportunity to answer various questions that could be challenging to answer using mono-methods. In a single study, MMR enables researchers to answer questions about the varieties of "what", "why" and "how" (Ngulube & Ngulube, 2022:2).

It is known that by its nature, the world is not purely quantitative or qualitative. There are always the characteristics of the former that appear in the latter, which confirms the existing mixed occurrence of nature. In the study, the integration of the two entities needs to be reflected from the inception of the problem up to the reporting of its findings. Various perspectives, such as data collection, analysis and

interpretation, are the areas in which the qualitative and quantitative nature of the study are integrated (Cohen et al., 2018:32). MMR offers flexibility in data collection and analysis by combining qualitative and quantitative methods. It allows researchers to answer challenging questions in a single study, reflecting the mixed nature of the world. In addition, in the present research, the educational research, together with its planning conventions, cannot be treated with a simple step. It needs complex, intertwined and interrelated processes that combine both quantitative and qualitative information to reach an effective result via understanding its intent and holistic features by considering appropriate contexts such as its ontological and epistemological matters (Cohen et al., 2018:29). This approach provides the researcher with the advantage of widening the scope to probe educational issues with both numbers and words (Almalki, 2016:288). Almalki underlined its positive benefit to many studies, despite the challenge it will impose. In general, owing to such established advantages, the MMR approach was deemed suitable for the present study.

4.2.3. Research type or strategy

There are a variety of MMR types, as described in the literature (Onwuegbuzie, 2006; Ngulube, 2022). The basic and essential MMR designs include sequential exploratory designs, sequential explanatory designs, and concurrent convergent designs (Onwuegbuzie, 2006; Creswell & Creswell, 2018; Ngulube: 2022). In this study, a mixed method of explanatory sequence was selected as specified before. The researcher first conducted quantitative research, following an analysis of documents and literature, which was used as a basis to construct a theme for the survey. The analysis result of the survey was used to inform the focus of qualitative data collection to explain the selected constructs in detail and depth through semi-structured interviews. In alignment with the foregoing, Almalki (2016:293) has pointed out that the explanatory sequence design, which is often used in educational research, is called a participant selection model, although it is challenging as it is time-consuming.

Before marching to sum up the section, explaining research question framing in MMR is vital. Preparing a research question in the case of MMR is vital in enabling the researcher to frame the problems that the researcher was focusing on answering. This outline was based on previous experience, the preceding theories, and past research results. The MMR question is vitally important in laying the foundation for the study by indicating methodology, the direction of the investigations, the way of maintaining relevance among sections, and keeping coherence through the process of the investigations (Onwuegbuzie& Leech2006:479). Furthermore, the questions were also used to describe the data collection and analysis of the study. Hence, research questions are a central and interactive avenue in the case of the MMR. The arrangement and contextualising of the research questions were open for modification where it could be made in each critical step, starting from determining the purpose of the mixed research to the last steps of interpretation. It was not a one-time task that can end in ‘determining the research question(s)'; rather, it was re-evaluated in the steps of ‘the data analysis’ and ’data validation’. Any of these steps led to the modification of the research questions, including the addition of a new question from the perspective of the objectives set. Even after the research questions were established, the modification of the research questions led to the action of revising the research purposes designed in the early stages of research formulation. The issue of treating more general and generic terms of TVET leadership practice (treated in the initial stage of the study) was changed into the specific focused issue of polytechnic leadership practice on TT from PolyCO to the MSE manufacturing subsectors.

Since the study used an explanatory sequential design, the researcher first collected data through questionnaires for analysis and then moved to the qualitative one based on the quantitative result. The researcher prepared structured interview questions to collect data that could add some insight and address an issue not thought of in first quantitative phases. The findings of the

quantitative data in the study helped to generate the structured interview based on the problem statements, general objectives and questions forwarded against the overall purposes of the research (Almalki, 2016:293; Creswell & Creswell 2018). The second phase, the qualitative, focused mainly on further clarifying and explaining the quantitative data interpretation. As it was depicted in the work of the author concerning MMR, Creswell and Creswell (2018) model has been put in Figure 4.1 hereunder.

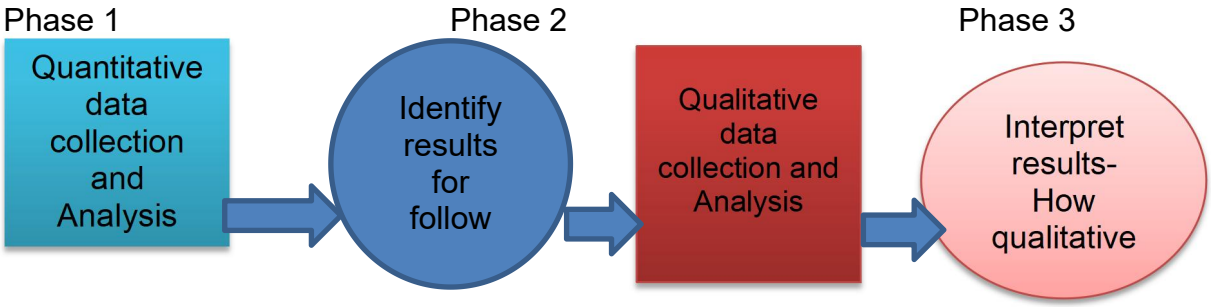


Figure 4.1 Explanatory sequential designs (two phase's designs

Source: Adapted from Creswell & Creswell, 2018: chap. 10, types of mixed methods designs.

4.3. RESEARCH METHODS

The research methods employed included survey method, semi-structured interview method, and document analysis method. The relevant research instruments were a survey questionnaire, a semi-structured interview guide and a document review checklist

4.3.1. Selection of participants/sampling

The populations of this study were the cluster centre of the government polytechnic college, college deans, department heads, instructors, student councils, students (participating in the manufacturing-related fields), and constituent MSEs, as well as MSE practitioners.

To begin with, the study focused on 35 government TVET colleges and six polytechnic colleges in Addis Ababa, Ethiopia. Five polytechnic colleges, General Winget Polytechnic College, Misrak Polytechnic College, Entoto Polytecnic College, Nifas Silk Polytecnic College, and Tegbare-Id Polytecnic College, were chosen for the study as they acted as resource cluster centres. They were selected purposefully so that the communities in these colleges were able to be the best informant representing other colleges under them because they were the centre spot for these colleges. So, they acted as the best informants for other colleges and served as a centre for experience sharing. In the second place, focusing on MSE manufacturing sub-sectors (leather goods and leather products, woodwork and furniture, metal fabrication, textiles and garments, as well as agro- and food processing), 182 sample MSE personnel were included from the population of 545 constituent MSEs manufacturing sub-sectors MSE managers and employees using the Raosoft sample size calculator.

Concerning the main research subject, the researcher aimed to gather information from deans, department heads, trainers and trainees' council representatives of the five selected polytechnic colleges. To that end, the researcher selected reliable informants and respondents using Cohen et al.'s (2018:206) table and the Raosoft sample size calculator, including an available sample for deans and department heads cases.

Using available sampling techniques to address TT issues in manufacturing subsectors, 35 leaders (15 deans and vice-deans, coordinators, and 20 department heads) were selected as survey research samples. The random sampling method was used to select 194 trainers and 262 trainees from the population of the research (671 trainers and 7593 trainees, respectively). Where the precise number could not be read from Cohen et al.'s table, Raosoft's sample size calculator was also utilised. Using Raosoft sample size calculator, 182 MSE individuals (MSE owners and employees) questionnaire respondents were selected from the 545 MSEs population who were working in the manufacturing subsectors.

From these, ten deans, 20 department and coordinators, five (5) trainees' council leaders, four top leaders from the AATVTTDB, as well as 20 MSE owners were accounted for as the sample for a semi-structured interview. Based on the result of the quantitative survey, a minimum of 20 MSE owners were selected using simple random sampling from all 182 MSEs owner to hold semi-structured interview for the qualitative research phase.

The research method involved three-phase data collection as follows:

Table 4.1. Source of data

Research Phases	Research Activity	Main goal	Sample Size
Phase 0	Document analysis	• To sift out themes of leadership and management practice /lived experience before, during and after TT-Process-Implementation in the TVET and while linking to MSE /research questions 1, 2 & 4/.	
Phase 1	Pilot survey	• To test and improve the questionnaires that would be administered for trainers, MSE personnel, and TVET leadership to survey their opinion on (research questions 1,2,3 and 5) To improve the validity and reliability of the survey	3 Polytechnic colleges and one MSE
Phase 2	Survey	• To create a more generalizable understanding of the practice of PolyCO leadership team (PLT) on the demarcated questions no 1,2,3,4 and 5 and that would deepen through the interview) • To determine the perception status of stakeholders (leadership, trainers and MSE personnel) are either unified or varied	35 PLT, 194 trainers 262 trainees from 5 PolyCO and 182 members from MSE personnel
Phase 3	Interviews	• To create rich insight into the	10 Deans

Research Phases	Research Activity	Main goal	Sample Size
		types and range of problems TVET leadership encountered to implement TT. • To create a better understanding of leadership practice as regards TT process activities are concerned, and how the practice is improved and whether the practice of leadership and management are peculiar as far as TT activities are concerned.	20 Department head 5 trainee council leaders 4 top leaders from Addis Ababa TVT Technology Development Bureau as well as 20 MSE owners

Data collection and processing is one of the main flows of research that starts with actualising and defining problems, connecting the problem with existing theories, producing a conceptual framework, creating the research design, interpreting it, and finally reporting it (Jonker & Pennink, 2010:71). All aspects of the research received due consideration from data collection to the selection of appropriate statistical tools for analysis.

In the present research, the data collection and processing were structured (Jonker & Pennink, 2010:73) and were collected from three sources: document reviews, survey questionnaires and semi-structured interviews. Following document review, first-hand information was collected from the sampled human participants through questionnaires and semi-structured interviews. The quantitative data came first, followed by the structured interview (Cohen et al., 2018; Creswell & Creswell, 2018). In contrast to the merged methods, the data collection was carried out in a linked manner in the explanatory of sequential mixed methods (Creswell & Creswell, 2018).

In MMR, it is very common to use both probability and non-probability sampling types, taking the various types and scope of samples in different sizes into account. As a sample, various cases of social situations, location, etc. could be

incorporated into a single research project to see things from different perspectives (Cohen et al., 2018:224). Purposive sampling was used to include the five polytechnic colleges and then random sample techniques was used with the confidence level of 90% with an interval of 5% (Cohen et al., 2018:206) for the trainees' population. Available sample technique was used to take the deans and department head as leadership team members. Raosoft sample calculator was used to include samples for the present research.

Table 4.2. Questionnaire respondents' population and sample

Available TVET college in Addis Ababa City	**Purposively selected 5 Polytechnic College (PolyCO)**	**Questionnaire respondents**							
		Polytechnic leadership team (PLT)		**Trainers**		**Trainees**		Technology recipients (MSE)	
		Population	**Sample**	**Population**	**Sample**	**Population**	Sample	Population	Sample
35 TVET College and 6 PolyCO	General Winget Polytechnic	7	7	146	42	1720	50	70	38
	Misrak Polytechnic	7	7	128	37	1336	46	84	46
	Entoto Polytechnic	7	7	135	39	1725	60	59	32
	Nefas-Silk Polytechnic	7	7	118	34	1235	43	79	43
	Adiss Ababa Tegbare-Id Polytechnic	7	7	144	42	1635	54	42	23
	Total	**35**	**35**	**671**	**194**	**7591**	262	545	182

The entire population of trainers at the five polytechnic colleges was 671, whereas the total population of micro and small enterprises around these polytechnics was 545 individuals considering both the manager and the employees of the MSE. In addition to Cohen et al. (2018:206) particularly, as specified earlier, when the exact number is not read from the Cohen table, the Roasoft sample calculator was used, too.

For a structured interview, respondents: 10 deans, 20 department heads, five (5) trainees' council leaders, four top leaders from AATVTTDB , as well as 20 MSE

leaders, were accounted for as the sample for semi-structured interview. To proceed to the presentation, the collected data concerning personal and general information was presented and analysed in 5.1A up to 5.1D under Table 5.1 which is presented in Chapter 5.

4.3.2. Instrumentation and data collection methods

This study used questionnaires, interviews and document reviews as data collection tools. These were aligned to problem statements, basic questions and study design, outlined in the previous section. For clarity, a briefing is provided on each instrument in the following section.

4.3.2.1. Questionnaire

The questionnaires were used as data collection instruments to collect data to enable the researcher to collect data at a convenient time and cost effectively. Questionnaires offer researchers the opportunity to collect standardised and open responses to a wide range of topics from a large population sample, where they can be cheap, reliable, valid, fast and simple (Cohen et al., 2018:471).

For the present study, the researcher used both closed-end and open-end questionnaires to gather data from various stakeholders, including deans, department heads, trainers, trainees, and MSE personnel (owners and employees). The same questions were included in the four respondents where comparisons were needed on some constructs like attitude towards the status of TT leadership practice and the hindering factors facing TT implementation from the TVET leadership/management practice perspective.

4.3.2.2. Interviews

According to Cohen et al. (2018:506), the researcher in this study used interviews to gather data that the questionnaires could not address, allowing for a more in-depth investigation of the issues at hand. The interview was also beneficial to see

how and why individuals formulate their thoughts to begin thinking on them. It was used to investigate how and why practitioners connect ideas, values, occurrences, viewpoints, behaviour, etc. Consequently, the researcher used it to explain in detail the initial quantitative results to deepen some of the findings of the survey, as outlined in the overall aim of the qualitative data described in this design. Moreover, it was important to combine the quantitative results with the collection of qualitative data (Creswell & Creswell, 2018). So, semi-structured interview questions were prepared for deans of polytechnic colleges, department heads, trainees' council representatives, MSE owners, and top leaders of TVET sectors that include TT process professionals at the regional level.

An interview is a flexible method for data collection, enabling the use of multisensory channels: verbal, non-verbal, seen, spoken, heard and, in fact, extends further enabling online interviews and written questions (Cohen et al., 2018:506). The main advantage of this method was that it allowed both the interviewer and the interviewee more flexibility. Interview schedules were conducted with the interviewees as planned according to their schedule. For documentation purposes and further analysis and interpretation for the study at hand, the researcher used a mobile phone for recording purposes together with the desktop and external hard disc for storage purposes.

4.3.2.3. Document reviews

Different Ethiopian government strategic political documents on TVET sectors in general and TT in particular, as well as leadership development frameworks, proclamations and directives, have been used as data sources. In addition, the MSE Development Agency documents both the federal and municipal governments of Addis Ababa. The Education and Training Policy (ETP), the ESDP, the GTP I and II, various annual statistical abstracts and literature, as well as annual and semi-annual reports on TT performance were used.

4.4. DATA ANALYSIS AND INTERPRETATION

Processes including statistical procedures, variable formulation, factor analysis, and inferential statistics for reporting results are all part of data analysis (Cohen et al., 2018:339). Interpretation starts with reporting the result quantitatively in the first phase and was followed by qualitative result reporting in the second phase in mixed-method design (Creswell & Creswell, 2018). In addition, this design used a third form of interpretation, integrating qualitative findings to explain quantitative results, leading to a series of conclusions and recommendations. The analysis and interpretation phase took the statistical tests into account (Creswell & Creswell, 2018:) for quantitative phase. Atlas Ti software was also used for analysis in qualitative in the second phase. The proposed surveys and interviews data analysis results served as the foundation for the analysis and interpretation of the study.

The initial analysis sections, both in the quantitative and qualitative phases, involved presenting respondents' and informants' biographical data quantitatively, using percentages and frequency distributions. Next to the analysis of the biographical data, the practice level of the PolyCO leadership team was included, elaborating on being as the central focus of the study on the TT of PolyCO-MSE manufacturing sub-sectors, where both descriptive and inferential statistics from SPSS version 26 were used in quantitative and the ATLAS.ti software were also used in qualitative phase.

In quantitative phase of this study, descriptive and inferential statistics were used for analysis and interpretation. The rate of practical allocation and the degree of agreement on statements expressing respondents' thoughts and views were measured using frequency percentages, mean, grand mean and standard deviations. The t-test, analysis of variance (ANOVA), and coefficient correlation were used in SPSS version 26 software. T-tests and ANOVA were also used to test the significance of the deviation among the perception of the respondents toward leadership and management practices in the TT process. Hochberg's GT2

Multiple comparisons were applied to check the attitudinal status and the source of variation for the perception of significant differences among respondents in relation to the accomplishment of the TT process.

The Pearson Moment of Correlation coefficient was used to show the possible relationship between the independent variable, (critical components of leadership and management practices derived from function planning, effective communication, setting environment, and boundary-spanning) and dependent variables in terms of TCB, TA and AC internally in the college and transferring it to the MSE manufacturing sub-sectors. The process of TT internally in the college and transferring it to the MSE manufacturing sub-sector was deemed a result as it was perceived by the respondents in the polytechnic college and MSE respondents. Cronbach's alpha was also used to measure the reliability of the survey questionnaire items following the pilot tests. Furthermore, composite reliability was used to see the status of the internal consistency of each construct. In their explanation of the results, Sürücü and Maslakci (2020:166) have suggested that a Cronbach alpha in the range of 0.65 to 0.80 is acceptable. In other words, it stated that the standard alpha range of .65-.80 was typically considered sufficient for a scale used in human dimensions research for the current research.

The second phase focuses on the analysis of the qualitative results obtained from individual interviews. The qualitative data obtained through semi-structured interviews was coded, carefully transcribed and analysed using ATLAS Ti software. Finally, the third section of this chapter was about the integration of both quantitative and qualitative data with its detailed discussions to report it. The researcher used this for finding reports and recommendations.

4.5. TRUSTWORTHINESS

4.5.1. Trustworthiness of quantitative data

Trustworthiness involves the issue of confirming the certainty of the collected data for analysis and interpretation. The validity and reliability of the research

depend on the design type. Validity in qualitative research does not use the same terminology as in quantitative research. Therefore, it was necessary to consider the type of research methods used and that validation was not only a one-time task; rather, it needs to continue throughout the study (Creswell & Creswell 2018; Cohen et al. 2018:245). Validity and reliability, the pilot test process and triangulation issues are discussed in the section below.

4.5.1.1. Validity

In the first place, validity involves the issue of being defensible by acceptable principles and theories. In this respect, data interpretations are justified by the theories and evidence used (Cohen et al. 2018; 245). The researcher was required to create the scores obtained from the validity analysis in the quantitative measures and continued discussing it via the result obtained from the qualitative in case of the mixed-method research (Creswell & Creswell 2018). Various forms of validity, such as content validity, construct validity criteria and reference validity, were considered to check the validity using suitable criteria and briefly described hereunder.

4.5.1.1.1. Content validity

Content validity is an important aspect of validity that could be tested in relation to its design, which was used to check whether it covers representative coverage of the programme type, for instance, and the objectives of the test items. Considering the title statement of the problems, objectives and the set research question, the content validity of the instrument were checked by making open discussion repeatedly with expertise in the sector. It was made to comprise professional judgment concerning relevance and the types of topics and section included as domain. In short, content validity involves an issue of the coverage and representativeness of the domains under operation (Cohen et al., 2018:282). With regards to content validity, the instrument was required to cover all themes and constructs accurately and comprehensively.

4.5.1.1.2. Construct validity

Construct validity is a crucial type of validity that focuses on the meaning, definition and operationalisation of factors, rather than methodological issues. Therefore, to address construct validity, the researcher followed Cohen et al.'s (2018:256) two stages:

Stage One: The researcher followed it accurately define a construct adequately, considering key elements, take expert opinions into account, including other further constructs, ensuring its validity.

Stage Two: following checking the criteria depicted in stage one using the suggestion as checklist, the researcher ensured fair operationalisation of the construct, using clear discrimination to cover only the construct and exclude other possible constructs in the data collection instruments.

In short, the researcher checked the validity of this important aspects focusing on checking the significance, definition and the implementation of factors using the two stages described above to ensure that the data collection instruments covered all possible expected constructs.

4.5.1.1.3. Criterion- related validity

Criterion-related validity involves where the research involves determining the presence or absence of suitable criteria for a construct, ensuring the suitability of the proxy or indicator used. In this research, the unique nature of MMR addressed both qualitative and quantitative requirements, focusing on legitimisation for validity and reliability. To overcome validity issues in mixed research representation, legitimating and integration were prioritised (Cohen et al. 2018:250).

4.5.1. 2. Reliability

Reliability is the extent to which measurement is consistent or reproducible (Cohen et al., 2018:268). To assess the internal consistency of the survey tool, Cronbach's

alpha coefficient was used, which ranges from 0 (no internal consistency) to 1 (perfect internal consistency). An alpha value of 0.70 or higher is generally acceptable (Nunnally, 1978). Furthermore, to check for equivalency, the split-half method was also used, dividing the instrument into two comparable halves and checking the correlation between the two.

As shown in Table 4.3, the pilot test results indicate that all constructs are above the acceptable limit of 0.70 with the values ranging from 0.73 to 0.95. This indicates a good internal consistency among all measured variables.

4.5.2. Pilot test

To improve the reliability and validity of the data collection instrument, a pilot test was carried out in three TVET colleges that differ from PolyCO samples. The pilot test was used to enhance the validity and reliability of the ready-to-do research instruments. In detail, the pilot test was used to establish content validity, internal consistency and improve questions, formats and instructions. It also assessed the duration of the study and the possible concerns of participants about fatigue (Creswell & Creswell, 2018).

Cohen et al. (2018) emphasized the need for piloting questionnaires to refine the construct set, wording, length, and other related issues. . The pilot test was held to assess whether the prepared survey questionnaires were suitable. To determine this, a sample of 34 draft questionnaires was delivered to five PLT members, nine trainers, five MSE owners, and 15 trainees, and the result was fed into SPSS version 26 and run.

The Cronbach alpha coefficients were calculated to assess the internal consistency of each construct 0 (denoting the absence of internal reliability) to 1 (perfectly correlated) .According to Cohen et al., 2018; Creswell & Creswell, 2018; and Jonker & Pennink, 2010 Cronbach alpha that ranges from 0.65 to 0.9 is optimal and acceptable and the current research pilot test result has been presented in Table 4.3.

Table 4.3: The distribution of Cronbach's alpha of each factor covered in questionnaires

	Factor	No of items	Cronbach alpha	
1	Planning	7	0.89	
2	Leadership effective communication	3	0.76	
3	Setting environment for innovation	3	0.93	
4	Boundary-spanning	2	0.93	
5	Individualised influence	3	0.76	
6	Individualised Consideration	3	0.95	
7	Inspirational motivation	3	0.75	
8	Intellectual stimulation	3	0.93	
9	Contingent reward	3	0.78	
10	Management by exception	3	0.93	
11	Innovation enhancement	4	0.83	
12	Technological accumulation	3	0.84	
13	Effectiveness/efficiency of communication	5	0.85	
14	Cooperation/participation strengthening	4	0.79	
15	Success factors	10	0.83	
16	Hindering factors	10	0.83	
17	Technological capability build	3	0.89	
18	Technology accumulated	3	0.9	
19	Absorptive capacity improved	4	0.76	
20	Current status of TT on COVID-19 pandemic	12	0.92	
21	Future TT way-out for COVID-19 pandemic	12	0.73	

An instrument's strength is its internal consistency, which can be quantified using Cronbach's alpha I,(Creswell & Creswell, 2018). Every construct or variable has a reliability value of 0.76 for the "Inspirational Motivation" construct and a maximum value of 0.95 for the "Individualised Consideration

4.5.3. Trustworthiness of Qualitative Data

Grounded in Lincoln and Guba's (1985) framework, this study reconceptualises validity and reliability as trustworthiness, addressing four core criteria: credibility, transferability, dependability, and confirmability.

4.5.3.1. Credibility (truth-value)

Credibility was established through three strategies. Protracted engagement (2021–2023) enabled deep contextual orientation and trust-building across five

polytechnic colleges, MSE owners, and a government bureau. Member checking invited corrections from deans, department heads, and MSE owners to ensure interpretations accurately reflected participants' lived experiences. Triangulation of data sources across PLT members, trainers, trainees, MSE owners, and bureau leaders provided corroborating evidence while divergent views were explored as contextual complexity rather than contradiction.

4.5.3.2 Transferability

Transferability refers to the degree to which the findings can be transferred to other contexts. Transferability in qualitative research is enabled by thick description, not statistical generalisability (Lincoln & Guba, 1985). Detailed contextual information was provided by the researcher, which included the following: geographic locations of the five polytechnic colleges within the city of Addis Ababa; organisational structures; demographic information of the participants; specific manufacturing sub-sectors (leather goods, woodwork and furniture, metal fabrication, textiles and garments, and agro-processing); and the socio-political environment of Ethiopian TVET during the COVID-19 pandemic. This detailed contextualisation enables readers to assess how similar the study context is to their own contexts, particularly other sub-Saharan African TVET systems.

4.5.3.3. Dependability

Dependability was ensured via an audit trail documenting raw transcripts, coding manuals, thematic development, field notes, and reflexive journals.. An external reviewer confirmed logical traceability of data to conclusions. Replication stepwise using ATLAS.ti 9 (open, axial and thematic coding) provided a systematic and replicable analytical procedure.

4.5.3.4. Confirmability

Conformability was achieved through reflexivity and triangulation. Reflexivity was used to address confirmability (neutrality). The researcher kept a reflexive journal deliberately bracketing preconceptions from past professional experience in Ethiopian TVET. Triangulation of methods cross: Checking the interview findings with quantitative survey data and documentary evidence (policy documents,

strategic plans, performance reports) was made to confirm that themes were a reflection of genuine data patterns. Together these strategies ensure that the qualitative findings are believable, transferable, dependable and confirmable; grounded in participant voices and transparent analytic processes.

4.6. ETHICAL CONSIDERATIONS

In educational research, ethics encompasses the considerations of good and bad conduct, right and wrong, and practice that incorporate a wide range of issues from recent literature (Cohen et al., 2018:111). It also incorporates the issue of fair and unfair issues and then leads to differentiating those unacceptable ethical issues to control and avoid. Since research, especially educational research, involves human elements, the researcher must take into consideration both ethical and legal considerations (McMillan & Schumacher, 2014:407). From the beginning to the end of this research, it was essential to adopt ethical practices and anticipate ethical issues before the study that might occur (Cresswell & Creswell, 2018).

Researchers must safeguard their research participants, foster trust with them, uphold the integrity of their work and avoid any wrongdoing that could reflect poorly on their institutions or organisations. In undertaking research, ethics demands the researcher consider and answer some basic questions. Jonker and Pennink (2010:130) contend that the research should be clear about access to data, the participants and the involvement of people. Confidentiality issues and the necessities of protecting data, participating people and the beneficiaries from harm and disappointment are important considerations that the researcher should act cautiously. Ethical considerations required the researcher to answer such a basic inquiry and think of those affairs even prior to the beginning of the study.

Before engaging into the research, ethical issues demand an appeal for permission. Taking these critical steps into consideration, the researcher carried this out it into two ways. The first task involved the issue of requesting the ethical clearance from the Education College of Research Ethics Review Committee (CEDU REC) of Unisa that authorised the researcher to proceed to the study. The other essential

task was requesting support and authorisation letter from the researcher's host institute to the research site and obtaining permission from the AATVTTD and the respective PolyCO.

In the first place, alongside situating other necessary tasks, asking permission for ethical clearance needed strict follow up and caution for the right ethical practice, which includes this among other various steps and procedures (Jonker & Pennink, 2010:130). Following the necessary steps and procedure, the researcher requested the CEDU REC of Unisa. The ethical committee gave comments and referred for amendments. Then, following the procedure with the supervisor, Prof. VJ Pitsoe sent the amended ethical clearance to the REC and then awarded the certificates that authorised them to carry out the research until 2027.

Secondly, mainly after obtaining the ethical approval of UNISA the researcher requested that the then Ethiopian Technical University (FDRE TVTI), now the Federal Democratic Republic of Ethiopia, send a letter of support to the AATVTTDB, now the Addis Ababa Labour and Skills Bureau (AALSB), and the respective five PolyCOs, General Winget Polytechnic College, Misrak Polytechnic College, Entoto Polytechnic college, Nifas Silk Polytechnic College and Addis Ababa Tegibare-Id Polytechnic College. After the support letter was submitted to the AATVTTDB, the researcher held a discussion with the vice head and other higher officials on the intent of the research and how to further collect the research. They fixed a time for the interview and informed the PolyCO officials of my coming and to directly collect the necessary information by taking the support letter I have from my host institute.

The researcher submitted the letter to the record office of the respective PolyCO to be referred to the respective officials, the PolyCO dean or vice dean. The researcher discussed with deans, vice deans, who have the authority to recognise and make the process easier for the data collection process, department heads and trainee representatives at each PolyCO. Communicating the 'full picture of confidentiality and anonymity with the available guarantee issues may increase the participation rate in the research (Cohen et al., 2018:126). Hence based on such,

the subject of the discussion was made to focus on a brief detail of the research and its process. The deans and vice-deans at each PolyCO secured their permission and cooperation to participate in the study under the facilitation condition to access the trainers, trainees and MSE owners within their span of support to get the consent of the individual research informant. Moreover, they assigned a moderator and promised any support wherever the researcher needed the support.

The researcher, together with the assigned facilitator, called the trainer and trainee population to the hall turn-by-turn, firstly the trainers and then the third and fourth year trainees in a separate modality. The researcher needs to make the issue of data authority clear once it was given. Certain questions, including "who controls the data and for whom it was secured?" were the issues that the researcher disclosed by then. The researcher informed the research participants of the data management after the data would have been once collected (Jonker & Pennink, 2010:138). In the short meeting, the title of the research, the key informant through questioners and interviews, the aim of the research, and the data collection process were briefed, including the researcher's intentions for their participation in the research as they were key informants.

Following the conversation, the participants agreed to take part in the study. The consent form was given out by the researcher for two reasons: first, document their involvement; and second, to provide them the option to leave the study at any time if they were not interested. The permission form and the questionnaire's cover letter made it clear that participants may withdraw at any point throughout the study period, which the researcher took note of.

In the briefing session, some of the trainer participants expressed that they were familiar with research ethical issues regarding the participation scope and the rights of the informant. They noted they could withdraw from participation at any time if they are not interested and want it; nevertheless, if they were volunteer in the early stages of the research. Then, on each briefing platform, the trainers and trainees expressed that they were volunteer to participate in the research. The

researcher used purposive sampling to select information-rich participants (college deans, departmental heads,trainees' representatives and MSE representatives). Then, a consent letter entreating their participation was distributed, and they gave their confirmation of participation by signing the consent letter (see Appendix Q: for returned consent form for individual interview respondents.

4.6.1. Anonymity and confidentiality issue

Among the ethical issues that received attention were an issues of anonymity and confidentiality. The researcher needs to defend the participants and clearly disclose the level of risk that the participants could receive (Creswell & Creswell, 2018).and, proper acknowledgement for any source used, among others. Confidentiality issues and proper acknowledgment of any source used were explained, among others. As Cohen et al. (2018:115) underline, from an educational research point of view, the practice of betraying confidentiality is distortion. The researcher needs to consider various experiences, including tampering with data to meet personal objectives and presenting selective and unrepresentative data. Yet, the issues also concern the making of recommendations out of the data result, not using data for non-negotiated purposes, and holding research when the personal objects affect navigation and content were among the distortion of ethical issues.

Finally, codes were generated for interview participants to secure the issue of anonymity and confidentiality, of which was communicate to the participants through the letter and the discussion hold. Although a 100% guarantee was impossible , the researcher clarified the procedure to keep the anonymity and confide ntiality of the data. To ensure the confidentiality of the participants' PolyCO, MSE and Bureau, as well as the confidentiality of their names, the researcher coded the interviewees and used these in the data presentation, analysis and interpretation. As a result, individual information could not be traced.

The data used in the present research, collected from informants both in hard copy and electronic devices, would be kept in the researcher's secret drawer for at least five years, according to the code of ethics, so that any issue of academic concern or future research concern would be addressed. After five years, both the hard copy and the electronic data would be permanently deleted. As it was explained in the Unisa Code of Ethics document, the researcher should not intentionally disappoint the research participants. The document strongly prohibits such practices. In alignment with it and with the intent of the accepted ethical clearance, the researcher took precautions to avoid any form of source of disappointments and risks that could happen to the informant by avoiding inconsistent venue by arranging the time of data collection during the interview and by solving the occurrences of certain minor disappointment at few interview respondents due to overload.

4.6.2. Data fabrication and falsification

Data fabrication and falsification are very important components of ethical issues. This issue involves any alteration that extends from data collection to result reporting and recommendation that the researcher alters the material, which involves the creation of data, manipulating the material and misrepresenting the research (Cohen et al. 2018:117). The researcher took great care to avoid the unethical practices that could be associated with changing, reporting and making recommendations based on the available data and information that the research data informants have provided, considering them to be true and reliable. To maintain transparency and accountability, Atlas Ti is used to analyse the qualitative data, which could increase the accountability and transparency of the data analysis from the stage of document uploading to the interpretation of the data.

4.6.3. Reporting, sharing and storing of data

After the completion of the research process, the next question concerns reporting, sharing and storing of research results. The data for further use is an essential

element of the procedure from an ethical point of view. In reporting and sharing research results, researcher takes great care not to do what is unacceptable to professional research communities. As the researcher primarily described the stance of the research in the proposal, he took that description as binding guidelines to act together with Unisa's interest from a scientific perspective. The researcher would use straightforward and appropriate language (Creswell & Creswell, 2018) to share the research. Creswell and Creswell (2018) suggested strategies for sharing research results, such as sending copies to study participants and stakeholders. Hence, the researcher uploaded the research result to the website and telegram platforms following Unisa’s procedure. The digital medium using websites and telegram platforms was believed to be comfortable for the research participants and even the end users of the TVET sectors and the MSE to access it.

Once the research was underway, it went beyond the researcher's influence. Since research, especially educational research, involved human elements, the researcher must take into consideration both ethical and legal considerations (McMillan & Schumacher, 2014:407). From the very beginning to the very finalisation of the research, it was essential to engage in ethical practices and anticipate the ethical issues before the study that likely arise (Cresswell & Creswell, 2018). The researcher, in the first hand, put the issue of building a trust with the research subject as a binding principle that cannot be overlooked to safeguard the interest of his/her research subjects. Without developing a sense of trust with them, they could stop their participation in the research, which would greatly hurt the researcher. The researcher is required to focus on safeguarding research subjects by fostering trust, ensuring research integrity and preventing misconduct that could harm the personal integrity and their organisation concern, ensuring obtaining full consent from these questionnaire respondents and interviewees to align with their needs and interests.

Among the ethical issues that received attention was an issue of ethical clearance in the form of letters from the research site areas, from the TVET sectors, and from

the institution hosting the researcher; an anonymity and confidentiality issue; and proper acknowledgement for any source used, among others. Confidentiality issues and proper acknowledgment for any source used were some, among others.

4.7. SUMMARY OF THE CHAPTER

The chapter began by providing a briefing on the fact that research methodology involves the four pillars of a pyramid composed of paradigms, methodologies, methods, and study instruments, and discussed in detail the issues of research design, research methods, data analysis and interpretation, trustworthiness, and ethical considerations.

To explain the focus of the chapter a little more, the first section, the introduction, mentioned some important and crucial concerns of research methodology that included the pillars of research that were considered when describing research design. The chapter provided adequate space to describe the design of the research because it was a kind of research that gave a clear direction to the procedures the researcher used in the selected research approach, mixed research approaches in the current case. The chapter further described the research paradigms in detail under the research design. The research paradigm used as the foundation, pragmatism, was used for the present research among the dominant paradigms, namely, post-positivism, constructivism, transformation and pragmatism. The principal authors were cited as adopting pragmatism as the research paradigm for the current study ,as the TT process and its transfer to the MSE constituent are reflected in the form of the result of action, problem-centred and practice-centred, which involves complex issues. Another important issue described in the chapter was the research methodology of mixed methods (MMR). The chapter underlined the need to explain quantitative data through qualitative data in this research since problems of educational research such as the present, which investigated the practice of leading TT from PolyCO to MSE are complex. Research employs multifaceted methods, combining the strengths of quantitative

methods with qualitative ones to overcome the weaknesses of mono-research approach and vice versa.

The chapter explained how the sequential explanatory design was used among other strategies, namely, sequential exploratory and the concurrent convergent design. The chapter illuminates how the sequential explanatory design was used as a suitable design or strategy for this study. It requires quantitative research, followed by qualitative data collection to describe the selected constructs in detail and depth in semi-structured interviews.

The chapter also described in detail the methods of research used in questionnaires, interviews and document reviews, including participant selection, instrumentation and data collection techniques. In the case of samples, the description mentions five PolyCOs (GeneralWinget, Nefas Silk, Misrak, Entoto, and Addis AbabaTegbare-Id) and MSEs. In the case of human subjects, the dean, vice-dean, head of departments, trainers, trainees and their representative on the council, top-level city government leadership entity, and MSE personnel were also used as informants. Deans, department heads, trainee's council representatives, MSE owners and top leadership bodies have been used as structured interview informants.

Likewise, at the end, the data analysis and interpretation of the data was described in detail in the same chapter. Finally, trustworthiness issues, focusing on validity and reliability, and pilot and the concern of ethical consideration were included, too, in the focus of the chapter to explain intensively.

CHAPTER FIVE

5. DATA ANALYSIS AND INTERPRETATION

5.1. INTRODUCTION

Chapter 4 provided a detailed description of the research design, research methods, data analysis and interpretations. In that chapter, the researcher provided a rationale for selecting the pluralistic approach, pragmatism, upon which the mixed research approach is based. In the same research framework, the selected sequential explanatory mixed method also received a brief discussion under the same design of research. The reasons for choosing the sequential explanatory mixed methodology design as the most suitable design to answer the question posed in the research were described. In the same chapter, the method of data collection and the analysis process that was employed to confirm the trustworthiness and reliability of the findings as per the ethical issues considered were discussed in detail. It is suitable for answering the complex issue of leadership experience within educational contexts that focus on TT through various theoretical orientations.

The data of the research were collected using the survey method (instrument: questionnaire), the interview method (instrument: structured interview schedule), and the document analysis The first phase consists of gathering and analysing quantitative data. The second phase consists of collecting and analysing qualitative data. Finally the results were combined .

Chapter 5 is presented in three main sections. The first section focuses, based on the design proposed, on presenting the analysis of biographical data of the respondents, together with the main parts of the leadership team practice, on the TT activities from PolyCO to the MSE from a qualitative data perspective. The frequency percentage, mean, grand mean, and standard deviation are used as

measures. Following the description of biographical data, the analysis of the polytechnic leadership team's TT practices includes six sub-sections. The leadership teams' performance level, the polytechnic leadership team's leading and managing style, taking both transformational and transactional leadership perspectives, stakeholder perceptions of the leadership team's TT practices, the success factors as well as challenges facing TT undertakings from the leadership perspectives, and the leadership team's current TT practices together with the ideal importance of the given TT activities in the context of the COVID-19 pandemic is discussed. Both the descriptive statistics and inferential statistics (T-test, ANOVA and Pearson correlation) were obtained from SPSS version 26.

In section 2, the analysis and interpretation of the qualitative data is presented using ATLAS.ti 9. Then came the third section, which focuses on the integration of the data obtained from quantitative and qualitative data to form the report on the findings for the recommendations that are made in Chapter 6.

5.2. RESEARCH PROCESS

The aim of this sequential explanatory mixed method study was to explore the lived practices of polytechnic college leadership teams on TT to MSE manufacturing sub-sectors in Addis Ababa, Ethiopia. At this stage in the research, TT is generally defined as transferring both the materials (existing in the form of technology and scientific results) and its expertise to other entities for sustainable improvement and development. It involves transplantation, import, promotion, and popularisation, and so on (Liu et al., 2010:3); actually, an integration process involving polytechnic colleges (providers).

The data were collected using the survey method. The survey questionnaires were administered to various respondents (35 PLT (deans, vice deans, and department heads together), 194 PolyCO trainers, 262 trainees, and 182 MSE personnel). The return rates for survey questionnaires were 35 (100%) for polytechnic leadership,

184 (94.84%) for trainers, 245 (93.16%) for trainees, and 172 (94.5%) for MSE personnel. The qualitative data collection process involved semi-structured interview methods by using interview instruments schedule for ten PLT, 20 department heads, five trainee council members, 20 MSE leaders, and four top leadership members at the city government level of Addis Ababa. Interviews were held with eight deans, 18 department heads, 18 MSE owners, and five trainee representatives for analysis.

5.3. DATA PRESENTATION AND ANALYSIS

Data presentation and analysis were conducted according to what is described in sections 4.3.1 and 4.3.2 of the methodology section. The first phase of analysis begins with a quantitative presentation of the biographical data of respondents using percentages and frequency distributions. The level of the PolyCO leadership team's (PLT) practices on TT from the polytechnic college to the MSEs' manufacturing sub-sectors was then assessed using both descriptive and inferential statistics from SPSS version 26. The PolyCO leadership team's level of practices in terms of "planning," "effective communication," "setting the environment," and "spanning boundaries" were discussed. Based on theories and empirical works, this section discussed the core TT process activities on which the PLT has been focusing. The study utilised independent t-test and one-way ANOVA to compare perceptions among respondents from two and three groups, aiming to determine the degree of difference or association between perceptions.

The second phase focuses on the context in which the qualitative results of individual interviews are analysed. The results of the interview are obtained from PolyCO leadership teams, trainers, trainees and MSE personnel. The results were correctly transcribed into texts and then developed themes and categories using ATLAS.ti 9.

The third section of this chapter deals with the integration of quantitative and qualitative data and includes detailed discussions. Finally, the chapter culminates in the development of a model that contributes to the prevailing body of knowledge to support the leadership entity, including the supervisor and policy designer, in solving some critical problems arising in the area of leading and managing the TT from the PolyCO to the MSE-manufacturing subsectors.

5.4. PHASE I: QUANTITATIVE DATA PRESENTATION AND ANALYSIS

5.4.1. Biographical Data

In this phase, biographical data were collected from respondents via questionnaire during the data gathering phase. For this quantitative data collection, 35 PLT, 184 trainers, 245 trainees from 5 PolyCOs, and 172 personnel from MSE manufacturing sub-sectors had been sampled. Following the data collection, a cross-tabulation of the characteristics of respondents, the PolyCO leadership team, PolyCO trainers, and MSE dependable personnel are presented. The characteristics of the informants, which involve age, sex, qualification, academic rank, the total years of service rendered in the polytechnic and the specific experience in the TT project in particular, are presented.

The percentage and frequency distribution of respondents by polytechnic, gender and age were drawn in tables. Another display table that incorporates the frequency and percentage distribution of respondents by their qualification, academic rank and types of participation at the Polytechnic College level was described, and all other necessary data were presented in the following section. The biographical data were presented in four consecutive tables, as depicted in the next subsections. The demographic data of the leadership team and trainers are presented in two tables simply for manageability, not for any scientific reason. Hence, the Table was split into 5.1A and 5.1B. The general demographic and

personal details for trainees and MSE personnel were also presented in Table 5.1C and 5.1D, respectively.

Table 5.1A: Percentage (%) and Frequency (F) distribution of participants by sex, age and education level

NO	variables	Category	Respondents					
			leadership		Trainers		T	
			F	%	F	%	F	%
1	**Sex**	Male	28	80	147	79.8	175	79.9
		Female	7	20	37	20.2	44	20.1
		T	**35**	**100**	**184**	**100**	219	**100**
2	**Age**	20 years and below	0	0	0	0	0	0
		21-30 years	7	20	45	24.4	52	23.7
		31-45 years	19	54.3	93	50.6	112	51.1
		46-55 years	9	25.7	46	25	55	25.2
		56 years and above	0	0	0	0	0	0
		T	**35**	**100**	**184**	**100**	219	**100**
3	**Qualification**	Certificate	0	0	0	0	0	0
		Diploma	0	0	6	3.26	6	2.52
		Bachelor's degree	24	68.57	139	75.54	163	74.21
		Master's Degree	10	28.57	30	16.3	40	18.97
		Doctorate	0	0	0	0	0	0
		Other	1	2.86	9	4.89	8	4.44
		T	**35**	**100**	**184**	**99.99**	**219**	**100**

Source: Field Survey result

To begin with, Table 5.1A depicts the sex, age and academic qualifications of the polytechnic leadership team and the polytechnic college trainers. In terms of sex, 28 (80%) of the leadership team and 147(79.8%) of the trainers are male, which indicates the leadership is male dominated. According to Kumar and Quisumbing (2014), various studies confirmed that reducing gender disparity is critical for the achievement of certain goal sets. Hence, TT is not an exception to this. The gender information indicates the presence of a gender gap both in the leadership team layer and the trainer, which exacerbates the problem of implementation. Yet the majority of the leadership team and trainer respondents, 19 (54.3%) and 93

(50.6%), respectively, fell in the range of 31–45 years, while the next majority, 9 (25.7%) of the leadership team and 46 (25% of trainers), fell in the range of 46–55 years in age. This indicates that the leadership team and trainers are more experienced in these sectors. In addition, the age category is also an indicator that they are at their energetic best to execute any task that requires hardship to reach the goal set. The education qualification status indicated that most of the leadership team members are 24 (68.57%) and 139 (75.54%) first-degree holders, while the master's degree holders' leadership team and trainers are 10 (28.57%) and 30 (16.3%), respectively. This indicates the presence of some gaps in bringing the leadership and the trainers to the expected qualification level. This can have its own negative impact on leadership practice and training efforts in polytechnics, as well as on the organisation of technological transfer activities.

In the technology and innovation area, technical skills, qualifications, and academic background are essential to advancing to a better position. Obtaining new leadership soft skills like personal trait development, attitudinal change and the ability to display the proper behaviour to discharge responsibility with people you lead or work with is critically important. Hence, advancing the qualification level is one platform that exposes one to such a good opportunity.

Table 5.1B: Percentage (%) and Frequency (F) distribution of participant by current job/position, year of service in TVET and particular experience in the context of TT

NO	variables	Category	Respondents					
			leadership team(N=35)		Trainers (N=184)		Total (N=219)	
			F	%	F	%	F	%
4	**Position /Job**	Dean	5	14.3	0	0	5	2.28
		Vice dean	13	37.1	0	0	13	5.93
		Head of Department	15	42.9	0	0	15	6.84
		Trainer	0	0	181	98.4	181	82.64
		Technical Assistance	0	0	3	1.6	3	1.36
		Others	2	5.71	0	0	2	0.91
		T	**35**	**100**	**184**	**100**	**219**	**100**
5	**TVET experience**	2-5 years	3	8.58	28	15.2	31	14.15
		6-10 years	9	25.71	94	51	103	47.03
		11-15 years	21	60	53	29	74	33.78
		16 years and above	2	5.71	9	4.89	11	5.02
		T	**35**	**100**	**184**	**100**	**219**	**100**
6	**TT experience**	1 Year and below	0	0	2	0.81	2	0.91
		2-5 years	2	5.71	52	28.2	54	24.65
		6-10 years	23	65.7	114	62.1	137	62.56
		11-15 years	9	25.7	10	5.65	19	8.67
		16 years and above	1	2.86	6	3.23	7	3.19
		T	**35**	**100**	**184**	**100**	**219**	**100**

Source: Field Survey result

Table 5.1B depicts the position (job), TVET experience and TT experience of the polytechnic leadership team and trainers. Most respondents, 94 respondents (51%) fell into the category of 6–10 years, which predicts that they do have this experience after giving up to five years in other related fields in the sector. This gives them the opportunity to do things very energetically. In contrast, most leadership team respondents 21(60%) fell into the category of having experience with 11–15 years. In another way, it can also be seen that the leadership has accumulated reasonable time to know the sector.

When we come to the TT experience issues, the experience of both the leadership team and the trainers is almost in the same category, which is a little bit different from the experience of the sector. The majority of both the leadership team respondents and the trainer respondents fell into the category of experience, having a year range of 6–10. This can indicate that the experience accumulated in TT between the leadership team and the trainers is in the same category.

Table 5.1C: Percentage (%) and Frequency (F) distribution of trainee participants by sex, age, Education Level and year enrolled

No	variables	Category	Respondents					
			Trainees N=262					
			Male		Female		T	
			F	%	F	%	F	%
	Age	Below 15 years	0	0	0	0	0	0
		15-20 years	37	21.8	52	46.4	89	36.3
		21-25 years	96	78.2	60	53.6	156	63.7
		26-30 years	0	0	0	0	0	0
		31 years and above	0	0	0	0	0	0
		T	**133**	**100**	**112**	100	245	100
	Education status	Level I	0	0	0	0	0	0
		Level II	0	0	0	0	0	0
		Level III	48	36.1	44	39.3	92	37.6
		Level IV	85	63.9	68	60.7	153	62.4
		Other		0	0	0	0	0
		T	**133**	**100**	**112**	**100**	**245**	**100**
	Year/batch enrolled	First year		0	0	0	0	0
		Second year		0	0	0	0	0
		Third year	45	33.8	41	36.6	86	35.1
		Fourth year	85	63.9	66	58.9	151	61.6
		Other	3	2.26	5	4.46	8	3.27
		T	**133**	**100**	**112**	**100**	**245**	**100**

Source: Field Survey result

As indicated in Table 5.1C, 37.6 and 62.4% of the trainee respondents were at Level III and Level IV in their training status, respectively. As a result, they can be confident in their educational status and understand what is going on with TT activities, from their polytechnic to their immediate partner MSEs. In alignment with this, as indicated above, 35.1 and 61.6 trainees were in their 3rd and 4th years of study, which witnessed their long stay in the institution where the process of TT is

underway. Hence, the trainees have rich experience and are exposed to any activity taking place in their polytechnic college concerning TT. The current advancement of science and technology obliges the polytechnic to make the trainees active participants in the TT activities running currently to improve the working capacity of the trainees. The partnership among the students, the polytechnic, the industries need commitment and strong follow-up. The improvement of the partnership is essential to ensure the benefit of all participants and a final result that impacts the development of the community in general and the widening of opportunities for polytechnics and industries in particular, through equipping the trainees with the necessary skills and attitudes (Zainuddin et al., 2012:517).

Table 5.1D: Percentage (%) and Frequency (F) distribution of MSE participants by sex, age, education level, experience on the current sector and partnership experience

Variables	Category	Respondents					
		MSE personnel N=172				T	
		Male		Female			
		F	%	F	%	F	%
Age	Below 20 years	0	0	0	0	0	0
	20-25years	3	2.63	3	5.17	6	3.49
	26-30 years	23	20.17	13	22.41	36	20.93
	31-35 years	53	46.5	29	50	82	47.67
	36years and above	35	30.7	13	22.41	48	27.91
	Total	**114**	**100**	**58**	**100**	**172**	**100**
Education status	High school completer	32	28.1	29	50	61	35.47
	Level Diploma	54	47.37	18	31	72	41.86
	Bachelor's degree	5	4.39	4	6.9	7	4.1
	Master's degree	0	0	0	0	0	0
	Other	23	20.18	7	12.1	32	18.6
	Total	**114**	**100**	**58**	**100**	**172**	**100**
Experience on current sector	1 Year and below	3	2.63	1	1.72	4	2.33
	2-5 years	52	46.61	30	51.72	82	47.67
	6-10 years	48	42.1	18	31	66	38.37
	11-15 years	9	7.89	6	10.34	15	8.72
	16 years and above	2	1.75	3	5.17	5	2.91
	Total	**114**	**100**	**58**	**100**	**172**	**100**
TT experien	1 Year and below	8	7	3	5.17	11	6.4
	2-5 years	56	49.12	31	53.45	87	50.58
	6-10 years	41	35.96	21	36.2	62	36.05

Variables	Category	Respondents					
		MSE personnel N=172				T	
		Male		Female			
		F	%	F	%	F	%
ce	11-15 years	9	7.9	3	5.17	12	6.98
	16 years and above	0	0	0	0	0	0
	Total	**114**	**99.98**	**58**	**100**	**172**	**100**

Source: field Survey result

Table 5.1D depicts the sex, age, education level, sector experience and TT experience of the MSE personnel. In terms of sex, it can be deduced from the above data that 58 (33.72%) of MSE respondents are female, while the remaining 114 (66.27%) are male MSE personnel respondents, indicating male dominance in that economic sector. The gender information indicates the presence of a gender gap. Hence, this is also liable to the existing literature that recommends the criticality of reducing the available gender disparity for the set goal achievement (Kumar & Quisumbing, 2014). Various studies have confirmed that reducing gender disparity is critical for the achievement of certain goal sets.

Yet the majority of the MSE personnel respondents, 82 (47.67%), fell in the range of 31–35 years, while the next majority, 48 (27.91%), fell in the range of 36 years and above in age. This indicates that the MSE personnel are in their late 30s and above. The education qualification status indicated that the majority of the MSE personnel respondents, 72 (41.86%), are high school graduates, while 61 (35.47%) have diplomas in their educational background. From this, it is deduced that the MSE personnel do have the foundation to accept the technology at their level.

Surprisingly enough, 82 (47.67%) of the MSE personnel respondents have 2–5 years of experience in the sector, while 66 (38.37%) have 6–10 years of experience in the sector. This indicates that they are experienced enough in the sector in which they are running their business.

As far as TT experience is concerned, 87(50.58%) of the MSE personnel respondents do have an experience of TT that fell in the category of 2-5 years, yet

considerable portion of the respondents 62(36.05%) have 6-10 years of TT sector experience. The leadership entity of the TT and the receiver can have foresight to scan opportunity beyond the internal issues. Boundary-spanning leadership has the potential to ignite the atmosphere of creativity and innovation by integrating diverse experiences, views and backgrounds from multifaceted sources (Ernst & Chrobort-Manson, 2011:30). This is possible only when the TT stakeholders are equipped with the appropriate experience, attitudes and knowledge.

5.4.2. Analysis of respondents' views on the practices of PLT on TT

The aim of this thesis is to describe the polytechnic leadership team's current level of practices on TT from the polytechnic college to micro- and small enterprises in the city government of Addis Ababa, Ethiopia. To this end, questionnaires were prepared to collect first-hand data based on the views of PLT, trainers and trainees from the sample polytechnic college and MSE. Considering the TT as a project entity, the planning activity, effective communication, setting the environment and spanning boundaries are taken as core leadership activities to analyse the level of current practices. The dominant role of leadership practices from both the transformational and transactional perspectives, as depicted in Chapter 3, is also considered to decide the existing practices. Both transformational leadership and transactional leadership are irreplaceable. Transformational leadership is required to make corrective transactional action meaningful and successful on the part of followers. Empirically, in relation to leading change, Kedir and Geleta (2017:49) found that transformational leadership was practised in the TVET institutions of Ethiopia at a low or below average level. The challenging factors issue and the current practice in the context of COVID-19 pandemic-are the focus of the thesis, which weighs the practices of the polytechnic leadership team on TT in as far as situating the condition in such pandemics.

The five-point Likert scale, ranging from "strongly disagree” (1) to, "strongly agree "(5) was used. For meaningful analysis, the five-point scale is described as follows: mean value less than or equal to 1.8 (mean <1.8) = hardly any presence of practice; mean value greater than 1.8 and less than or equal to 2.6 (1.8< mean ≤ 2.6) = presence of low practice; 2.6 ≤ mean ≤ 3.4 = undecided to suggest; 3.4 < mean ≤ 4.2 = the presence of moderate practice; and mean >4.2 = the presence of high practice.

For more clarity and brevity of analysis, the five-point scale was changed into a three-level analysis in terms of "absence of practices”, “undecided to suggest" and” presence of practices.” Hence, the mean value is interpreted as mean > 3.66 = the presence of practices, 2.33 < mean ≤ 3.66 = “undecided to suggest” the level of practices, and mean ≤ 2.33 = the “absence of practices”. In the following part, the practices of PLT in terms of planning, effective communication, setting an environment for innovation and spanning boundaries are discussed in order.

5.4.2.1. Practices of PLT on TT in Terms of Planning

According to Jagoda et al. (2010:370), planning helps TT projects to establish milestones to strengthen management and control the project's progress. Planning is an important leadership function that requires the leadership or management body to take resources, opportunities and challenges into account for implementing TT activities through the active participation of key stakeholders. In the planning of TT activities, Muda and Abdul Aziz (2020:71) found that the multi-tech leadership team must use short-term and long-term activities to ensure a consistent and sustainable planning design because the sustainability of the implementation and monitoring of TT efforts depends on consistent planning and effective collaboration with industry, institutions and communities.

From an operational view, involving people can secure participation from multiple constituencies (especially those who will later be charged with implementation) and in the planning phases of the change process for the execution of the proposed goal (Wolverton & Gmelch, 2002:8). In line with this, leaders at every level are

expected to focus on building the foundation of the TT project: planning. For that reason, five items related to the practices of PLT in planning the activities of TT were forwarded to three groups of respondents (personnel and trainers). Two questions were also added to the two respondent types (PLT and trainers). The results of their rating were analysed using the mean and presented. The items recommended for respondents to rate focus on the issues: holding a critical assessment for planning, eliciting full participation of key stakeholders, focusing on value-adding technology, focusing on quality and quantified deliverables, setting monitoring and controlling systems, and considering the plan as a function and the criticality of resources for the TT plan.

Table 5.2A: Views of PLT, trainers and MSE on Practices of PLT on TT in terms of planning

No.	Items	All-respondents N=636		Respondents by type					df	F	Sig.
		Mean	SD		N	Mean	SD				
1	Holding critical assessments before preparing the TT plan.	4.07	0.78	PLT	35	4.46	0.51	BG	2	21.96	0.00
				Trainers	184	4.32	0.66	WG	461		
				Trainees	245	3.89	0.82	T	463		
2	Eliciting the participation of key actors.	3.27	1.27	PLT	35	4.80	0.41	BG	3	274.1	0.00
				Trainers	184	4.42	0.60	WG	632		
				MSE	172	3.56	0.90	T	635		
				Trainees	245	2.27	0.97				
3	Giving focus for inclusion of schedule during planning	3.59	1.22	PLT	35	4.80	0.41	BG	3	231.64	0.00
				Trainers	184	4.52	0.58	WG	632		
				MSE	172	2.28	0.98	T	635		
				Trainees	245	3.87	0.85				
I 4	Setting deliverable with defined quality and quantity	3.60	0.93	PLT	35	4.17	0.45	BG	2	47.46	0.00
				Trainers	184	3.06	0.92	WG	488		
				MSE	172	3.87	0.83	T	390		
5	Setting monitoring and controlling mechanism	2.28	0.94	PLT	35	3.14	0.81	BG	3	12.3	0.00
				Trainers	184	2.29	0.74	WG	632		
				MSE	172	2.27	0.98	T	635		
				Trainees	245	2.16	0.95				

No.	Items	All-respondents N=636		Respondents by type					df	F	Sig.
		Mean	SD		N	Mean	SD				
6	Giving due consideration for TT plan as critical function	3.72	1.02	PLT	35	4.06	0.97	BG	3	33.62	0.00
				Trainers	184	3.98	0.96	WG	632		
				MSE	172	3.14	1.04	T	635		
				Trainees	245	3.95	0.86				
7	Considering the criticality of resource for TT plan	2.27	0.95	PLT	35	3.20	0.83	BG	2	22.97	0.00
				Trainers	184	2.32	0.79	WG	461		
				Trainees	245	2.12	0.96	T	463		
	Overall grand mean	**3.26**	**1.02**			**3.48**	**0.79**				

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'.
Mean ≤ 2.33 = poorly done; 2.33< mean ≤ 3.66 = moderately done; and mean >3.66 = largely done

Table 5.2A's first column displays the mean score of All-respondents rating the given 'level of PLT practices on TT from the perspective of planning (1= strongly disagree, 5= strongly disagree). According to the respondents, the level of practices in items 1 ("holding critical assessments before preparing the TT plan") had a mean value of (M = 4.07) and item 6 ("giving due consideration for the TT plan as a critical function" (M = 3.72), which was found to be a "largely done' practice. The other leadership planning practices incorporate item 4 "setting deliverables with defined quality and quantity" (M = 3.60), item 3: "focusing on the inclusion of value-adding technology" (M=3.59), and item 2, "eliciting the participation of key actors." With a mean value of 3.27, they were rated into the 'moderately done' practice category.

Contrary to policy capitalisation and the anticipated need that the need that TVET should address, the respondent type ratings revealed that both the trainer and the MSE personnel had almost the same opinion. It seemed that they reached consensus concerning the practice of "setting monitoring and controlling mechanisms," with mean values of 2.28 and 2.27, respectively, being very minimal in that it fell into the category of "poorly done" practice. It indicated that the core activities of planning, execution, monitoring the process and seeking proper

allocation of resources seemed to have received minimal consideration. Hence, controlling and monitoring were issues which the leadership gave little attention, which can greatly affect the achievement of the goal in that particular instance.

Although there were significant differences of opinion among the respondents, the general rating of All-respondents reflected the presence of these three practices during the planning phase. However, in item 1 the results of the ANOVA F ratio (2,461) = 21.96, $p < 0.05$, in item 2 the results of the ANOVA of the F ratio (3,632) = 274.1, $p < 0.05$, in item 3 the F ratio (3,632) = 231.64, $p < 0.05$), in item 4 the F ratio (2,488) = 47.46 $p < 0.05$, in item 5 the F ratio (3,632) = 12.3 , $p < 0.05$, item 6 F ratio (3,632) = 33.62, $p < 0.05$, item 7 of the ANOVA F ratio (2,461= 22.97, p0.05) indicated the presence of statistical significance difference among the views of the respondents PLT trainers, MSE, and trainees.

By referring to the result of Hochberg's GT2 test, the source of variation was exhibited among PLT, trainers, MSE and trainees on almost all the items. Hence, this suggested that the core issues of controlling and monitoring were items to which the leadership gave little attention, which can greatly affect the achievement of the goal in that particular instance. After careful examination of the mean distribution of the respondent rating, the mean distribution of the leadership team remained the highest of any respondent type, which could be the source of the variation in their opinion. This might suggest the presence of a reception gap among the leadership team, the trainers, the operators of TT activities and the technology receiver.

In summary, the trainers and MSE personnel agreed that the performance of the leadership was very low concerning the issue of monitoring and controlling mechanisms from a planning perspective. It fell into the category of "poorly done." The PLT was unable to participate with the MSE and other stakeholders during planning. The Hochberg's GT2 test showed the presence of opinion variation among key stakeholders (PLT, trainers and MSE) on the execution of the PLT on

the issues of planning in general. The ratings of the PLT remained the highest of any other. The difference in opinion among stakeholders deduces the presence of a perception gap among the stakeholders, which in turn affects the essential implementation of the TT plan.

5.4.2.2. Practices of PLT on TT in terms of effective communication

As it is defined in section 2.3.4.1.2 effective communication, being essential for leaders and managers to perform well and achieve assigned tasks, is crucial for both individuals and organisations. It is a foundation for development progress and success as it allows employees to obtain the necessary information, knowledge and to be motivated in general for better practice. Furthermore, it helps to eliminate misunderstanding to incrementally maintain better understanding (Dahiya & Luthra, 2018:128). As a result, the core responsibility of the leadership team in attempting to influence the followers' activities through an orchestrated communication system is to ensure effective communication. Good leaders are effective communicators, among other very critical roles of leaders, including efficient organisers, careful planners and successful motivators. Leadership aims to help an individual or group find their way and progress within larger group. The goal of leadership is to help everyone find his or her place within a larger group of people (Gmelch & Buller, 2015:35).

As indicated in the following tables, among the five items prepared related to effective leadership communication, three were administered for All-respondents (PLTs, trainers, MSEs and trainee respondents). Depending on the nature of the information needed, the remaining two questions were administered to only two respondents (PLT and trainers). The analysis is given here in Table 5.2B.

Table 5.2B (I): Views of PLT, trainers and MSE on practices of PLT on TT in terms of making effective communication

var. No	Items	All-respondents N=636		Respondents by type							
		Mean	SD		N	Mean	SD		df	F	Sig.
8	Setting effective communication to organise TT.	3.23	1.34	PLT	35	4.66	0.64	BG	3	21.96	0.000
				Trainers	184	4.26	0.76	WG	632		
				MSE	172	4.12	0.76	T	635		
				Trainees	245	2.13	0.95				
9	Often making frequent contact with micro and small enterprise.	2.12	0.82	PLT	35	2.49	0.84	BG	2	3.865	0.021
				Trainees	184	2.06	0.63	WG	488		
				MSE	172	4.09	0.63	T	390		
12	Setting effective means of communication	3.27	1.15	PLT	35	4.20	0.41	BG	3	1191.9	0.000
				Trainees	184	4.40	0.66	WG	632		
				MSE	172	2.24	0.99	T	635		
				Trainees	245	3.29	0.81				
	Overall mean	**2.87**	**1.10**			**3.45**	**0.73**				

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'. Mean ≤ 2.33 = poorly done; 2.33< mean ≤ 3.66 = moderately done; and mean >3.66 = largely done

To this end, three items in relation to the practice of PLT on TT from the polytechnic college to the MSEs were administered to four types of respondents, and the result of their ratings was analysed using the mean distribution of ANOVA. As indicated from the all-respondent ratings, Item 8, 'Setting effective communication to organise TT," with a mean value of 3.23, and Item 12, "Setting effective means of communication," with a mean value of 3.27, fell in the "moderately done" practice category. In contrast, item 9, "often making frequent contact with micro and small enterprises," with a mean value of 2.12, was rated as a "poorly done" practice.

As could be derived from the ratings of the respondent types, the respondents agreed unanimously that item 9, "often making frequent contact with micro and small enterprises," was rated as a "poorly done" practice. The ANOVA indicated

the presence of a significant difference among the key stakeholders of the TT, as evidenced by their relationship status. The ANOVA ratio for item 8 (3,632) = 21. 96., P = 0.001, and for item 9 (2,488) = 3.865, P = 0.000, and the ANOVA ratio for item 12 (3,632) = 191.9, P = 0.00, witnessed the presence of a significant difference among the respondents, where the variation came from the PLT's rating being the highest of any other respondents. No difference was available between the trainer and MSE personnel.

From this result, it is logical to deduce that the key TT stakeholders as well as the respondents agreed that the PLT practice of making frequent contact with the MSE as far as TT is concerned was poorly done. The MSE ratings were the lowest of any other ratings, which might indicate the presence of a gap between the technology provider and the recipients. The Hochberg's GT2 test indicated the source of variation was the MSE ratings.

The study found that the PLTS practice in effective leadership communication was "moderate," with an overall mean (M = 3.19). Nevertheless, the affairs of keeping regular contact and communication with the MSE have remained a "poorly done practice" category. In addition, "set effective communication to organise TT" and "set effective means of communication" have received ratings of "largely done" and "moderately done," respectively. The study also emphasised the importance the importance of continuing grassroots-level interaction while implementing these practices. But, without continuous communication with the MSE stakeholders, thinking of the TT result could be insignificant, which indicates the criticality of improving the leadership team practice in such an area.

In summary, effective leadership communication involves motivating and inspiring individuals or groups through systematic and meaningful information sharing. Good leaders are effective communicators, among other very critical roles of leaders, including efficient organisers, careful planners and successful motivators. The analysis revealed that the respondents rated the item "set effective communication

to organise TT" as the 'largely done' practice category, whereas the respondents put the rating value of the item "often made frequent contact with micro and small enterprises" into the 'poorly done' practice category. As Hochberg's GT2 test showed, the source of variation was the highest PLT rating in all cases. The MSE ratings were the lowest of any other ratings, which might indicate and confirm the presence of a gap between the technology provider and the recipients. A matter of making frequent contact was mostly at the non-existent level.

Table 5.2B (II): views of PLT and trainers on practices of PLT on TT in terms of making effective communication

				Participants	N	Mean	SD	t	df	Sig. (2-tailed)
10	…applied good communication skills to manage the TT.	4.32	0.89	PLT	35	4.66	0.8	2.477	217	0.014
				Trainers	184	4.25	0.9			
11	…developed communication strategy to alleviate barriers.	2.14	0.69	PLT	35	2.09	0.92	-0.681	217	0.527
				Trainers	184	2.16	0.62			

t =shows the result of t-ratio= level of analysis at 0.05'
Mean ≤ 2.33 = poorly done; 2.33< mean ≤ 3.66 = moderately done; and mean >3.66 = largely done

Two items, "Developing a communication strategy to alleviate barriers", and "Applying good communication skills to manage the TT process" are administered to the PLT and trainers' respondents. From all-respondents perspective Item 10," which indicate the practice of applying good communication skills was at a moderate level with the mean score and SD of (4.32,0.89) whereas an issue of developing communication strategy to alleviate barriers concerning the practices of PLT on TT from the polytechnic college to the MSE fell at a lower level with a mean score and SD of (2.14,0.69).

When the analysis is viewed separately from the respondent's type perspective, the rating value of both the PLT and trainers resulted with a mean value of 4.66 and 4.25 respectively, indicating largely done practice though as the t-test result indicated that t (217) = 2.477, P = 0.014 indicated significance difference was

observed between the two respondents type (PLT and trainer). Yet, in case of the development of a communication strategy to alleviate the barriers was concerned, similarity of view was observed between the respondent type PLT and Trainers as the t-test result t (217) = -0.681, P= 0.529, shows the presence of opinion similarity between the PLT and the trainer

5.4.2.3. Practices of PLT in terms of setting environment for TT and innovation

It is the responsibility of the institution's leadership and managers to provide participants with favourable conditions that diminish challenges for the betterment of goal achievement (TT project) in the current situation. The issue of building a suitable environment for TVET trainees and trainers is significantly important to engage them in TT, as it is considered a major strategic statement to implement TT (MoSHE, 2020:40).

As it was further explained in part 2.12.1.3 of Chapter 2, leadership is responsible for situating the culture and environment of the organisation to continue to be competitive in the face of surging change. Because leadership style influences an organisation's ability to thrive in an innovative culture, fully aware, innovative, and technology-minded leaders are required for successful innovation (Maladzhi et al., 2012:). The success of an organisation is increasingly dependent on its capability to create an effective environment for knowledge creation and application.

Table 5.2 C: Practices of PLT on TT in terms of setting environment /culture for innovation and TT.

No	Items	All-respondents N=636		Respondents by type							
		Mean	SD		N	Mean	SD		df	F	Sig.
13	setting experience sharing platforms on	**2.24**	**0.98**	PLT	35	3.09	1.04	BG	3	10.18	0.00
				Trainers	184	2.23	0.88	WG	632		
				MSE.	172	2.24	0.99	T	635		

	TT			Trainees	245	2.13	0.96				
14	Creating motivating environment for TT actors.	**3.42**	**1.20**	PLT	35	4.83	0.38	BG	3	231.72	0.00
				Trainers	184	4.47	0.66	WG	632		
				MSE.	172	2.36	1.03	T	635		
				Trainees	245	3.16	0.87				
15	Focusing on the presence of infrastructure for TT.	**4.09**	**0.90**	PLT	35	4.46	0.56	BG	2	35.08	0.00
				Trainers	184	4.49	0.60	WG	488		
				MSE.	172	3.73	0.99	T	390		
16	Showing a good example for the staff to follow.	**4.05**	**0.91**	PLT	35	3.80	0.72	BG	2	42	0.00
				Trainers	184	4.48	0.60	WG	461		
				Trainees	245	3.76	0.96	T	463		
17	Setting an enabling environment to fix the barriers of TT.	**3.09**	**1.31**	PLT	35	4.40	0.50	BG	3	251.9	0.00
				Trainers	184	4.48	0.60	WG	632		
				MSE.	172	2.35	1.03	T	635		
				Trainees	245	2.40	1.02				
	Overall mean	**3.37**	**1.06**			**3.49**	**0.8**				

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'.
Mean ≤ 2.33 = poorly done; 2.33< mean ≤ 3.66 = moderately done; and mean >3.66 = largely done

As indicated in Table 5.2C, when the analysis was viewed from the perspectives of All-respondents' rating values respective, items 15, "Focusing on the presence of infrastructure for TT," with a mean value of 4.09, and item 16, "Showing a good example for the staff to follow," were rated as "largely done practice categories, whereas item 13, "setting experience sharing platforms on TT," with a mean value of 2.24, was rated as a "poorly done" category. The other remaining items, namely item 14, "creating motivating environments for TT actors," with a mean value of 3.42 and item 17, "setting an enabling environment to fix the barriers of TT," with a mean value of 3.09, were rated as "moderately done," practices category. However, a significant opinion difference among respondents has been observed in Item 15, "Showing a good example for the staff to follow". Yet, the MSE personnel's rating was somehow the least of any of the PLT and trainer respondents' ratings. The

results were registered in the presence of a significant opinion difference among respondents, as the F ratio confirmed.

As could be derived from the ratings of the respondent types, concerning Item 13, "Setting experience sharing platforms on TT ," the PLT's ratings with a mean value of 3.09 fell in the category of "moderately done: practice," in contrast to both the trainers and MSE personnel response ratings that fell in the "poorly done" category. Regarding the items that fell into the category of "moderately done," practice Item 14,"creating motivating environments for TT actors," and Item 17" setting an enabling environment to fix the barriers of TT", variation was yet to be observed. As the ANOVA ratio for item 14 (2,632) = 231.2, P = 0.001, and the ANOVA ratio for item 17 (3,632) = 251.41, P = 0.000 indicated, the available significance difference that drifted from the ratings result of MSE personnel with a mean value of 2.36 and 2.35, respectively. These fell far below the respective mean values of 4.83 and 4.47 for item 14 and 4.40 and 4.48 for item 17 of both the PLT and trainers' ratings, respectively. This, therefore, suggests that the issue of creating a motivating environment was not satisfied by the technology receiver, as that was the highest expectation of the technology providers.

Among the forwarded items, the PLT and the trainer respondents with means values of 4.46 and 4.49, respectively, agreed unanimously on the practice achievement of Item 15, "focused on the presence of infrastructure for TT," while the MSE personnel's ratings (3.73) were significantly lower than the former two respondents' types. The Hochberg's GT2 test indicated the source of variation among the respondents was mainly owing to the lower ratings of the MSE personnel for items 14, 15 and 17, while PLT's ratings were the cause of the variation, with a mean value of 3.09 that was the highest of any other in Item 13, "Setting experience sharing platforms on TT".

As indicated in Section 5.2C, a significant difference was available between the trainers and MSEs' ratings concerning the execution level of the items "set

experience sharing platforms on TT" and "set an enabling environment to fix the barriers of TT." The ratings of the PLT, with a mean value of 3.09 fell in the "moderately done" practice category whereas the trainers and MSEs' rating fell in the "poorly done" category. The MSEs' ratings were significantly lower than the trainers', indicating that the creation of a motivating environment was an area in which the technology receiver did not agree with the notion of the PLT teams' opinion. Surprisingly, the PLT and trainers agreed unanimously in their opinions concerning the issues of creating a favourable environment for the TT receivers while the MSEs' rating remained significantly lower. The results suggest that the accomplishments in TT concerning setting up experience-sharing platforms and the effort to fix barriers were areas where the TT provider and the technology receiver differed in their views. The MSE personnel's lowest ratings may indicate a gap between the technology provider and the recipients, indicating dissatisfaction.

5.4.2.4. Practices of PLT on TT in terms of Boundary spanning

Polytechnic leaders can span boundaries in a variety of directions and contexts, both within their own city and at the city administration level. The leadership activity can be stretched out through a vertical boundary, focusing on various levels or layers in the larger institution's case. Bridging boundaries would be the geographical entity that invites diverse friends from adjacent and distant avenues (Ernst & Chrobort-Manson, 2011: 248). Hence, spanning boundaries involves creating vertical boundaries between the hierarchical organisational level, horizontal boundaries between functions and stakeholders, demographic boundaries and geographic boundaries.

Beyond the internal leadership activities with project group members, leaders in the project context are required to play important roles in spanning boundaries. According to Elkins and Keller's (2003:595) contention, the project leader should exert upward and outward influences across boundaries and often act as a project champion to attract multitudes of constituencies for the success of the project.

To see the execution level of the practice of the leadership team from the spanning boundaries point of view, two items were identified with the factor rendered for four types of respondents (PLT, trainers, MSE and trainees), one item for three respondents (PLT, trainers, MSE) and one item for two respondents (PLT, trainers). The analysis is presented in Table 5.2D hereunder.

Table 5.2D: Views of PLT, trainers and MSE on Practices of PLT on TT in terms of Boundaries

No	Items	All-respondents N=636		Respondents by type							
		Mean	SD		N	Mean	SD		df	F	Sig.
18	Reaching diverse participants across boundaries	2.24	0.98	PLT	35	2.17	0.38	BG	2	3.116	0.045
				Trainers	184	2.29	0.57	WG	588		
				MSE.	172	2.15	0-51	T	390		
20	Pulling people separated by boundaries for a common good	4.09	0.90	PLT	35	3.06	0.68	BG	3	18.8	0.00
				Trainers	184	2.28	0..66	WG	632		
				MSE.	172	2.17	0.53	T	463		
				Trainees	245	2.30	0.66				
21	made communications between internal and external stakeholders	3.15	1.23	PLT	35	4.51	0.51	BG	3	403.3	0.00
				Trainers	184	4.51	0.6	WG	632		
				MSE	172	2.54	0/99	T	463		
				Trainees	245	3.76	0.6				
	Overall mean	**3.37**	**1.06**			**2.89**	**0.57**				

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'.
Mean ≤ 2.33 = poorly done; 2.33< mean ≤ 3.66 = moderately done; and mean >3.66 = largely done

As depicted in Table 5.2D, the first column indicated all the respondents' ratings values regarding the execution level of selected items, as shown in the table, in terms of the spanning boundary activities. The Likert scale is given using the responses (1 = strongly disagree to 5 = strongly agree). Among the three items administered to respondents for rating, the items "reached diverse participants across boundaries" with a mean value of 2.22 and "pulled people separated by boundaries for a common good" with a mean value of 2.30 fell into the "poorly

done” category, while item 21 “made communications between internal and external stakeholders” with a mean value of 3.15 fell into the “moderately done” practice category.

The study revealed, based on the respondents rating value, that the indicator “reaching diverse participants across boundaries” with a grand mean of 2.56 was practised at low status. It was significant at the level of 0.05 with a F ratio value of (3,632) = 3.116, P = 0.045. When the analysis of the data is viewed from all rating value, the MSEs’ rating was the lowest. In general, All-respondents’ ratings indicate inadequate practice level regarding the mentioned indicator. This is in exception of the respondents PLT who rated item 20, “pulling people separated by boundaries for a common good” with a mean value of 3.06 as the “moderately done” practice category. The rest of the respondents, namely trainers, MSE, and trainees, rated it as a “poorly done, “practice category in similar opinion. A significance difference among the respondents was observed because the PLT’s rating was the highest of any other respondents, as the post-hoc test confirmed from the Hochberg’s GT2 result F (3,372) = 18.78, P = 0.000 ratio in that the mean difference is significant at the 0.05 level. On the contrary, the rating value of MSE is the least of any PLT and trainer respondents in the case of item 21, "Making communications between internal and external stakeholders, where its execution level fell in the "moderately done" practice category.

In general, the study revealed that the respondents rating value regarding the execution level of the factor spanning boundaries fell into the “poorly done” category. For instance, two of the three items, namely, “reached diverse participants across boundaries” and “pulled people separated by boundaries for a common good,” fell into the “poorly done” category. The activity of "making communication among internal and external stakeholders," according to the respondents’ opinions, rested at a good execution level. However, the other areas of focus remained behind expectations. The TT activities the PLT practiced in terms of the spanning boundary have had a weak effect on ensuring the

competitive advantage to the MSE owners' effectiveness since their execution level has only remained at the poorly done practice level.

5.4.3. Practice of PLT on using leadership style in leading TT

The researcher delivered 18 items (12 related to transformational and six items related to transactional style) to the PLT and trainer respondents for rating to determine the existing practices of using transformational and transactional leadership styles at PolyCO during the operation of TT activities from the PolyCO to the MSEs. For this purpose, the questionnaire used a Likert scale of five points, where 5 means “done very largely” and 1 means “never done”. PLT and trainer respondents rated the items according to the leadership style that was prevalent in their PolyCO. To facilitate the analysis, the mean value was interpreted as: mean ≤ 2.33 = poorly done; 2.33 < mean ≤ 3.66 = moderately done; and mean > 3.66 = largely done. The analysis of the transformational leadership practice is presented first and transactional is presented second (Tables 5.3A and 5.3B, respectively).

5.4.3.1. The transformational leadership style in TT leading context

According to Wolverton and Gmelch's (2002:3) briefings, since the theory of transformational and transactional leadership is extended from the theory of motivation, it is at the same time used to energise followers for the better achievement of the purpose delineated. In the same vein, Boateng (2012:46) also concurs that leaders motivate followers by imparting strong emotion. As a result, employing a transformational style inspires motivated followers to exert maximum effort. With this in mind, 12 items related to transformational leadership style behaviour were administered to PLT and trainer respondents.

The mean scores of All-respondents were calculated to assess the overall status of both the PLT and the trainers' perceptions together. The analysis was portrayed in Table 5.3A in the following part. The mean score of the PLT and the trainer

respondents' rating level of the PTA leadership style concerning TT activities from the Polytechnic College to the MSEs' manufacturing sub-sectors were also analysed. The respondent ratings by type were put together with the standard deviation, which informs the diversity level among the respondents.

Table 5.3A: The mean distribution and the independent T test on the transformational leadership style practiced while leading TT activities

No	Items	Grand Mean	Participants by type				t	df	Sig. (2-tailed)
			position	N	Mean	SD			
1	...improve the attitudes of the staffs by inspiring them.	4.02	PLT	35	4.5	0.66	5.3	217	0.00
			Trainers	184	3.5	0.97	6.5	80.213	0.00
2	…lead staffs by providing them a vision	4.04	PLT	35	4.5	0.56	7.2	217	0.00
			Trainers	184	3.6	0.78	8.6	73.865	0.00
3	…motivate their staff to exceed the set expected performance level	4.14	PLT	35	4.9	0.36	9	217	0.00
			Trainers	184	3.4	0.91	14	142.3	0.00
4	…give special attention for staff member for personal needs.	3.25	PLT	35	4.1	0.51	9.1	217	0.00
			Trainers	184	2.4	1	13	109.13	0.00
5	…help staff develop themselves.	4.04	PLT	35	4.6	0.69	7	217	0.00
			Trainers	184	3.5	0.93	8.3	72.656	0.00
6	…bring out the best in their staffs.	3.63	PLT	35	4.1	0.43	4.1	217	0.00
			Trainers	184	3.5	0.91	6	121.56	0.00
7	…provide appealing images about what staff can do.	4	PLT	35	4.6	0.49	8.1	217	0.00
			Trainers	184	3.4	0.83	11	95.273	0.00
8	…set high standards for staffs.	4.11	PLT	35	4.7	0.76	6.5	217	0.00
			Trainers	184	3.6	0.85	6.9	59.93	0.00
9	…act as a role model to their staffs.	3.62	PLT	35	4.5	0.56	12	217	0.00
			Trainers	184	2.7	0.75	15	76.221	0.00
10	…provide staff with new ways of looking at puzzling things.	3.57	PLT	35	3.6	0.49	0.6	217	0.583
			Trainers	184	3.5	0.84	0.7	92.892	0.471
11	Getting staff to rethink ideas that they had never questioned before.	4.03	PLT	35	4.5	0.51	6.9	217	0.00
			Trainers	184	3.5	0.84	9.1	92.317	0.00
12	…make staffs capable of fix things in unusual ways	2.06	PLT	35	2.1	0.61	0.3	217	0.743
			Trainers	184	2	0.77	0.4	65.466	0.714
	Overall mean	**3.7**			**3.7**	**0.71**			

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'.
Mean ≤ 2.33 = poorly done; 2.33< mean ≤ 3.66 = moderately done; and mean >3.66 = largely done

As the grand mean of all-the respondents' indicated, "improve the attitudes of the staff by inspiring them" with a mean value of 4.02; "lead staff by providing them a

vision” with a mean value of 4.04; “motivate their staff to exceed the set expected performance level” with a mean value of 4.14; "helping their staff develop themselves" with a mean value of 4.04; “provide appealing images about what staff can do” with a mean value of 4.00; "setting high standards for staff" with a mean value of 4.11; and “Getting staff to rethink ideas that they had never questioned before” with a mean value of 4.03 were the items that the respondents rated as ‘largely done’ in the context of the research. The other four items, namely, "give special attention to staff members for personal needs," with a mean value of 3.25; ”bring out the best in their staff," with a mean value of 3.63; ”acting as a role model to their staff,” with a mean value of 3.62; and “providing staff with new ways of looking at puzzling things,” with a mean value of 3.57, were the items for which the respondents rated them as “moderately done’ practice category. In contrast, All-respondents rated item 12, “making staff capable of fixing things in unusual ways," with a mean value of 2.06 as only “poorly done,” practice category. In general, the overall grand mean clearly indicates that the respondents in aggregate rated the practice of using the transformational leadership style as falling into the category of moderately done.

The data analysis revealed a significant difference in opinion between PLT and trainer respondents regarding the practice level of the transformational leadership style. The PLT respondents categorised two items as “moderately done” practices, namely, providing staff with new ways of thinking and rethinking ideas. However, the only item both respondents considered “poorly done” was “making staff capable of fixing things in unusual ways,” which both of them deemed “poorly done” from a transformational leadership style perspective. In addition, the other item on which both the PLT and the trainer respondents had similar opinions was “providing staff with new ways of looking at puzzling things” in the “moderately done” practice category.

But within these items, which have received high grand mean scores, and the moderately done practice category, the t-test indicated the presence of a

statistically significant difference between the perceptions of PLT and trainers on the items. This, in one way or another, deviated from the idea of drawing people beyond their daily and routine tasks as well as engaging them in helping to shape the desired future, which facilitates the creation of a more meaningful and inspiring workplace (Duignan, 2006:21). The difference came from the highest rating of PLT in all items. The independent t-test indicated there was a significant difference in the leadership style.

In a nutshell, the respondents rated most of the items that focus on leading the followers and other stakeholders via inspiring to bring about attitude change; giving vision; motivating to perform beyond expectations. Moreover, helping to develop oneself; delivering an appealing image of the staff endeavours; setting high standards and letting people experience new things unexpectedly as largely done practice from the PLT' rating perspective were also suggested. These themes fell into the moderately done practice according to the trainers' ratings. In extreme edge, the issue of making staff capable of fixing things in unusual ways was rated as "poorly done "practice, with an absolute consensus in their opinion, as the t-test indicated. In general, the overall mean for the PLT's practices of the transformational leadership style, with a grand mean score of **3.72** during leading the TT activities from the polytechnic college to the MSE, fell under the category of "moderately done style."

5.4.3.2. The Transactional leadership style in TT leading context

Transaction leaders focus on maintaining the status quo. This in one way or another diminished the scope of the leadership practice for change and innovation for it focuses on running the routine tasks smoothly by keeping the institution stable and efficient. This is done by giving clear goals and objectives under binding directions that is liable to give less attention for environmental change (Basham, 2010:143-146). 'Transactional leadership, particularly contingent reward, provides a broad basis for effective leadership, but a greater amount of effort is expected in

the transaction leadership climate if it is enhanced by the transformational leadership style (Avolio & Bass: 2002:6).

Table 5.3B: The mean distribution and the independent t-test on the transactional leadership style practiced while leading TT activities

No	Items	All participants N=219		Participants by type				t	df	Sig. (2-tailed)
		Mean	SD	position	N	Mean	SD			
1	…tell staff what to do if they want to be rewarded for their work.	**3.05**	**0.77**	PLT	35	3.06	0.73	0.059	217	0.953
				Trainers	184	3.05	0.78	0.062	58.406	0.951
2	…call attention to what staff can get for what they accomplish.	**4.01**	**0.78**	PLT	35	4.06	0.64	0.382	217	0.703
				Trainers	184	4.00	0.82	0.438	68.528	0.663
3	…use promotion/reward to get the desired results	**2.27**	**0.91**	PLT	35	2.26	0.82	-0.097	217	0.923
				Trainers	184	2.27	0.94	-0.105	61.781	0.916
4	…do not try to change anything as long as things are working,	**3.44**	**1.13**	PLT	35	2.11	0.58	-10.065	217	0.000
				Trainers	184	3.81	0.95	-13.055	90.007	0.000
5	…ask no more of staff than what is absolutely essential.	**2.47**	**1.11**	PLT	35	2.03	0.57	-2.681	217	0.008
				Trainers	184	2.59	1.20	-3.888	120.294	0.000
6	…focus on receiving quality results from the staff as they delivered	**4.15**	**0.71**	PLT	35	4.17	0.57	0.192	217	0.848
				Trainers	184	4.15	0.75	0.224	71.050	0.824
	Overall mean	**3.23**	**0.90**			**3.13**	**0.78**			

Mean ≤ 2.33 = poorly done; 2.33< mean ≤ 3.66 = moderately done; and mean >3.66 = largely done.Df=2 and 175 t =shows the result of t-ratio= level of analysis at 0.05'

All-respondents' ratings indicate the existence of two "largely done" practice categories. The respondents rated the two items, namely, "focusing on receiving quality results from the staff as they deliver," with a mean value of 4.15 and "calling attention to what staff can get for what they accomplish," with a mean value of 4.01, as "largely done" practice categories. In both items that received a high rating

score, the t-test showed that t (217, 68.528) = 0.438, P = 0.663, and t (217, 71.050) = 0.192, P = 0.848, which statistically proved the presence of opinion similarity on the specified items between the two respondent types.

The all-respondents rated the following items, namely, Item 1, "telling staff what to do if they want to be rewarded for their work," with a mean value and SD of (3.05, 77) and Item 4, “not trying to change anything as long as things are working," with a mean value and SD of (3.44, 1.13) as “moderately done” practice categories. All-respondents rated the first item, "telling staff what to do if they want to be rewarded for their work," with similar views on status, while a significant difference was available in the second item, “trying not to change anything as long as things are working." Unlike the result of the transactional leadership-related data analysis result in Table 5.3A, abundant similarity of opinion was observed in this transactional leadership style practice analysis part. Both the respondent types (PLT and trainers) rated all items except items 4, "not trying to change anything as long as things are working," and 5, “ask no more of staff than what is absolutely essential,” with a similar opinion status. A significant difference between the two respondent types was observed only in the two items mentioned. The independent t-test result confirmed the opinion similarity at the 0.05 level, as depicted in Table 5.2B.

The significant difference between these two items comes from the lower rating of the PLT in Item 4, "not trying to change anything as long as things are working." This could indicate that the PLT group respondents do not accept the notion of leaving things as they are instead of proactively acting on them to induce change and innovation. Hence, this could suggest that the leadership respondents did not accept the existence of a lack of responsiveness to day-to-day activities, even though the trainer respondents showed their agreement with the lack of responsiveness of the leadership team. The respondents again rated the item “use promotion or reward to get the desired results” as “poorly done," with a mean value of 2.27.

In summary, the rating distribution indicated that items such as ‘focusing on receiving quality results from staff” and ‘calling attention to what staff can get for their accomplishments’ were “largely done”, with a similar opinion between the two respondent types in both cases. The trainer respondents seemed to reflect their views about the lack of concern for the assignments assigned to the leadership team. In the case of using promotion and reward as motivation, both the PLT and the trainer respondents confirmed the presence of “poorly done” practice to get the expected behaviour from the participants. In general, the overall mean for the PLT’s practices of the transactional leadership style, with a grand mean value of 3.23 fell in the "moderately done style” practice category.

5.4.4. Perceptions of stakeholders on the practices of PLT on TT

Extant literature indicated the presence of a strong correlation between the available perception of the institute and its readiness for any change set, including TT (Al-Mobaideen et al., 2012:1). This issue underscores the importance of determining the prevailing perception of TT subordinates. The perception could focus on the relative advantage of the technology candidates mainly based on their status, which could be reflected in their compatibility, trialability, observability, etc. (Capps & Fairley, 2003). A study conducted in some European countries and in China witnessed the presence of a strong gap between the leadership team and the subordinates’ perception. According to Cedefop (2011:23), a gap between leaders' and teachers' perceptions concerning leadership effectiveness was found in Australia.

To determine the existing perception of the polytechnic college leadership, trainers and technology receivers (MSE) regarding the current leadership TT support, 13 items were designed that could best reflect the prevailing perception. The items were coined from the common literature under four main constructs, namely, ‘innovation enhancement’, ‘knowledge accumulation', ‘efficiency and effectiveness

improvement', and ‘cooperation and participation strengthening’ administered to the PLT, trainers, and MSE respondents to rate. A 5-point Likert scale ranging from strongly disagreeing (1) to strongly agreeing (5) was offered to respondents to rate their degree of conformity to the support given to enhance TT. For the brevity of the analysis, the mean score range was interpreted as follows: mean ≤ 2.33 = hardly institutionalized; 2.33 < mean ≤ 3.66 =moderate institutionalized and mean > 3.66 = highly institutionalized.

Table 5.4A: Mean distribution and ANOVA test on perceptions

No	Items	All-respondents N=391		Respondents by type					df	F	Sig.
		Mean	SD	Position	N	Mean	SD				
1	Focusing on fostering innovation	**2.53**	**1.17**	PLT	35	**4.63**	**0.49**	BG	2	101.56	0.00
				Trainers	184	**2.23**	**0.95**	WG	488		
				MSE	172	**2.31**	**0.97**	T	390		
2	Showing devotion to develop innovative environment	**2.88**	**1.35**	PLT	35	**4.09**	**1.15**	BG	2	103.16	0.00
				Trainers	184	**3.64**	**0.98**	WG	488		
				MSE	172	**2.08**	**1.09**	T	390		
3	Focusing on contemporary practice and innovation	**2.93**	**1.15**	PLT	35	**3.83**	**0.45**	BG	2	15.37	0.00
				Trainers	184	**2.66**	**1.13**	WG	488		
				MSE	172	**2.94**	**1.17**	T	390		
	Overall mean	**2.78**	**3.67**			**3.16**	**0.93**				

Df=2 and 390 ,F = show the results of the f-ratio= analysis level at 0.05’
Mean ≤ 2.33 = hardly institutionalised; 2.33 <Mean ≤ 3.6 =moderately institutionalised; and mean ≥ 3.66= highly institutionalised

As indicated in Table 5.4A, according to All-respondents ratings, Item 3 , “Focusing on contemporary practice and innovation,’ with the mean value of 2.93 ; Item 2 "showing devotion to develop innovative environments," with a mean value of 2.88, and Item 1, "Focusing on fostering innovation’ with a mean value of 2.53 fell in the category of ‘moderately institutionalised” practice category. Hence, the perception of All-respondents together, concerning the PLT’s practice on the specified items rested on the determination of its being as the moderately institutionalised practice at the PolyCO level.

On the contrary, when the data are analysed separately by the respondent types, the PLT's rating of the items is the highest of all in items "focusing on fostering innovation " (4.63), "showing devotion to develop innovative environments" (4.09) and 'focusing on contemporary practice and innovation,' (3.86). This can indicate that the PLT themselves believe that the illustrated practices were "highly institutionalised." According to All-respondents' reflections, perceptions for Items 2 and 3 fell into the category of "moderately institutionalised," practices, whereas there was a high level of positive perception for the practice of PLT on Item 1. The trainers' ratings indicated a mean value of 3.64 for Item 2, "showing devotion to develop innovative environments," 2.66 for Item 3, 'focusing on contemporary practice and innovation," and 2.23 for Item 1, "focusing on fostering innovation," which indicated their perception fell into the 'hardly institutionalised' category. Moreover, they perceive that the practice described in Item 1 fell into a 'hardly institutionalised" which is unfavourable perception towards the practice in terms of the innovation enhancement. Surprisingly enough, the MSE personnel ratings all fell into the low levels of perception category, with a mean value of 2.08 for Item 2 and 2.31 for Item 1, respectively. The ANOVA F ratio $(2,488) = 101.58$, $p < 0.05$, indicated the presence of a statistically significant difference in the respondents' opinions.

The significant difference came from the highest rating of the PLT respondents. In summary, the overall grand mean for the construct "innovation enhancement," the perception of the respondents clearly indicated their opinion, showing that they have a moderate perception in both the case of All-respondents and by the respondents type rating, we can deduce the presence of positive readiness for the progress of TT activities from the PolyCO entities to the MSE's manufacturing sub-sectors. For the trainer respondents, the institutionalisation level of 'focusing on fostering innovation" is at the level of "hardly institutionalised", which was also strongly supported by the MSE respondents. The MSE respondent levelled the two important indicators of TT activities, namely, "focusing on fostering innovation" and "showing devotion to developing innovative environments," as "hardly institutionalised" practices in contrast to the views of the PLT.

In short, data analysis has revealed that the respondents' perceptions of the PLT's practice in implementing the indicators, namely, "focusing on fostering innovation," "showing devotion to developing innovative environments," and "focusing on contemporary practice and innovation," are "hardly institutionalised" practices. This idea stands in contrast to the views of the PLT. However, the PLT's rating of these items is the highest of all, indicating that they believe the practices are 'highly institutionalised'. The trainers' ratings remain between the PLT and the MSE, despite the fact that the MSE respondents' ratings are lower than both their partners, the PLT and trainers respondents, with a mean value of 2.08 and 2.31 for items 'fostering innovation' and 'showing development for contemporary practice and innovation', respectively.

Table 5.4B: The mean distribution and the ANOVA test on perceptions of stakeholders in terms of knowledge accumulation

No	Items	All-respondents N=191		Respondents by type							
		Mean	SD		N	Mean	SD		df	F	Sig.
4	Giving due consideration for value-adding technology	**3.53**	**0.85**	PLT	35	4.40	0.55	BG	2	23.80	0.00
				Trainers	184	3.37	0.81	WG	488		
				MSE	172	3.46	0.83	T	390		
5	Focusing on strengthening linkage with partners	**4.02**	**1.02**	PLT	35	4.11	0.83	BG	2	5.74	0.04
				Trainers	184	3.77	1.28	WG	488		
				MSE	172	4.17	0.79	T	390		
6	Exerting effort for the accumulation of essential knowledge	**2.60**	**1.05**	PLT	35	4.09	0.82	BG	2	51.37	0.00
				Trainers	184	2.40	0.92	WG	488		
				MSE	172	2.45	0.93	T	390		
	Overall mean	**3.38**	**0.97**			**3.56**	**0.86**				

Mean ≤ 2.33 = hardly institutionalised; 2.33 <Mean ≤ 3.6 =moderately institutionalised; and Mean ≥ 3.6= highly institutionalised

The mean value of 4.03 for item 2, "Focusing on strengthening linkage with partners," as shown in Table 5.2B, suggests a high level of institutionalisation of

the aforementioned items. The PolyCO's performance fell into this category of "highly institutionalised, which is likely to predict the existence of favourable perceptions for the leadership team's practices regarding 'knowledge accumulation issues'. The respondents perceptions in terms of Item 4, "giving due consideration for value-adding technology," with a mean value of 3,53, and Item 6, "exerting effort for the accumulation of essential knowledge," with a mean value of 2.6, fell in the "moderately institutionalised" practice category, which still indicates a positive perception for the practice of TT and its sustainable accumulation. The total grand mean of 3.38 revealed that the summary did, that the respondents' degree of perception of its institutionalisation level of knowledge accumulation is moderate.

When the analysis of the data was viewed separately by the type of respondent, the PLT's rating of the items was still the highest of all in items 4 (4.44), 5 (4.11), and 6 (4.6), thereby falling into the "highly institutionalised" practice category that the respondents perceive as being highly institutionalised. The trainers' rating value was 3.77 for Item 5, "focusing on strengthening links with partners," also indicating a "highly institutionalised" level of perception. The rest mean value of 3.37 for Item 4 giving due consideration for value-adding technology" and 2.45 for Item 6 effort exerting intensity for the accumulation of essential knowledge" fell in the category of "moderately institutionalised" practice, which predicts positive motivation for the operationalisation of items rendered in relation to "knowledge accumulation activities."

The MSE personnel's ratings fell into the "highly institutionalised" levels of perception category in the case of Item 5, "Focusing on strengthening linkage with partners," with a mean value of 4.17, while Item 4, "Giving due consideration for value-adding technology," with a mean value of 3.46, and Item 6, with a mean value of (2.40), rested on a "moderately institutionalised" status. The results of ANOVA F ratio (2,488) = 23.80, $p < 0.05$, for Item 4; F ratio (2,488) = 5.17, $p < 0.05$, for item 5; and ANOVA F ratio (2,488) = 51.37, $p < 0.05$, for Item 6, indicated the presence of a statistically significant difference among the respondents in their

opinions. The significance difference resulted from the PLT respondents' highest rating.

In short, the overall mean for the construct "knowledge accumulation" clearly indicated that the execution level fell into a "moderately institutionalised" position. In general, from the association of perception with the institutionalisation level of the selected items regarding "knowledge accumulation activities," the ANOVA ratio clearly indicated the presence of a statistically significant difference among the three types of respondents, namely, the PLT, trainers and the MSE. The respondents perceived that the construct "knowledge accumulation "was practised moderately," indicating a moderately positive attitude towards the result of the TT regarding the items under it. The overall mean value of the construct supports this labelling. The ANOVA ratio clearly indicated the presence of a statistically significant difference among the three types of respondents, namely, the PLT, the trainers and the MSE.

Table 5.4C: The mean distribution and the ANOVA test on perceptions of stakeholders in terms of effectiveness and efficiency improvement

No	Items	All-respondents N=191		Respondents by type							
		Mean	SD		N	Mean	SD		df	F	Sig.
7	Intensifying efficiency and effectiveness of the institution	**3.21**	**0.94**	PLT	35	4.37	0.55	BG	2	36.26	0.00
				Trainers	184	3.06	0.87	WG	488		
				MSE.	172	3.09	0.89	T	390		
8	Developing skill that enable competitive in dynamic world	**3.56**	**1.01**	PLT	35	4.31	0.53	BG	2	12.05	0.00
				Trainers	184	3.52	0.99	WG	488		
				MSE.	172	3.43	1.03	T	390		
9	Introducing new technology to increase productivity	**4.11**	**0.58**	PLT	35	3.86	1.14	BG	2	3.72	0.025
				Trainers	184	4.15	0.49	WG	488		
				MSE.	172	4.13	0.46	T	390	125.34	
10	Giving due consideration for gaining competitive advantage	**2.45**	**1.03**	PLT	35	4.51	0.61	BG	2		0.00
				Trainers	184	2.28	0.78	WG	488		
				MSE.	172	2.33	0.81	T	390		
	Overall mean	**3.36**	**0.89**			**3.59**	**0.76**				

Df=2 and 390 ,F = show the results of the f-ratio= analysis level at 0.05'
Mean ≤ 2.33 = hardly institutionalised ; 2.33 <Mean ≤ 3.6 =moderately institutionalised; and Mean ≥ 3.6= highly institutionalised

As indicated in Table 5.4C, the mean value of 4.11 for Item 9, ‘introducing new technology to increase productivity," was found to be "highly institutionalised" according to the perception of All-respondents. The remaining items, namely, "developing skills that enable competitiveness in a dynamic world," with a mean value of 3.56; Item 7, "intensifying efficiency and effectiveness of the institution,” with a mean value of 3.27; and Item 10, "giving due consideration for gaining competitive advantage, with a mean value of 2.45, fell in the "moderately institutionalised" practice category. Moreover, the overall mean of All-respondents' ratings is in harmony with most of the items in that the perception level of the respondents in relation to "effectiveness and efficiency improvement" fell in the "moderately institutionalised" practice category.

When the data were analysed separately by respondent type, the PLT's ratings of the three items, namely, Item 10, "giving due consideration for gaining competitive advantage, with a mean value of 4.51, Item 7, "intensifying efficiency and effectiveness of the institution,” with a mean value of 4.37, Item 8, “developing skills that enable competitiveness in a dynamic world,” with a mean value of 4.31, and Item 9, ‘introducing new technology to increase productivity," with a mean value of 3.86, fell into the "highly institutionalised" practice category too. Regarding Item 10, "giving due consideration for gaining competitive advantage," unlike PLT’s perception, the trainers and MSE personnel respondents perceive it as a "hardly institutionalised" practice category.

The results of ANOVA F ratio (2,488) = 36.26, p = 0.05, for Item 7; F ratio (2,488) = 12.05, p = 0.05, for Item 8; and ANOVA F ratio (2,488) = 3.72, p = 0.05, for Item 9, indicated the presence of a statistically significant difference among the respondents in their opinions. The Hochberg’s GT2 test confirmed the significant difference resulting from the PLT respondents' highest ratings, except for Item 10.

In summary, the analysis revealed that All-respondents regarded the "introduction of new technology" as a "highly institutionalized" practice that increases productivity.The remaining items, such as 'developing skills for competitiveness', 'intensifying efficiency', and 'giving due consideration for gaining competitive advantage', were moderately institutionalised. The PLT's ratings of three items were all in the "highly institutionalised" category, suggesting a significant difference among the key stakeholders in their perceptions of the institutionalisation level of the items given in relation to effectiveness and efficiency improvement as far as the prevailing TT activities. The analysis also revealed the extreme difference between the PLT respondents on the one hand and the trainers and the MSE on the other hand, in that the PLT perceive the presence of a highly institutionalised competitive advantage, whereas the trainers and the MSE perceive completely the opposite.

Table 5.4D: The mean distribution and the ANOVA test on perceptions of stakeholders in terms of cooperation and participation strengthening

No	Items	All-respondents N=191		Respondents by type							
		Mean	SD		N	Mean	SD		df	F	Sig.
11	Accruing participation from multiple partners	**3.02**	**1.12**	PLT	35	4.31	0.53	BG	2	30.67	0.00
				Trainers	184	2.85	1.08	WG	488		
				MSE.	172	2.88	1.07	TI	390		
12	Building synergy with micro and small enterprise	**2.70**	**1.18**	PLT	35	3.80	1.13	BG	2	19.24	0.00
				Trainers	184	2.50	1.07	WG	488		
				MSE.	172	2.63	1.15	TI	390		
13	Creating good influential atmosphere across boundary	**3.27**	**1.15**	PLT	35	4.29	0.52	BG	2	230.77	0.00
				Trainers	184	4.15	0.47	WG	488		
				MSE.	172	2.42	0.92	T	390		
	Overall mean	**2.99**	**1.15**		**3.31**	**0.92**					

Df=2 and 390, F = show the results of the f-ratio= analysis level at 0.05'
Mean ≤ 2.33 = hardly institutionalised; 2.33 <Mean ≤ 3.6 =moderately institutionalised; and Mean ≥ 3.6= highly institutionalised

As presented in Table 5.4D, when the construct was analysed from all the respondents perspectives, the level of institutionalisation of "creating a good

influential atmosphere across boundaries” (M = 3.27), “accruing participation from multiple partners” (M = 3.02), and “building synergy with MSE” (M = 2.70) in relation to "cooperation and participation strengthening" fell into the “moderately institutionalised practice category, which can be termed the modest execution level of the specified indicators.

However, the results of ANOVA F ratio (3,632) = 30.67, p = 0.00, for item “creating a good influential atmosphere across boundaries”; F ratio (3,632) = 19.24, p = 0.00, for item “accruing participation from multiple partners”; and ANOVA F ratio (3,632) = 230.77, p = 0.00, for item “building synergy with MSE” indicated the presence of a statistically significant difference among the three respondent groups in their opinions concerning the institutionalisation of the indicators having a relationship with the construct "cooperation and participation strengthening." The Hochberg’s GT2 test result witnessed that the difference came from the fact that the ratings value of PLT’s regarding the items, namely, "building synergy with MSE," "creating a good influential atmosphere across boundaries," and "accruing participation from multiple partners" in relation to "cooperation and participation strengthening," was found to be the highest of any of the trainers and MSE personnel.

To summarise, the overall mean of 2.99 of All-respondents indicated that the category rests on the status of "moderately institutionalised" in relation to the level of the PLT’s practices concerning the construct “cooperation and participation strengthening." The study revealed that the indicators from the construct, namely, “creating a good influential context across boundaries”; “gaining participation from diversifies partners” and “the building synergy with MSE” were “moderately institutionalized” practice category. However, there was a significant difference among the three respondents, PLT, trainers and MSE regarding the state of the institutionalisation level of the indicators. The highest rating values was found to be the PLTs’, causing for the occurrence of variability.

5.4.5. Success and challenging factors for TT practice

5.4.5.1. Level of TT success factors

Success factor issues are an attractive topic for researchers and practitioners. It helps to foster the activity of TT from a multitude of perspectives. It facilitates the operation of TT issues from various angles. Understanding the features and usability of technology and making it suitable to the activities is the essence of success factors in facilitating and accelerating cooperation between technology providers and receivers. It involves limiting opportunities that mitigate risk creeping into the operation of the TT project. The TT project's success is influenced by several elements, such as the issues of technology's functionality, flexibility, affordability, applicability, and experience in providing the greatest technology support to consumers, which influence the extent of success factors (Chiș & Crișan, 2020:52). As experience shows, even some practitioners exerted efforts in preparing an array of frameworks to analyse the issues. For instance, researchers have identified technical, organisational and people factors as important sources of success, though the parameters predominantly centre on the TT perspective.

Addressing the 'success factor issues' is a vitally essential topic that is imperative to speeding up the TT activities. In relation to this, Kumar & Uruthirapaty (2007) have identified three components of success factors for TT, namely, technical, organisational and people factors, which can contribute to the acceleration and effectiveness of the intended TT. To differentiate important success factors from the least successful ones in the accomplishment of the TT activities, the researcher suggested ten success factor items from the literature review and delivered them in the questionnaire to the PLT and trainer respondents for rating. A 5-point Likert scale, ranging from not important (1) to very important (5), was offered to respondents for rating the degree of the success factor intensity. For the brevity of the analysis, the mean score range is interpreted as follows: mean ≤ 2.99 = least

important; 3 ≤ mean ≤ 3.99 = moderately important; and mean ≥ 4 = highly important.

Table 5.5A: The mean distribution and the independent t-test on success factors practised while leading TT activities

	Items	Grand Mean	Participants by type				t	df	Sig. (2-tailed)
			Position	N	Mean	SD			
1	The suitability of the technology in technology transfer queues	**4.13**	PLT	35	4.49	0.51	4.173	217	0.00
			Trainers	184	4.03	0.58	4.514	61.772	0.00
2	The cooperation between technology donor and receiver	**2.40**	PLT	35	3.46	0.78	0.667	217	0.00
			Trainers	184	2.10	0.72	0.614	51.461	0.00
3	The positive influence of technology transfer on innovation	**3.07**	PLT	35	3.31	0.99	2.042	217	0.04
			Trainers	184	3.00	0.74	1.739	45.293	0.09
4	The current incentive for technology transfer	**1.74**	PLT	35	1.80	0.83	0.592	217	0.56
			Trainers	184	1.72	0.69	0.534	48.082	0.59
5	The functionality of the technology in a queue for transfer	**1.97**	PLT	35	2.14	0.55	1.728	217	0.09
			Trainers	184	1.93	0.68	1.940	65.946	0.06
6	Orchestrated relationship among technology transfer key actors	**1.66**	PLT	35	1.86	0.81	2.292	217	0.02
			Trainers	184	1.60	0.49	1.755	41.299	0.09
7	The timeliness of the technology in line queues for transferring	**3.70**	PLT	35	4.26	0.66	4.002	217	0.00
			Trainers	184	3.54	1.00	5.020	83.062	0.00
8	The reliability of the technology in line queues for transferring	**3.06**	PLT	35	3.20	1.05	1.206	217	0.23
			Trainers	184	3.02	0.71	0.974	43.109	0.34
9	The unity of purpose among key technology transfer stakeholders	**2.14**	PLT	35	2.29	0.79	1.229	217	0.22
			Trainers	184	2.10	0.76	1.207	53.322	0.23
10	Continued relationship among technology transfer key stakeholders	**2.92**	PLT	35	2.91	1.01	-0.030	217	0.98
			Trainers	184	2.92	0.84	-0.027	48.109	0.98
	Overall Mean	**2.68**		**2.78**	**0.76**				

Mean ≤ 2.33 = least important; 2.33 < Mean ≤ 3.66 =moderately important; and Mean > 3.66= highly important

As presented in Table 5.5A, while focusing on all the respondents group, the success factor items ‘The suitability of the technology in TT queues’ with a mean value of 4.13 and "The timeliness of the technology in line queues for transferring

‘with a mean value of 3.7 were rated by All-respondents as the highest success factors for PLT in the TT activities practices. In contrast to these, three items, namely, Item 4, ‘the positive influence of TT on innovation’, with a mean value of 1.74, Item 5, ‘the functionality of the technology in a queue for transfer’ with a mean value of 1.97, item 6, ‘Orchestrated relationship among TT key actors’ with a mean value of 1.66, and Item 1, ’ The cooperation between technology donor and receiver’ with a mean value of 2.40, and Item 9, ‘the unity of purpose among key TT stakeholders’ with a mean value of 2.14, were rated by All-respondents as the least important success factors. All the rest items, namely, Item 3, "the positive influence of TT on innovation," with a mean value of 3.07, Item 8, "The reliability of the technology in line queues for transferring," with a mean value of 3.06, and Item 10, “continued relationship among TT key stakeholders’’ with a mean value of 2.92, fell in the ‘moderately important success factor' category. Yet in aggregate, the overall mean of the same respondent type fell, in general, into the 'moderately important success factors’ category.

When we came to the analysis based on the respondents type, in the same way, the same Item 1, ‘‘The suitability of the technology in TT queues’, and Item 7, ‘The timelines of the technology in line queues for transferring’ fell into the "highly important success factors" category by the respondents type even if statistical significance differences were available, as the results of t (217, 61.772) = 4.514, P = 0.000, and t (217, 83.062) =5.020, P = 0.000, indicated the presence of a significant difference between the PLT respondents and trainer respondents as presented above. To the extreme end of these but in the same manner as it was analysed in the All-respondents’ case items, namely, Item 4, ‘the positive influence of TT on innovation’, with a mean value of 1.74, Item 5, ‘the functionality of the technology in a queue for transfer’ with a mean value of 1.97, Item 6, ‘orchestrated relationship among TT key actors’ with a mean value of 1.66, and Item 9, ‘the unity of purpose among key TT stakeholders’ with a mean value of 2.14, were rated by respondents type as the “least important success factors” category with significant difference between the PLT and trainers respondents views, the PLTs’ rating value

remain significantly higher than their trainers partners. The t-test result indicated this as follows: t (217, 48.082) = 0.534, P = 0.596, t (217, 65.946) = 1.940, P = 0.057, t (217, 41.299) = 1.755, P = 0.087, and t (217, 53.322) = 1.207, P = 0.233 confirmed the presence of significant difference in items 1, 4, 5, and 9 as depicted in the preceding lines. But, surprisingly enough, there is important statistical difference between the PLT and trainers respondents where the trainers' rating mean value (M=2.10) fell under the category of "least important success factors" while the PLT's rating remained higher than the trainer ones with a mean value of 3.46 t (217, 51.461) = 0.667, P = 0.000.

In the same manner, the remaining three items, which were rated as the 'moderately 'important success factor 'category by All-respondents, namely, Item 3, 'The positive influence of TT on innovation', Item 8, 'the reliability of the technology in line queues for transferring', and Item 10, 'continued relationship among TT key stakeholders' again fell into the 'moderately important success factor' by the two types of respondents separately, i.e., PLT and trainers. Indeed, a statistically significant difference was not observed, as the t (217, 45.293) = 2.042, p = 0.043, t (217, 43.109) = 1.206, p = 0.230, and t (217, 48.109) = -0.030, p = 0.976 depicted in Table 5.5A. This indicated that full statistical consensus among the two types of respondents regarding the importance of the given success factors was evident in determining that the three items fell at the level of moderately important success factors.

The PLT failed to address the discrepancy that may exist between their opinion of their current performance status and the trainers' and MSE's, the technology recipient's, assessment of their results. Theoretically, the success criteria that have been nominated are highly significant; nonetheless, the current dissociation between the essentiality of the variables and their implementation is a dominant issue. Nevertheless, the PLT did not diligently work to put the criteria into practice.

In conclusion, the items ‘the suitability of the technology in TT queues’, and “the timeliness of the technology in line queues for transferring’ were rated as the ‘highest success factors’ category for PLT in the TT activities practices. In contrast, the items ‘the cooperation between technology donor and receiver’, ‘the positive influence of TT on innovation’, ‘the functionality of the technology in a queue for transfer’, ‘orchestrated relationship among TT key actors', and ‘the unity of purpose among key TT stakeholders’ were rated as the “least important success factors’ practice category. The PLT failed to address the available gap between their performance status and how the performer, the trainers, and the MSE perceive their effort and outcomes of their leadership practice as far as TT activities were concerned. When the technology clearly discloses the lack of commitment and the presence of ineffective implementation, the PLTs’ rating indicates the opposite.

5.4.5.2. Level of TT Challenging Factors

The TT activity from the technology producer to the receiver needs various considerations because it is a demanding and complex task. There are several potentially complicated concerns that must be taken into consideration when planning and managing TT operations from the polytechnic to the receiving micro and small enterprises (MSEs). The key predictors of a leader's capacity to manage innovation in MSEs continue to be deficiency in business management skills, ignorance of leadership transition, education and training, market and technology expertise, and entrepreneurial issues. The hindering factors come not only from other directions but also, in the form of resistance, considerably stream from TVET managers and trainers themselves internally to adopt the new approaches.

Concerning the criticality and importance of working on challenging factors for TT activities, Estep (2017:4) describes that understanding the available barriers to tackling them on time and making them attributable to success is critical for the better commercialisation of TT. To identify major challenges that can hinder the effective implementation of the TT process from the polytechnic to the MSE, ten

hindering factors were designed from the actual problems at the grassroots level and a literature review that are common as challenging factors that hampered the practice of PLT during TT activity rendered to the PLT, trainers and MSE respondents to rate the extent of the challenging factors intensity. A 5-point Likert scale, ranging from no extent (1) to a very large extent (5), was offered to respondents to rate their degree of conformity to the challenges. For the brevity of the analysis, the mean score range is interpreted as follows: mean ≤ 2.33 = least challenge; 2.33 < mean ≤ 3.66 =moderate challenge; and mean >3.66 = highest challenge. The current analysis of the thesis is presented here under.

Table 5.5B: the mean distribution and the ANOVA test on challenging factors for TT

No	Items	All Participants N= 635		Participants by types					df	F	Sig
		Mean	SD	Position	N						
1	Limited capacity of the micro and small enterprise	**4.26**	**0.81**	PLT	35	4.57	0.65	BG	3	3.485	0.016
				Trainers	184	4.11	0.95	WG	632		
				MSE	172	4.22	0.81	T	635		
				trainees	245	4.31	0.75				
2	Lack of capital to motivate TT	**3.49**	**0.87**	PLT	35	4.31	0.72	BG	3	25.162	0.00
				Trainers	184	3.14	0.90	WG	632		
				MSE	172	3.33	0.65	T	635		
				trainees	245	3.66	0.90				
3	Internal resistance to change outdated experience	**2.93**	**0.93**	PLT	35	2.03	0.62	BG	3	69.924	0.00
				Trainers	184	2.58	0.95	WG	632		
				MSE	172	2.60	0.96	T	635		
				trainees	245	3.47	0.60				
4	Lack of competent staff to operationalise TT project	**2.69**	**0.99**	PLT	35	2.83	1.04	BG	3	19.636	0.00
				Trainers	184	2.46	1.06	WG	632		
				MSE	172	3.13	0.91	T	635		
				trainees	245	2.47	0.89				
5	Lack of access to appropriate technology to copy	**2.79**	**1.04**	PLT	35	3.49	0.82			58.977	0.00
				Trainers	184	3.59	0.66	BG	3		
				MSE	172	2.26	1.04	WG	632		
				trainees	245	2.66	0.94	T	635		
6	Lack of good governance	**4.05**	**0.92**	PLT	35	3.29	0.93			49.306	0.00
				Trainers	184	4.40	0.82	BG	3		
				MSE	172	3.55	0.87	WG	632		
				trainees	245	4.34	0.78	T	635		

No	Items	All Participants N= 635		Participants by types					df	F	Sig
7	Inefficient communication system	**4.07**	**0.91**	PLT	35	3.40	1.14			10.446	0.00
				Trainers	184	4.01	1.09	BG	3		
				MSE	172	4.01	0.78	WG	632		
				trainees	245	4.25	0.80	T	635		
8	Lack of time to focus on TT	**3.47**	**1.08**	PLT	35	4.49	0.66			124.777	0.00
				Trainers	184	3.44	0.99	BG	3		
				MSE	172	4.28	0.64	WG	632		
				trainees	245	2.78	0.91	T	635		
9	Limited support for TT	**4.25**	**0.87**	PLT	35	3.94	1.19			2.819	0.04
				Trainers	184	4.31	0.83	BG	3		
				MSE	172	4.35	0.81	WG	632		
				trainees	245	4.19	0.88	T	635		
10	Need mismatch between the polytechnic and MSEs	**3.12**	**0.99**	PLT	35	3.97	0.98			41.629	0.00
				Trainers	184	3.57	0.96	BG	3		
				MSE	172	2.58	0.86	WG	632		
				trainees	245	3.15	0.88	T	635		
	Overall mean	**3.51**	**0.94**			**3.54**	**0.87**				

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'.
Mean ≤ 2.33 = least challenge; 2.33 < Mean ≤ 3.66 =moderate challenge; and Mean > 3.66= highest challenge

As presented in Table 5.5B, the third and fourth columns presented the data analysis of all the respondents. As depicted, All-respondents rated the challenging factor items, namely, "limited support for TT" with a mean value of 4.26, "limited capacity of the micro and small enterprise" with a mean value of 4.25, "inefficient communication system" with a mean value of 4.07, and "lack of good governance" with a mean value of 4.05, as the 'highest challenges' for PLT in the leading and managing practice of the TT activities. All the rest from the higher mean value to the lower mean value: "lack of capital to motivate TT," with a mean value of 3.49; "lack of time to focus on TT," with a mean value of 3.47; "need mismatch between the polytechnic and MSEs," with a mean value of 3.12; "internal resistance to change outdated experience," with a mean value of 2.93; "lack of access to appropriate technology to copy", with a mean value of 2.79, and "lack of competent staff to operationalize the TT project", with a mean value of 2.69, fell into the moderate challenge' category. Yet in aggregate, the overall mean of the all-respondent type fell, in general, into the 'moderate challenge' category with a mean value of 3.51.

Regarding the analysis based on the respondents type, Item 1, ‘‘limited capacity of the micro and small enterprise," Item 7," inefficient communication system,” and Item 9, "limited support for TT, were rated into the ‘highest challenge" ‘category by the respondents type even if statistical significance differences were available, as F ratio (3,632) = 3.485, p = (0.016), F ratio (3,632) = 10.446, p = (0.000), and F ratio (3,632) = 2.819, p = (0. 0.038) confirmed the significant difference. As the Hochberg’s GT2 test witnessed, the difference came from the fact that the rating value of PLT was found to be higher than that of the trainers and MSE personnel respondents in Item 1 and lower, on the contrary, in items 7 and 9. This could indicate the fact that the PLT did not appreciate the issues of communication inefficiency and lack of good support for TT, or at least did not accept the fact that the MSE appreciated the presence of problems in such cases. The other Item, "Lack of time to focus on TT," was rated as if it were the highest challenge by the PLT and MSE personnel respondents, whereas the trainer respondents rated it into the 'moderate challenge’ category with a mean value of 3.44, which was significantly lower than the other two respondents type ratings.

Surprisingly enough, the PLTs rating remained the lowest of any trainer and MSE in items ‘lack of good governance’, limited support for TT, “inefficient communication system", and even in “internal resistance to change outdated experience", where it was significantly lower than other items above excepting the last Item ““internal resistance to change outdated experience”. In addition, Item 7, “inefficient communication system,” was rated as the highest challenge by the trainers and MSE personnel respondents, with the same mean value of 4.01 in contrast to the PLT’s lower rating, which termed it the 'moderate challenge’ category.

In the same way, other items rated as the ‘moderate challenge’ category by All-respondents were Item 3, ‘internal resistance to change outdated experience’ was found to be rated as the moderate challenge by all three types of respondents, i.e.,

PLT trainers and MSE personnel. Indeed, a statistically significant difference was observed, as the F ratio (3,632) = 69.924, p = 0.000 indicated. The Hochberg's GT2 test witnessed the difference, which came from the fact that the rating value of PLT was found to be the least of any other respondents' mean value. Item 4,' Lack of competent staff to operationalise the TT project' with a mean value of 2.69 was rated in the moderate challenge 'category, while the trainers indicated that it was the least challenging with a mean value of 2.46. The trainers' ratings were found to be lower than others, which is the reason for the statistical significance difference as the F ratio (3,632) = 19.636, P = 0.000 conferred in the analysis in Table 5.5B.

In short, almost all items, namely, 'limited capacity of the micro and small enterprise," "limited support for TT', "limited support for TT," and 'inefficient communication system', were found to be among the "highest challenges" for the leadership team in TT activities. Conversely, items 'internal resistance to change outdated experience' and "lack of competent staff to operationalize TT projects" and "lack of time to focus on TT',' were found to be among the "moderate challenges," thereby the ratings result nearer to the least challenge. Though differences were observed from respondents to respondents, the rest, namely, "lack of capital to motivate TT," "lack of good governance," and "need mismatch between the polytechnic and MSEs', were also rated as the 'moderate challenge types. In general, "limited capacity of the micro and small enterprises," "inefficient communication system(new)," "lack of time to focus on TT," and "limited support for TT" were rated as the highest challenges, though the PLT respondents' ratings were lower in the cases of "inefficient communication system(new)," "limited support for TT" and 'lack of good governance'.

5.4.5.3. Order of the three most serious challenging factors for TT activities

To identify the three major challenges that can hinder the effective implementation of the TT process from the polytechnic college to the MSE, the PLT and the trainer respondents were asked to select three most serious major challenging factors

from the given ten challenging factors. The analysis is given in Table 5.5C hereunder.

Table 5.5C: Rank of most serious hindering factors for TT

NO	Serious challenge for TT	CHF1		CHF2		CHF3		Total	
		F	%	F	%	F	%	F	%
1	Limited capabilities of MSEs	96	43.84	36	16.44	24	10.96	**156**	**23.74**
2	Lack of capital	36	16.44	30	13.70	40	18.26	**106**	**16.13**
3	Limited support for TT	30	13.70	54	24.66	42	19.18	**126**	**19.18**
4	Inefficient communication system	26	11.87	18	8.22	23	10.50	**67**	**10.20**
5	Lack of good governance	10	4.57	26	11.87	42	19.18	**78**	**11.87**
6	Lack of time to focus on TT	8	3.65	17	7.76	11	5.02	**36**	**5.48**
7	Need mismatch of PolyCO and MSE	6	2.74	13	5.94	23	10.50	**42**	**6.39**
8	Lack of competent staff to operate TT	4	1.83	14	6.39	9	4.11	**27**	**4.11**
9	Lack of accessibility to proper technology	3	1.37	9	4.11	2	0.91	**14**	**2.13**
10	Internal resistance	0	0	2	0.91	3	1.37	**5**	**0.76**
	Total	**219**	**100**	**219**	**100**	**219**	**100**	**657**	**100**

CHF1= Most serious TT Challenge; CHF2=2nd most serious TT challenge; CHF3=3rd most serious challenge T= total number of responded respondents

As indicated in Table 5.5C, 96 respondents rated the "limited capabilities of MSEs' as "the most challenging factor," and 36 and 24 respondents also rated it as the 2nd and 3rd most serious TT challenges, respectively. In general, 156 (23.74%) respondents rated it as falling within one to three ranks as the "most serious challenge'. The next challenge, namely, 'lack of capital," was rated as 'the most serious TT challenge' by 36 respondents, which is higher by six respondents than the next rated challenging factor, limited support for TT," which was rated by 30 respondents as the most serious challenge'. In addition, 30 and 40 respondents rated it as the 2nd and 3rd most serious and challenging factors, respectively. About 30 respondents rated "limited support for TT' as the most serious challenging factor, which is lower by six (6) respondents than 'lack of capital'. Though in rating the 'limited support for TT' as the "most serious challenge," the

2nd most serious challenge and the 3rd most serious challenge had 30, 54 and 42 respondents, of which in aggregate 126 (19.18%) participated, respectively, it seemed to stand third because it remained six respondents less than the challenge "lack of capital' for the first rank position. To conclude, as depicted in the analysis, the three most serious challenging factors of TT were identified to be "limited capabilities of MSEs," 'lack of capital," and "limited support for TT'. On the contrary, the three least challenging factors given as their ranks were "need mismatch between PolyCO and MSE," lack of competent staff to operate TT," and 'lack of accessibility to proper technology descending order in seriousness status. Figure 5.1 depicts graphs of the most serious challenge rank in the practice of leadership on TT.

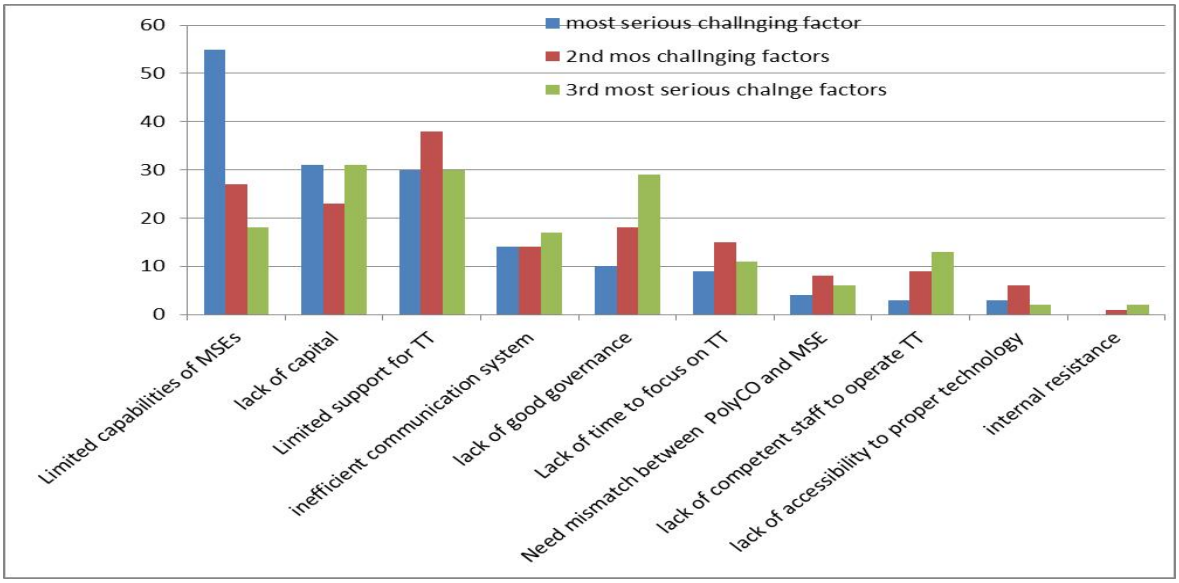


Figure: 5.1: The rank of three most serious challenge factors for TT practice

5.4.6. Technological capabilities built (TCB), technology accumulated (TA) and absorptive capacity acquired (AC)

A five-point Likert scale ranging from 5 (done very largely) to 1 (never done) was used. However, to simplify the analysis, the mean value was interpreted as follows: mean ≤ 2.33 = poorly done; 2.33 < mean ≤ 3.66 =moderately done; and mean >3.66 = largely done. Three items for each technological capability built,

technology accumulated or institutionalised, and four items for absorptive capacity institutionalised were rendered for respondents to rate them. The analysis was made in this order on the next subsections.

5.4.6.1. Technology Capability built (TCB)

TC comes from a variety of sources of invention and creativity, some are embodied in human skills and others are embedded in new processes and inventions. Others, however, are present in infrastructure, machinery and tools (Archibugi, & Coco, 2004:630). According to Zawislak et al. (2014), technological capabilities are crucial because they help to focus on four complementary capabilities: development, operations, management and transaction capabilities. It can be determined from its information and skills and technical issues related to managerial institutional capacity, which in turn enhance the power of using various technologies in different situations. Omar et al. (2012: 211–213) clarified that capabilities are embodied not only in employees' knowledge and skills and the technical system but also in the managerial system, values, and norms.

Technological capability establishment involves the learning process that individuals go through as well as how the organisation combines and inspires people to work (Omar et al., 2012: 212). It is a method of organisational learning or the process of acquiring technical knowledge. TT without the requisite training leads to a continued reliance on technology suppliers and ultimately results in ineffective operations since technology recipients lack the necessary knowledge and experience. As a result, the transfer process works well when the environment has a sufficient degree of knowledge, experience and abilities.

Table 5.6A: The mean distribution and the ANOVA test on Technology Capability built / institutionalised

No	Items	All-respondents N=636		Respondents by type					df	F	Sig.
		Mean	SD		N	Mean	SD				
1	Identification skill of essential technology is improved	**3.89**	**0.75**	PLT	35	4.11	0.7	BG	3	1.8	0.15
				Trainers	184	3.91	0.8	WG	632		
				MSE.	172	3.81	0.7	T	635		
				Trainees	245	3.9	0.8				
2	Technological capabilities management have been improved	**2.99**	**0.84**	PLT	35	3.94	0.48	BG	3	44.107	000
				Trainers	184	3.10	0.92	WG	632		
				MSE.	172	3.23	0.77	T	635		
				Trainees	245	2.62	0.69				
3	The learning power of TT actors have been improved	**3.04**	**0.7**	PLT	35	3.69	0.9	BG	3	72	000
				Trainers	184	2.76	0.4	WG	632		
				MSE.	172	3.49	0.8	T	635		
				Trainees	245	2.77	0.4				
	Overall mean	**3.53**	**0.71**			**3.57**	**3.96**				

Df=3 and 635 F = show the results of the F-ratio= analysis level at 0.05'.
Mean ≤ 2.33 = hardly institutionalised; 2.33 < Mean ≤ 3.6 =moderately institutionalised; and Mean > 3.6 = highly institutionalised

From All-respondents' perspectives as indicated in Table 5.6A, the analysis revealed that the institutionalisation level of the three items, which describe an issue of the improvement of essential technology identification skills, the improvement of technology capability management and the learning power of the TT key actors was highly institutionalised, except for the third Item, according to the respondents rating value. The mean values of the three issues were 3.89, 2.99 and 3.04, respectively. All four respondents (PLTs, trainers, MSEs and trainees) agreed that the identification skills of essential technology had improved, indicating a high level of institutionalisation.

When the analysis was made from the perspectives of the respondents, all types of respondents rated Item 1, which denoted the improvement of the identification skills of essential technological skills, where their views remain similar on its high implementation level. The F-ratio (3,632) = 1.8, P = 0.15 result has revealed the available similarity of views in the specified Item. However, the respondents rated the remaining two items, namely, "technology capability management has been improved" and "the learning power of TT actors has been improved," as a "moderately institutionalised" practice category, disclosing significant differences of opinion on the institutionalisation level of the two indicators. The result of the analysis confirmed the presence of opinion variability among the respondents, PLT, trainers, MSE and trainees. Technology capability involves the ability to operate, maintain, modify and improve the selected technology and, finally, the ability to promote technical learning to the end users (Kumar, et al., 1999: 82). Hence, the moderate institutionalisation level of implementation in this research could suggest the modest performance of the TT activities.

As the post-hoc test and the Hochberg's GT2 multiple comparisons revealed, the variability was found to originate from the highest rating value of PLT in two items, "technology capability management improvement, "and "learning power of TT actors' improvement, where the MSE and the trainers' perspectives on the item pertaining to technology capability management improvement are significantly similar. These findings were obtained from the use of the post-hoc test using Hochberg's GT2 in SPSS version 26. The MSE's rating value was significantly similar to the PLT's rating value in Item 3, indicating that the TT result has improved the learning power of the KY TT actors. This suggests that the MSE actors valued and supported the improvements made in the area.

In summary, the analysis indicated that for the item concerning the improvement of the skills of essential technology identification, All-respondents unanimously agreed in their views on its superior institutionalisation level. In contrast, the respondents put the institutionalisation level of "technology capability management

improvement, “and "learning power of TT actors’ improvement in the "moderate level" category, with such great variability among those that the ANOVA report confirmed the presence of significant differences among the respondents’ views. This suggests that the practice level of these activities may decline unless further appropriate action is designed to enhance them.

5.4.6.2. Technology accumulated (TA)

Technological accumulation has so far been extensively researched in the milieu of firms where the focus has been on the learning and acquisition of technology for change (Criscuolo & Narula, 2008:2). Wahab et al. (2012) also emphasise the importance of TT, which is nurtured with technology accumulation based on organisational learning. Three items were forwarded to the respondents to rate to determine the institutionalisation level of the issue related to the technology accumulation activity.

Table 5.6B: The mean distribution and the ANOVA test on technology accumulated/ institutionalised

No	Items	All-respondents (N=636)		Respondents by type					df	F	Sig.
		Mean	SD		N	Mean	SD				
4	TT effectiveness is improved due to technology accumulation	**2.41**	**0.7**	PLT	35	3.11	1	BG	3	15.23	0
				Trainers	184	2.48	0.8	WG	632		
				MSE	172	2.28	0.5	T	635		
				Trainees	244	2.38	0.7				
5	The knowledge accumulation	**2.94**	**0.55**	PLT	35	3.51	1	BG	3	28.4	0
				Trainers	184	3.02	0.5	WG	632		

	is embodied in the human resource			MSE	172	2.27	0.5	T	635		
				Trainees	245	2.98	0.4				
6	The accumulation process of technology is continual	**2.48**	**0.67**	PLT	35	2.49	0.5	BG	3	22.95	0
				Trainers	184	2.38	0.6	WG	632		
				MSE	172	2.81	0.8	T	635		
				Trainees	245	2..30	0.5				
	Overall mean	**2.61**	**0.65**			**2.7**	**0.65**				

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'. Mean ≤ 2.33 = hardly institutionalised; 2.33 ≤ Mean ≤ 3.6 =moderately institutionalised; and Mean > 3.6 = highly institutionalised

As indicated in Table 5.6B, All-respondents rated the three items, namely, Item 4, "TT effectiveness is improved due to technology accumulation," Item 5, "knowledge accumulation is embodied in the human resource," and Item 6, "the accumulation process of technology is continual," as "moderately institutionalised" practices category, with a mean value of 2.41, 2.94, and 2.48, respectively. However, the respective rating values of the respondents were lower, just in proximity to the "poorly institutionalised" practice level category. The overall grand mean value (M = 2.61) has also revealed the same execution level with a deviation value of 0.65 that fell in the same category.

The rating values of the respondents by type were also in congruence with All-respondents' ratings, which fell into the same "moderately institutionalised" category with a significant difference among the respondents. The ANOVA ratio result disclosed the respondents' views variability on the three items. This could indicate the presence of variability among all TT key stakeholders (technology donor and receiver entities) on TT from the polytechnic college to the MSE manufacturing subsectors. Yet, the overall result cannot escape confirming the very modest level of institutionalisation. The MSEs' rating values of Item 4, "TT

effectiveness is improved due to technology accumulation," and Item 5, “knowledge accumulation is embodied in the human resource,” for which they rated it as a "hardly institutionalised" practice category with a mean value of 2.28 and 2.27, respectively. Hence, this suggests the presence of a perception difference between the technology source and the technology receiver on the specified items.

As the post-hoc test and the Hochberg’s GT2 multiple comparisons revealed, the variability was found to drift from the lowest rating value of MSE to the highest rating value of the PLT respondents. The two respondent types were the source of the significant variability among the respondents, as verified by the ANOVA.

In general, all-respondents rated the “improvement of TT effectiveness due to technology accumulation", the "embodiment of knowledge accumulation in human resources,” and the "institutionalisation of continual technology accumulation” as “moderately institutionalised." However, the mean value was lower, almost nearer to the “poorly institutionalised" practice, with an overall grand mean of 2.61. When the analysis is made by dividing the respondents by type, the ANOVA result discloses the presence of significant variability among the respondents. Certainly, the MSE, the technology receiver, rated “improvement of TT effectiveness due to technology accumulation” and “institutionalisation of continual technology accumulation” as “hardly institutionalised” practice categories with means values of 2.28 and 2.27, respectively, and it came up with the variability of opinions to challenge the need for further unity of idea in the implementation.

5.4.6.3. Absorptive capacity (AC)

According to Criscuolo and Narula (2008: 2), absorptive capacity is the practice of having the capacity to learn, applying and implementing practices focused practices previously created and employed by the developed world. Technology transfer would happen only when there was at least a minimum level of absorptive capacity because its role around firms and the MSE context is instrumental.

Moreover, it is used as an important input as well as an important result or outcome of TT. Since the effectiveness of TT is determined by AC, Whangthomkun (2006:37) insisted that the leadership or managing entity of the polytechnic college must evaluate the status of absorptive capacity prior to the implementation of the TT and improvement project. Wahab et al. (2012) have also underlined the criticality of absorptive capability as one of the most important factors to influence TT on the part of the technology receiver.

Table 5.6C: The mean distribution and the ANOVA test on absorptive capacity (AC) institutionalised

No	Items	All-respondents N=636		Respondents by type		Mean	SD		df	F	Sig.
		Mean	SD	Position	N						
7	Absorptive capacity is improved	**2.90**	**0.81**	PLT	35	3.49	0.6	BG	3	63	000
				Trainers	184	2.91	0.6	WG	632		
				MSE	172	2.33	0.7	T	635		
				Trainees	245	2.53	0.7				
8	Acquiring essential technology is improved	**3.10**	**0.79**	PLT	35	3.91	0.3	BG	3	129	000
				Trainers	184	3.09	0.7	WG	632		
				MSE	172	2.4	0.7	T	635		
				Trainees	245	2.78	0.7				
9	Ability to assimilate the technology in local context is improved	**3.08**	**0.80**	PLT	35	3.46	1	BG	3	78	000
				Trainers	184	3.11	0.7	WG	632		
				MSE	172	2.45	0.7	T	635		
				Trainees	245	2.85	0.7				
10	Competitive advantage is built due to TT	**2.69**	**0.84**	PLT	35	3	0.8	BG	3	33	000
				Trainers	184	2.94	0.7	WG	632		
				MSE	172	2.21	0.8	T	635		
				Trainees	245	2.37	0.8				
	Overall grand mean	**2.69**	**0.84**			**2.86**	**0.7**				

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'.
Mean ≤ 2.33 = hardly institutionalised; 2.33 ≤ Mean ≤ 3.6 =moderately institutionalised; and Mean > 3.6 = highly institutionalised

Table 5.6C shows that All-respondents rated the four items presented as "moderately institutionalized" within the practice level category. These items incorporate the following: "Absorptive capacity is improved," which has a mean value of 2.90; "acquiring essential technology is improved," which has a mean value of 3.1; "ability to assimilate the technology in a local context is improved,"

which has a mean value of 3.08; and " competitive advantage is built due to TT," which has a mean value of 2.69. Furthermore, overall grand mean was 2.69, leaving all three mean value distributions above it. The ANOVA ratio confirmed the presence of a statistically significant difference among the respondents.

The PLT and the trainers rated the institutionalisation of the items expressing absorptive ability as "moderately institutionalised" after a comprehensive examination of the data from the respondent types. Both the PLT and the trainer respondents rated the item that describes the issue of "improvement of the absorptive ability" as a “moderately institutionalised” practice category. PLTs’ views on the performance level of Item 7 (“absorptive capacity is improved") and Item 8 (“acquiring essential technology is improved") were found to be significantly the highest of any other respondents. However, the respondents were similar in their rating status regarding Item 9, “ability to assimilate the technology in a local context is improved,” and Item 10, “competitive advantage is built due to TT,” in their opinion, depending on the level of institutionalisation of the two items.

The MSEs’ rating mean value distribution was far lower than that of the trainers and the PLT respondents. The trainees’ rating values was the least of any trainer and PLT respondents’ type. It was significantly higher than that of the MSE, except for Item 10, which they were discussing. The MSE rated Item 7, "absorptive capacity is improved," and Item 10, competitive advantage is built due to TT," as ‘hardly institutionalised” practice categories with a mean value of 2.30 and 2.21, respectively. Moreover, the MSE rating for Item 8, “acquiring essential technology is improved,” and Item 9, “ability to assimilate the technology in local context is improved,” with mean values of 2.4 and 2.45, respectively, were put just nearer to the “hardly institutionalised” practice category.

The post-hoc test revealed that, as it was read from Hochberg’s GZ test, the source of significant and great variability was found in the MSEs’ lower and the PLTs’ higher rating values in comparison to the trainer and trainee respondents.

Technology transfer occurs only when it acquires at least at minimum level of absorptive capacity, as it is instrumental in the MSE context and is used as an input and outcome of TT.

In summary, the study found that All-respondents, while seen jointly, rated all four items, namely, improvement of absorptive capacity; improvements of acquiring technology capability; improvement of contextualising technology for local needs and the scaling up of competitive advantage as moderately institutionalised practices. When the analysis was seen thoroughly in separate, the PLT and trainers rating mean value distribution for all items fell into the “moderately institutionalised ‘practice. Notably, the technology provider evaluated them in such a way that the PLTs’ rating value for the items was significantly higher than that of the trainer respondents in Item 7, “absorptive capacity is improved” and Item 8, “acquiring essential technology is improved.” There was no significant difference between the PLT and trainer ratings concerning Item 9, “ability to assimilate the technology in local context is improved” and Item 10, “competitive advantage is built due to TT”, However, the MSEs’ rating was far lower than that of the trainers, PLT respondents and trainees. It demands the leadership of a polytechnic college to evaluate the status of absorptive capacity carefully before entering the operation of TT activities.

5.4.6.4. Association between practices of PLT and TT in terms of TCB, TA and AC.

The practices of PLT were determined in terms of planning, effective communication, setting the environment, and spanning boundaries. As a concluding remark, identification of its association with the three constructs, namely, TCB, TA and AC (taking these as the result of TT achieved), was believed to be instrumental for future strategic measures for improvement. Pearson product-moment correlation analysis was run on SPSS version 26 to determine the association between the PLT practice and the three constructs suggested because of TT.

As stipulated in subsection 5.4.2, seven items for planning, five items for each effective communication and setting environment, as well as four items for spanning boundaries, for an aggregate of 21 items, were forwarded to the PLT and trainer respondents for ratings. In addition, the same 15 and 14 items were also forwarded to MSE and trainee respondents respectively, omitting items that were believed not relevant for MSE and trainees, respectively.

PLT's practice in terms of planning, effective communication, setting the environment, and spanning boundaries were computed from the three respondent types' ratings of items 5, 3, 4 and 4, respectively. The mean value of each item was considered for computation. As depicted in sections 2.4.4.2.1 to 2.4.4.2.3 in Chapter 2, technology capability built (TCB), technology accumulated (TA), and absorptive capacity (AC) obtained were given because of TT activities for this thesis. The mean values were computed in the same way from the three types of respondents' ratings on 3 items under TCB, 3 items under TA, and 4 items under AC. Therefore, to assess the strength and direction of the linear relationship between the independent variables and the dependent variable, a bivariate Pearson product-moment correlation coefficient r was run on the software SPSS version 26 and result is presented in Table 5.6D hereunder.

Table 5.6D: Association between practices of PLT and TT result in terms of TCB, TA and AC.

Correlations									
			PL	EC	ES	BS	TCB	TA	AC
1	PL	Pearson Correlation	1						
		Sig. (2-tailed)							
		N	636						
2	EC	Pearson Correlation	.361**	1					
		Sig. (2-tailed)	0.000						
		N	636	636					
3	ES	Pearson Correlation	.456**	.397**	1				
		Sig. (2-tailed)	0.000	0.000					
		N	636	636	636				
4	BS	Pearson Correlation	.453**	.364**	.609**	1			
		Sig. (2-tailed)	0.000	0.000	0.000				
		N	636	636	636	636			
5	TCB	Pearson Correlation	.144**	.097*	0.028	0.052	1		

Correlations									
			PL	EC	ES	BS	TCB	TA	AC
		Sig. (2-tailed)	0.001	0.020	0.496	0.216			
		N	636	636	636	636	636		
		Pearson Correlation	.133**	.091*	.151**	.217**	-0.077	1	
		Sig. (2-tailed)	0.001	0.030	0.000	0.000	0.064		
6	TA	N	636	636	636	636	636	636	
		Pearson Correlation	.151**	-0.025	.230**	.141**	-.233**	.170**	1
		Sig. (2-tailed)	0.000	0.552	0.000	0.001	0.000	0.000	
7	AC	N	636	636	636	636	636	636	636
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

Source: The researcher's analysis

PL= Planning practice
EC= Effective Leadership communication
ES= Environment Setting
BS= Boundary Spanning
TCB= Technology capability built
TA= Technology accumulated
AC= Absorption Capacity acquired

5.4.6.4.1. The association of PLTs' planning practice level with TCB, TA, and AC

As indicated in Table 5.7, Pearson product-moment correlation coefficient was run to determine the relationship between the PLT's practice and TCB, TA and AC turn-by-turn in such order. The associations of PLT's practice in terms of planning with TCB, TA and AC were positive and medium as it is indicated in Pearson correlation coefficients [r = 0. 144**, N = 636, P =0.001]; [r = 0.133**, N = 636, P =0.001] and [r = 0.151**, N = 636, P =0.000]. There was statistically significant similarity between the leadership function "planning" and technology capability built, technology accumulated, and absorptive capacity obtained. This suggests that when the mean of the planning practice increases, the technology capability built, technology accumulated and absorptive capacity obtained will increase too.

5.4.6.4.2. The association of PLT's communication practice with TCB, TA, and AC

The association of PLT in terms of effective communication (EC) with TCB and TA was positive and medium, as observed from [r = 0.097*, N = 635, P = 0.020] and [r = 0.091*, N = 635, P = 0.030] and it does not have relation with AC as the [r = 0. -

0.025, N = 635, P = 0.552] indicated. The relationship between the PLT function in terms of “effective communication (EC) and technology accumulated (TA), and TCB were positive and moderate relationship. Hence this confirms that when the effective communication of the leadership execution increases its direct influence on the technology capability and technology accumulation also indicate enhancement. No correlation was found between the leadership effective communications and construct AC.

5.4.6.4.3. The association of PLT’s in terms of ES with TCB, TA, and AC

As indicated in Table 5.7, there was a positive and medium correlation between the practice of the PLT role in terms of environment setting and the constructs TA and AC. The correlation coefficient values were read as follows: [r=0.151**, N=636, P=0.00] and [r=0.23**, N=635, P=0.000], respectively. The correlation was significant at 0.01 levels (2 tails). This means that the mean value increment due to the high ratings of the respondents would also increase at both technology accumulation (TA) and absorptive capacity obtained (AC). The PLT’s practice in terms of the environment setting (ES) was found to have no relationship with technological capability built (TCB) as the correlation ratio, [r =0.028, N = 191, P = 0.496] disclosed from the data.

5.4.6.4.4. The association of PLT’s practice in terms of BS with TCB, TA and AC.

As shown in Table 5.7, the association between the practices of PLT and TT in terms of boundary spanning (BS) with TA and AC was positive and medium, as [r = 0.217**, N = 636, P =0.000] and [r =0.141**, N = 635, P = 0.000] indicated, respectively. The correlation was significant at 0.01 levels (2 tails). This means that the mean value increment due to the high ratings of the respondents would also increase at both technology accumulation (TA) and absorptive capacity obtained (AC).The PLT’s practice in terms of the boundary spanning (BS) was found to have

no relationship with technological capability built (TCB) as the correlation ratio [r =0.028, N = 636, P = 0.496] witnessed.

To wrap up, the study analysed the practices and reached the conclusion that the practice of PLT was described in terms of planning, effective communication, setting the environment, and spanning boundaries. To determine the available association, the researcher used a bivariate Pearson-Moment correlation coefficient. The result portrayed that the association between PLT practices in terms of 'planning' was positively and mediumly correlated to the constructs TCB, TA and AC. Furthermore, the practice of PLT in terms of boundary spanning showed no significant relation to TCB, where its relation was positive and medium with the constructs TA and AC. The PL practice in terms of effective leadership communication had no relationship with the TA and AC, as was clearly shown in the preceding analysis.

5.4.7. Outcomes and ideal benefit of PLT's COVID-19 pandemic related TT activities

The necessity of rethinking the students' needs is critical to implementing the appropriate strategy for protecting the public from pandemic like the COVID-19 pandemic. Hence, implementing a flexible framework that helps reasonably diminish the potential danger of pandemic contamination is a timely and vital task. Pitsoe (2016) argues that managerial leaders are required to think about reengineering the conventional structure of the organisation, which is responsible for delivering the service. The role of TVET in mitigating the effects of COVID-19 pandemic and the opportunities in their hands to help the community equip itself with the necessary skills were well documented (Levin, Santos, Weber, & Hoftijzer, 2020).

To suggest a feasible alternative framework to improve the PLT's practices of TT-related activities and the sustainable importance of the same activities in the

context of the COVID-19 pandemic context, 12 COVID-19-related TT activities were forwarded to the PLT, trainer and MSE personnel respondents to rate. The respondents were requested to rate the same 12 items on two levels: in the first place, they were asked to rate the current level of PLT's performance on the delivered COVID-19-related TT activities, and on the other hand, they were asked to weigh the sustainable ideal importance of the same COVID-19-related TT activities from a sustainable importance perspective. The analysis for the current level of performance and sustainable importance of the PLT's COVID-19-related TT activities is presented in the following tables: 5.8A and 5.8B, respectively. Then efforts were made to suggest a framework based on the results.

5.4.7.1. Current outcomes of PLT's COVID-19 pandemic related TT activities.

A five-point Likert scale ranging from 5 (very satisfied) to 1 (very unsatisfied) was used. The researcher assigned the mean value for each response point by dividing the score equally as follows: Mean ≤ 1.8 = very unsatisfied; 1.8 < mean ≤ 2.6 = unsatisfactory; 2.6 < mean ≤ 3.4 = undecided; 3.4 < mean ≤ 4.2 = satisfactory; and mean > 4.2 = very satisfactory. These five categories mean values were again transformed into three categories to make the analysis simple and precise, as follows: Mean ≤ 2.33 =unsatisfactory; 2.33 < mean ≤ 3.66 = undecided to determine; and 3.66 < mean = satisfactory. The analysis is presented in Table 5.7A.

Table 5.7A: The mean distribution and ANOVA of the current TT performance in the context of COVID-19 pandemic

No	Items	All-respondents N=636		Respondents by type							
		Mean	SD	Position	N	Mean	SD		df	F	Sig.
1	Improving the students' attitudes to COVID-19 protection	**3.61**	**1.05**	PLT	35	4.54	0.51	BG	3	106.94	0.00
				Trainers	184	4.50	0.83	WG	632		
				MSE	172	2.85	0.99	T	635		
				Trainees	245	3.56	0.77				
2	…changing	**3.80**	**1.18**	PLT	35	4.77	0.43	BG	3	53.19	

No	Items	All-respondents N=636		Respondents by type					df	F	Sig.
	organisational form that aggravating contamination			Trainers	184	4.66	0.57	WG	632		0.00
				MSE	172	3.45	1.19	T	635		
				Trainees	245	3.46	1.18				
3	…utilisation of e-learning to avoid contact.	**2.84**	**0.65**	PLT	35	2.66	0.59	BG	3	12.26	0.00
				Trainers	184	2.56	0.67	WG	632		
				MSE	172	2.93	0.64	T	635		
				Trainees	245	2.94	0.61				
4	local production capability building to protect COVID-19.	**3.05**	**1.32**	PLT	35	3.63	0.77	BG	3	17.41	0.00
				Trainers	184	3.51	0.83	WG	632		
				MSE	172	2.53	1.02	T	635		
				Trainees	245	3.10	1.62				
5	…protecting intellectual property rights for TT	**3.08**	**1.11**	PLT	35	4.00	0.59	BG	3	18.00	0.00
				Trainers	184	3.44	1.48	WG	632		
				MSE	172	2.86	0.99	T	635		
				Trainees	245	2.91	0.89				
6	…disseminating the acquired technology to MSE	**3.17**	**1.17**	PLT	35	3.63	0.69	BG	3	20.06	0.00
				Trainers	184	2.55	0.85	WG	632		
				MSE	172	3.13	0.65	T	635		
				Trainees	245	3.45	1.48				
7	…facilitating the cooperation with MSE	**2.88**	**0.97**	PLT	35	2.86	1.00	BG	3	34.62	0.00
				Trainers	184	3.52	1.11	WG	632		
				MSE	172	2.92	0.77	T	635		
				Trainees	245	2.52	0.85				
8	…setting self-efficacy in volatile environment due to COVID	**3.60**	**0.86**	PLT	35	4.02	1.00	BG	3	112.26	0.00
				Trainers	184	2.86	0.63	WG	632		
				MSE	172	2.91	0.77	T	635		
				Trainees	245	3.99	0.60				
9	…applying COVID-19 context in TT framework model	**3.30**	**1.09**	PLT	35	3.66	0.76	BG	3	7.60	0.00
				Trainers	184	3.46	1.16	WG	632		
				MSE	172	3.45	0.86	T	635		
				Trainees	245	3.05	1.19				
10	…participating in the various stages of the COVID-19 crisis	**3.18**	**1.32**	PLT	35	4.46	0.51	BG	3	35.32	0.00
				Trainers	184	2.40	0.67	WG	632		
				MSE	172	3.07	1.61	T	635		
				Trainees	245	3.47	1.17				
11	… rebuilding the breaks down in post-pandemic	**3.03**	**1.16**	PLT	35	3.46	1.20	BG	3	20.70	0.00
				Trainers	184	3.52	1.03	WG	632		
				MSE	172	2.55	1.01	T	635		
				Trainees	245	3.05	1.19				
12	…vaccination promotion to access it to the community.	**2.57**	**0.94**	PLT	35	4.60	0.50	BG	3	85.57	0..003
				Trainers	184	2.52	0.76	WG	632		
				MSE	172	2.36	0.86	T	635		
				Trainees	245	2.44	0.76				

No	Items	All-respondents N=636		Respondents by type				df	F	Sig.
Overall mean		**3.18**	**1.07**			**3.19**	**0.92**			

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'.
mean ≤ 2.33 =unsatisfactory; 2.33 < mean ≤ 3.66 =undecided; and mean ≥ 3.66= satisfactory

As presented in Table 5.7A, when the analysis was evaluated from the 'All-respondents' ratings perspective, the COVID-19-related TT activities item, only Item 2 "changing organisational form that aggravating contamination" (M = 3.8), was rated by All-respondents as the "satisfactory" practice of PLT. The other remaining items, ranging from the Item "improving the students' attitudes toward COVID-19 pandemic protection" (M = 3.61) to the Item "vaccination promotion to access it in the community" (M = 2.57), fell into the undecided category, which indicated that yet a consensus was not reached on the path to prevent the deadly contamination of COVID-19. Because unless there is clarity about the follow-through of action, it could be difficult to expect results in the movement of TT activities to contribute to fighting such epidemics. As it was observed from the all-together respondents, all 11 items except one fell into the vague category, which is undecided to determine its status as satisfactory level. To cut the matter worse, the analysis indicated that items such as "vaccination promotion to access it in the community" (M = 2.57), "facilitating cooperation with MSE" (M = 2.88) and "utilisation of e-learning to avoid contact" (M = 2.84) were closest to the category of unsatisfactory status of the shortlisted action items concerning COVID-19.

But when the analysis was based on the respondent type in separate, vaccination promotion to access to the community" (M = 4.60), "participating in the various stages of the COVID-19 pandemic crisis" (M = 4.46),"changing organisational structure form that aggravating contamination" (M = 4.77) and "protecting intellectual property rights for TT (M = 4.00), they were rated into the "satisfactory" category by the PLT. Moreover, "improving the students' attitudes toward COVID-19 pandemic protection" (M = 4.50) and "changing organisational form that

aggravates contamination” (M = 4.66) were also confirmed by the trainer respondents for putting them at a “satisfactory level” performance. Though the category was not put at an unsatisfactory level, the items “utilisation of e-learning to avoid contact” and “local production capability building to protect COVID-19" (M = 2.53) and “utilisation of e-learning to avoid contact” (M = 2.91) were almost nearer to the technology recipients’ rating values.

Items that incorporate indicators, namely, "improving the students’ attitudes to COVID-19 pandemic protection” (M = 2.85), “protecting intellectual property rights for TT (M = 2.86), setting self-efficacy in a volatile environment due to COVID” ”(M = 2.86), “rebuilding the breaks down in post-pandemic (M = 2.55), and “vaccination promotion to access it in the community” (M = 2.36) all nearly fell into the “unsatisfactory level” of practice category. The overall mean of all respondent ratings (3.21) fell into the same “undecided to determine” practice category. These suggest the prevalence of a minimal level of PLT’s performance on COVID-19 pandemic and related pandemic in respective TT activity. As Hochberg’s GT2 test indicated here, the lower rating value of MSE concerning the issue was the source for the presence of significance differences. ANOVA F ratio (3,632) = 106.94, P = 0.00 for Item 1, and ANOVA F ratio (3,573) = 53.19, P = 0.00 for Item 2, confirmed this fact.

In conclusion, the study found a gap between the technology provider and recipients regarding TT usage in the context of COVID-19, aiming at preventing and achieving the project target. The technology provider believes that the technology donor is providing satisfactory service in an informed manner while the technology receiver entity, the MSE, believes in a different way. Moreover, this experience stands in contrast to the empirical description of the TT, which describes it as an essential tool in preventing and treating diseases like COVID-19 pandemic and related pandemics, as it gives new insight into the movement of the TT effectively. The overall mean value of 3.18 fell into the undecided-to-determine and satisfactory practice categories when the respondents are analysed together,

taking all the respondents together without making any distinction among the types of respondents.

5.4.7.2. The ideal importance of PLT's COVID-19 pandemic related TT activities used

In parallel to section 5.3.1.8.1, a five-point Likert scale ranging from 5 (very important) to 1 (not important) was used. The researcher assigned the mean value for each response point by dividing the score equally as follows: Mean ≤ 1.8 = not important; 1.8 < mean ≤ 2.6 = little important; 2.6 < mean ≤ 3.4 = fairly important; 3.4 < mean ≤ 4.2 = important; and mean > 4.2 = very important. These five categories mean values were again transformed into three categories to make the analysis simple and precise, as follows: Mean ≤ 2.33 = unimportant; 2.33 < mean ≤ 3.66 = moderately important; and 3.66 < mean = highly important. The analysis is presented in Table 5.7B.

Table 5.7B: The mean distribution and ANOVA of the ideal importance of TT activities in the context of COVID-19 pandemic .

No	Items	All-respondents N=636		Respondents by type						
		Mean	SD		N	Mean	SD		df	F
1	…improving the students' attitudes to COVID-19 protection	4.37	0.94	PLT	35	4.46	1.20	BG	3	147.24
				Trainers	184	4.83	0.38	WG	632	
				MSE	172	3.56	1.04	Total	635	
				Trainees	245	4.83	0.38			
2	…changing organisational form that aggravating contamination	4.83	0.38	PLT	35	4.86	0.36	BG	3	4.64
				Trainers	184	4.93	0.26	WG	632	
				MSE	172	4.83	0.38	Total	635	
				Trainees	245	4.78	0.42			
3	…utilization of e-learning to avoid contact.	4.60	0.49	PLT	35	4.71	0.46	BG	3	7.92
				Trainers	184	4.53	0.50	WG	632	
				MSE	172	4.73	0.44	Total	635	
				Trainees	245	4.52	0.50			
4	…local production capability building to protect COVID-	4.77	0.42	PLT	35	4.51	0.51	BG	3	57.78
				Trainers	184	4.78	0.41	WG	632	
				MSE	172	4.52	0.50	Total	635	

No	Items	All-respondents N=636		Respondents by type					df	F
	19.			Trainees	245	4.98	0.14			
5	…protecting intellectual property rights for TT	4.33	0.49	PLT	35	4.57	0.81	BG	3	326.84
				Trainers	184	4.08	0.27	WG	632	
				MSE	172	4.90	0.31	Total	635	
				Trainees	245	4.02	0.13			
6	…disseminating the acquired technology to MSE	4.02	0.38	PLT	35	4.40	0.50	BG	3	13.15
				Trainers	184	4.00	0.00	WG	632	
				MSE	172	3.99	0.57	Total	635	
				Trainees	245	4.00	0.23			
7	…facilitating the cooperation with MSE	4.85	0.36	PLT	35	4.00	0.00	BG	3	110.01
				Trainers	184	4.85	0.36	WG	632	
				MSE	172	4.91	0.29	Total	635	
				Trainees	245	4.93	0.26			
8	…setting self-efficacy in volatile environment due to COVID	4.91	0.29	PLT	35	4.91	0.28	BG	3	0.35
				Trainers	184	4.94	0.25	WG	632	
				MSE	172	4.90	0.32	Total	635	
				Trainees	245	4.91	0.28			
9	…applying COVID-19 context in TT framework model	4.85	0.35	PLT	35	4.91	0.28	BG	3	0.48
				Trainers	184	4.84	0.37	WG	632	
				MSE	172	4.86	0.35	Total	635	
				Trainees	245	4.84	0.36			
10	…participating in the various stages of the COVID-19 crisis	4.85	0.35	PLT	35	4.86	0.36	BG	3	0.37
				Trainers	184	4.82	0.38	WG	632	
				MSE	172	4.86	0.35	Total	635	
				Trainees	245	4.86	0.35			
11	… rebuilding the breaks down in post-pandemic	4.88	0.32	PLT	35	4.86	0.36	BG	3	0.08
				Trainers	184	4.88	0.33	WG	632	
				MSE	172	4.88	0.32	Total	635	
				Trainees	245	4.89	0.32			
12	…vaccination promotion to access it to the community.	4.06	0.40	PLT	35	4.89	0.32	BG	3	73.72
				Trainers	184	4.04	0.20	WG	632	
				MSE	172	3.99	0.57	Total	635	
				Trainees	245	4.01	0.09			
	Overall mean	**4.61**	**0.43**			**4.62**	**0.31**			

Df=3 and 635 F = show the results of the f-ratio= analysis level at 0.05'.
Mean ≤ 2.33 = Unimportant; 2.33 < Mean ≤ 3.66 = moderately important; and Mean > 3.66= highly important

As depicted in Table 5.7B, all 12 items forwarded for rating have received the mean distribution that they have fallen within the "highly important" ideal practice for the prevention of the COVID-19 pandemic in ascending order: "setting self-efficacy in a volatile environment due to COVID" (M = 4.91), "participating in the various stages of the COVID-19 pandemic crisis" (M = 4.86), a "vaccination promotion to access it in the community." (M = 4.88), "improving the students'

attitudes toward COVID-19 pandemic protection" (M = 3.86)," "changing organisational form that aggravates contamination" (M = 4.86), "facilitating cooperation with MSE" (M = 4.83), "utilisation of e-learning to avoid contact." (M = 4.68), "protecting intellectual property rights for T" (M = 4.67), "applying COVID-19 pandemic context in the TT framework model" (M = 4.65), "local production capability building to protect OVID-19" (M = 4.59), and …disseminating the acquired technology to MSE (M = 4.02) were highly important ideal practices for COVID-19.

Regarding the analysis by individually in a separate mode, the items with the smallest rating mean value was only the Item "improving the students' attitudes to COVID-19 pandemic protection" (M = 3.56), which MSE respondent, rated it as "moderately important" practice indicators. Otherwise, all the other items were put in the most important ideal practice by all respondent types with a complete and unanimous consensus.

As a post-hoc test, the Hochberg's GT2 result indicated that the variability was owing to the highest rating value of the PLT, which fell in the "highly important' category. Variability was observed in Item 1. With "improving the students' attitudes toward COVID-19 pandemic protection," the variability was observed between the PLT and trainer and between the trainer and MSE respondents. It is negligible in comparison with others.

In conclusion, the respondents' values indicated the unanimous agreement of the respondents regarding the ideal importance of certain issues focusing on self-efficacy in a volatile environment and further rebuilding of the breaks. Among the items revealed for rating, "setting self-efficacy in a volatile environment due to COVID," "rebuilding the breaks in post-pandemic," "applying COVID-19 pandemic context in the TT framework model," and "participating in the various stages of the COVID-19 pandemic crisis" were termed as "highly important" in PLTs' practices in tackling the problems of the pandemic.

5.5. PHASE II: QUALITATIVE DATA PRESENTATION AND ANALYSIS

5.5.1. Introduction

In Chapter 4, the characteristics of the research approach are described, along with the merits and demerits researchers must consider when selecting an appropriate approach. Based on this, mixed-method research (MMR) was chosen as the suitable approach for this thesis. It was explained in Section 4.2, thereby providing the details of the research paradigms, approaches and research strategies and types. It received a brief discussion from sections 4.3.1 to 4.3.3. Neither a sole quantities nor the qualitative approach could try to treat the existing practice of PolyCO leadership practice on TT from the college to manufacturing subsectors. By its nature, educational research, together with its planning conventions, cannot be treated with a simple step. It needs complex, intertwined and interrelated processes that combine both quantitative and qualitative data accessibility to reach a reliable result. An effective result via understanding its intent and holistic features by considering appropriate contexts and by taking its ontological and epistemological matters into consideration is secured (Cohen et al., 2018:29).

5.5.2. Biographical data of the structured interview participants

In this phase, as described in the preceding sections, data were collected from top leadership at the AATVTTDB levels. PolyCO deans and deputy deans, department heads, MSE owners, and trainees' council leaders were sampled. Concerning this structured interview, 52 total participants, including 3 top leadership entities from the TVET and technology development bureau, 8 PolyCO deans and vice-deans, 18 department heads, 18 MSE owners, and 5 trainees' council leaders, participated in the interview. The participation percentage in this

structured interview is recorded as top leaders: 75% of respondents gave an interview and one respondent did not give the interview because the the responsible person was overseas on assignment for a long period of time during the data collection period. Regarding the department head and the MSE interview respondents, the participation percentage is 90% in both cases. In both cases, the researcher left the participants without calling for an interview because the data collected were enough and no new information was expected from the interview because data saturation was reached.

Empirical studies made by taking this study were investigated using the methods of qualitative approach and qualitative interview, which reveal that PhD students are hesitant to use or "avoid using reserved from using the data saturation principle but rather mainly focus on using large data to be on the safe side. A wide range of samples has been observed, from a single person to the total of 95 samples. And yet, the mean of the samples has been found to be 31. The issue of sample size for saturation level in quantitative studies has been debatable until today (Mason, 2010).

The prevalence studies using 50 and 60 as sample sizes were acceptable, where 50 is the most prevalent. Therefore, using a sample size of 53, which is beyond 50, the available sample of respondents for the data is saturated in that no new ideas or codes are found. Nothing new could happen from interviewing the respondents because of data saturation (Mason, 2010). In general, saturation is a state where one issue is filled with another; it no longer adds further additional ideas. It originates from grounded theories. Saturation occurs where no new insights, properties, dimensions, relationships, codes, or categories are produced, and all data are accounted for in core categories and sub-categories, (Cohen et al., 2018; Creswell & Creswell, 2018: Jonker & Pennink, 2010).

The data have been presented in the respective Tables 5.9A and 5.9B.

The backgrounds of the structured interview participants, including top leaders, PolyCO deans, and department heads, are presented in Table 5.9A, and the information of the MSE owner and trainees' council leaders is done in Table 5.9B.

Table 5.9A: Percentage and frequency distribution of top leaders, PolyCO deans and department head by sex, age qualification and service

No	Variables	category	Respondents							
			Top Leaders		PolyCO deans		Department head		Total	
			F	%	F	%	F	%	F	%
1	Sex	M	3	100	6	75	15	83.34	24	62.78
		F	0	0	2	25	3	16.66	5	17.24
		T	**3**	**100**	**8**	**100**	**18**	**100**	**29**	**100**
2	Age	20 years and below	0	0	0	0	0	0	0	0
		21-30years	0	0	0	0	2	13.33	2	13.33
		31-45 years	3	100	8	100	15	83.33	26	83.33
		46-55 years	0	0	0	0	1	5.55	1	5.55
		56 years and above	0	0	0	0	0	0	0	0
		T	**3**	**100**	**8**	**100**	**18**	**100**	**29**	**100**
3	Qualification	Certificate	0	0	0	0	0	0	0	0
		Diploma	0	0	0	0	0	0	0	0
		Bachelor's degree	1	33.33	**2**	25	12	66.66	15	51.72
		Master's Degree	2	66.66	**6**	75	6	33.33	14	48.28
		Doctorate	0	0	0	0	0	0	0	0
		Other	0	0	**0**	0	0	0	0	0
		T	**3**	**100**	**18**	**100**	**18**	**100**	**29**	**100**

Source: Interview and survey result

Table 5.9A depicts the demographic data of the respondents who participated in the structured interview. Consulting the total data in terms of sex, it indicates that only 5 (17.24%) were female participants, while the remaining large number, 24 (82.76%), were male participants, witnessing the almost non-participants or very small number of female participants. Regarding age, 26 (83.33%) of the structured interview participants fell into the age range of 31–45 years of age. This implies that the participants are at a very productive and energetic age, and the other 2

(13.33%) fell in the age category of 21–30 and were very young, suggesting that they are very fresh and in the youth stage to do things with more hope and energy. Academic qualifications are also another important piece of personal data that influences the data. In qualification terms, 15(51.72%)) of the study participants were bachelor's degree holders, and and 14 (48.28% were master's degree holders, respectively. Because of this fact, the participants of this structured interview could deliver the essential information related to the TT activities taking place from the PolyCO to the MSE manufacturing sub-sectors, for they are as determinedly qualified and at a reasonable age to accumulate the necessary experience.

Table 5.9B: Percentage and frequency distribution of structured interview respondents MSE owner and Trainees council by sex, age, qualification and service

Respondents							
MSE owner				Trainees Council			
Variables	category	F	%	Variables	category	F	%
Sex	M	12	66.67	Sex	M	3	60
	F	6	33.33		F	2	40
	T	18	100		T	5	100
Age	Below 20 years	0	0	Age	Below 17 years	0	0
	20-25years	1	5.56		17-20 years	0	0
	26-30 years	13	22.2		21-25 years	5	100
	31-35 years	4	22.22		26-30 years	0	
	36 years and above	0	0		31 years and above	0	0
	T	18	100		T	5	100
Qualification	High school completer	4	22.22	Batch/year	Level I	0	0
	Level Diploma	7	38.89		Level II	0	0
	Bachelor's degree	1	5.56		Level III	2	40
	Master's Degree		0.00		Level IV	3	60
	Other	6	33.33		Other	0	0
	T	18	100		T	5	100

Source: Interview and survey result

Table 5.9B depicts the demographic data of the MSE and the trainee respondents who participated in the structured interview. In terms of sex, it indicates that 6 (33.33%) were female participants in the case of MSE respondents, while two of five (40%) were female, which is somewhat better than the trainers and the leadership team respondents as depicted in Table 5.9A. Concerning age, 13 (72.22%) of the MSE owners who participated in the structured interview fell into the age range of 26–30, which is very young, implying that they are very fresh and in the youth stage to do things with more hope and energy. In the remaining age category, 4 (22, 22%) and 1 (5.56%) fell into the range of 31–35 and 20–25 years of age, respectively. This also implies that the participants are at a very productive and energetic age, as one MSE owner was found to be 20 years old. All five (100%) trainee-structured interview participants fell into the age category of 21–25, which implies they are in the appropriate age range of youth to give reliable information, having experience of 2-4 years in the polytechnic college as senior trainee representatives. The training status has also been described, for it is an important demographic characteristic in determining the reliability of the data obtained from the respondents. In terms of training status, 7 (38.89%) and 4 (22.22%) of the study participants were level diploma holders and high school completers, respectively, while the remaining 6 (33.33%) and 1 (5.56%) were other qualification status holders and bachelor's degree holders, respectively. This implies that the respondents could deliver the essential information related to the TT activities taking place from the PolyCO to the MSE manufacturing sub-sectors. The trainees' training levels were 3 (60%) at Level IV and 2 (40%) at Level III , revealing that they are senior enough in the training context to deliver reliable and necessary information.

5.5.3. Generating themes and categories

Themes and categories were generated from the structured interview data, focusing on the objectives and research questions as depicted in Chapter 1. It is particularly developed based on the research questions described under Section 1.3 and the objectives of the research stated in Section 1.4 of Chapter 1. Various

parts of the research, such as the general aim and the theoretical and conceptual framework depicted in Chapter 1 and 3, helped the researcher to develop the themes and categories. The themes and categories were presented in Table 5.9 for clear understanding.

Table 5.9: Summary of themes and categories

I	Level of PLT practice in terms of leadership functions	PLT practice in terms of planning
		PLT practice in terms of communication
		PLT practice in terms of setting environment
		PLT practice in terms of spanning boundary
		Leadership practice about time usage/spending/
II	Leadership style in leading TT activities	Transformational leadership style in leading TT activities.
		transactional leadership style in leading TT activities
III	Stakeholders' perception towards TT support	Department head respondents' opinions on the MSEs' perception towards TT support
		Dean respondents' opinions on the MSEs' perception towards TT support
		Top leader respondents' opinions on the MSEs' perception towards TT support
IV	Challenge facing the leading practice of PLT about TT	Lack of integration among stakeholders
		Capacity gap-related challenge
		Promotion-associated challenge
		Regulation associated TT challenge
		Rank of three serious TT challenge
V	Strategic ways to better improve the TT activities and the leadership focus	Recommendation to enhancing involvement of stakeholders
		Recommendation on the criticality of improvement on various issues
		Recommendation on the Ways to improve TT
		Recommendation on the Ways to improve capability and Capacity
		Recommendation on improving TT from MSE to PolyCO
		Recommendation on the Ways to establish motivation system

The purpose of this research was to apply the absorptive theory, transformational/transactional leadership theory, and change management model to investigate the experienced and existing practice of PolyCO leadership on TT to micro and small enterprises in the city government of Addis Ababa, Ethiopia. To

that end, the present thesis focuses on the issues listed as follows: the level of leadership practice on PolyCO- MSE manufacturing subsectors TT and the extent of using transformational and transactional leadership styles. It also includes determining the availability of perception difference and similarity of the key stakeholders (PLT, trainer as technology donor, and MSE personnel as technology recipients); the success factors that facilitate the TT activities and the challenges facing the leadership practice while leading the TT activities; and finally, the strategy used in fostering TT activities in the undertakings of the COVID-19 pandemic context.

The research is conceived with a strong desire to investigate what is going on as far as leadership practice is concerned in leading the TT process from the PolyCO to the MSE manufacturing sub-sectors. It was apprehended with the sole intention of suggesting a solution that could back up leadership, supervision groups and policy parameters, for there has not been research made locally in such an area, if not very scarce, that has missed the leadership element as a variable.

5.5.4. Level of PLT practice in terms of Leadership function

Structured interview questions were prepared for PolyCO deans, department heads, MSE owners, and trainee representatives, and for the top leaders at the AATVTTDB level. A total of 52 participants participated in this structured interview, including three top leaders, eight deans, 18 department heads, 18 MSE owners, and five trainees' council leaders. The participation percentages of the sample respondents were 3 (75%) for top leaders, 8 (80%) deans, 18 (90%) department heads, 18 (90%), MSE owners, and 5 (100%) of the trainee representatives. One top leader was out of office for a long period during data collection. In the case of deans and department heads remaining structured interview participants, the researcher left the participants because the data were enough and saturated with both the deans and the department heads, as described in sub-section 5.3.2.

In the quantitative analysis subsection 5.3.2, analysis concerned the level of practices of PLT in terms of planning, effective communication, environment setting, boundary-spanning and manner of leadership time investment with regard to core and routine activities which are aligned with the sub-question “What is the level of Polytechnic College practices concerning the TT process in terms of planning, effective communication, environment setting, and boundary-spanning?" Accordingly, the following section analyses the rating values of the four categories of structured interview respondents in this qualitative data analysis: PolyCO deans, department heads, MSE owners, and trainee council members, with respect to environment setting, effective communication, planning, and boundary-spanning as well as the time usage of the leadership team regarding focus given for core activities which is later discovered after performing the quantitative data analysis. To see the level of practice of polytechnic leadership on TT, the opinions and views of the four types of respondents are given from the perspective of the leadership function rendered in the thesis.

5.5.4.1. Leadership Function - planning

One of the traditional roles of management and leadership is planning, which calls for "strong coordination and management championed by an organisation's top management" (Muda & Abdul Aziz, 2020:65). Planning attempts to set criteria for monitoring and managing TT project operations to achieve the TT goal, prevent resource waste, avoid duplication of effort, and lead project direction. However, the qualitative data from the interview respondents stated the availability of problems in plan preparation for TT activities.

> “From a planning point of view, not planning in collaboration with the appropriate stakeholders is another gap. There is a big gap in planning internally, be it at the bureau level or about the federal government and other stakeholders as well. From the point of view of micro- and small enterprises, it is necessary to plan and communicate with them, for we are working on MSE development and market creation. This is a loophole, as long as there is no concerted planning” (**PD 11:6**).

Respondents have indicated that the stakeholders are used to, if any, planning independently. The other respondent from AATVTTDB with ID NO PD 11:3 stated that the way of planning convention makes the TT implementation remain with a minimal result.

> "What is meant by planning based on better potential is related to the way of planning in the past; believing in working on transferring a large number of technologies was pervasive. However, there was no result. It wastes resources, time and human resources. It used to be that the results were small." (**PD 11:3**)

On the contrary, the same respondent has also mentioned the prevailing strength as far as the content of the TT plan is concerned as observed in the planning arena that is based on the potential of the environment and expressed it as follows:

> "In the first place, there is a situation where better work is done in terms of planning based on the prevailing potential as far as the internal situation is concerned." (**PD 11:2**)

An interviewee from the same bureau with ID NO PD10:6 supported the idea raised above as follows:

> "From a planning perspective, one polytechnic college used to plan 100 percent TT; in the process of fulfilling this, the participants were tempted to transfer ineffective and low-standard technology." (PD**10:6**).

The respondent coded with ID NO (PD11:32) emphasised the opportunity gained from the new trend introduced concerning planning practices in polytechnic colleges and the MSE, despite widespread weaknesses in the past. It was stated that in an internal situation, the interviewee further noted the importance of planning, for it has been stated based on the prevailing potential. It was described as having a good opportunity to rectify the past resource-wasteful practices.

> "From my experience and my long-term work here, in the first place, there is a situation where better work is done in terms of planning, based on the prevailing potential, as far as the internal

> situation is concerned. Planning based on better potential refers to a method of planning that is based on the available resources in the field, as opposed to the previous convention, which concentrated on planning the transfer of numerous technologies. In the past, there was no result. It wastes resources, time, and human resources. It used to be that the results were small. But in the current situation, we have avoided playing with a large quantity by focusing on transferring technology in a few numbers that are effective in terms of market value" (PD11:32)

Another respondent from the AATVTTDB with ID No PD12:10 indicated the presence of unqualified planning practices on the part of both the PolyCO and the MSE. He further commented that the accountability of MSE is to other sectors rather than to the TVET sectors. This creates great hurdles for they are most of the time negligent of any tasks that come to them from the PolyCO. They are accountable to the previous Addis Ababa enterprise and industry development and now the Addis Ababa Labour and skill Bureau (AALSB).

This has put a burden on the implementation of TT because there is no binding situation on the part of the MSEs.

> "Now there is a limited level of technology transfer planning with polytechnic colleges and micro and small enterprises. However, this has to be done well. Micro and small enterprises are owned and organized by the Works, Entrepreneurship, and Industry Development Bureau and by the Ministry of Labor and Skill at the federal level." (**PD12:10**).

The respondents from the layer of the top leadership team, an interviewee coded with ID NO PD11:4, briefed that planning in a massive manner has been avoided, and he put it as follows:

> "But in the current situation, we have avoided playing with a large quantity by focusing on transferring technology in a few numbers that are effective in terms of market value." (PD 11:4)

However, the polytechnic leadership team interviewees have expressed that the issue raised has not been implemented so far at the grassroots level because it has

been a new practice. The AATVTTDB has only recently introduced it into the system.

The data analysis indicated that the TT stakeholders were not fully engaged in the planning phase and that there was a lack of strategic preparation regarding the preparation of the organisation's objectives. From the perspectives of theoretical and operational level of performance, engaging and participating the responsible key actors can result in attracting people from diverse constituencies, particularly those who are directly liable to discharge the particular tasks in a sustainable work process (Wolverton & Gmelch, 2002:8). The interviewee confirmed this in their answer, referring to grabbing the attention of the responsible stakeholders from the leadership etiquette perspective in the employee arena.

5.5.4.2. Leadership and effective communication

One of the main tasks of the PLT is to exert effort to influence followers' behaviour through an efficient communication channel with the appropriate strategy. Leaders can boost implementation by harvesting commitment by removing communication barriers and explicitly demonstrating what is required of the organisation. This can be achieved by letting staff understand how knowledge management approaches could be achieved; including clarifying the benefits that could be gained from the jobs they are engaged in (Safari & Azadehdel, 2015:62). The technology receiver and MSE owner interviewee expressed the presence of interrupted communication, though the importance of communication is very critical. The interviewee coded with ID NO PD 42:24 described such an idea as follows:

> "Regarding the communication issues between the polytechnic and us, it is broken. Most of the time, there is no communication, and they have their work. On our part, we have little motivation to get support." (PD 42:2)

The department head interview respondents coded with ID NO PD 39:24 supported the foregoing ideas. The same respondents emphasised the criticality of

effective communication and the presence of uncoordinated communication channels.

> “It is known that technology transfer is very important for the effective implementation of innovation. It involves the transfer of innovation and technology through various modes of communication. However, the communication system is not well orchestrated.” (PD 39:24)

In line with this, the interview respondents from the department head with ID No PD16:9 expressed their opinion by describing that if the transfer is founded on reaching a consensus.

> ‘When the technology is transferred based on the raised issues, communication and discussion will be held with various stakeholders to facilitate the transfer. The problems that could occur are accustomed to being solved through due process. So, it would be clear of any barriers and enhance the perception that would occur.” (PD16:9).

Firstly, the leadership team tries to confirm that the presence of effective communication between polytechnic colleges and MSEs is in good condition, thereby suggesting the smooth running of the communication task. For instance, regarding the communication mechanism used in a department head interview, respondents with ID No, PD16:8 expressed the presence of various forms of communication mechanisms as described next:

> “Leadership renders various services, such as creation awareness, through meetings and formal training. Discussion is scheduled one or two times per year. Discussion on various issues, such as how to transfer technology to the MSE, the constraints available there and related issues, is reviewed with the MSE in the polytechnic college. Therefore, such platforms help to clear off all related issues during discussion.” (PD16:8)

In addition, the respondents from the top leadership entity coded with ID NO PD 10:7 added ideas that summarise the forwarded issue above in terms of ‘from an effective communication perspective, the available communication with the micro and small enterprises and the polytechnic college has been better.”

The MSE respondents stated that the communication that was available between the polytechnic college and their partners, MSEs, did not hide the existence of significant issues and the need for reform. MSE owner interview respondents coded with ID NO PD 44:8 described the nature of communication they experienced.

> "As far as communication is concerned, though it needs improvement, it is well done. The support on the technology transfer issue is, of course, good for me. I have modernised my production based on the design and the technology transferred from the polytechnic trainers." (PD 44:8).

Meaningful engagement and dialogue with staff in their day-to-day working lives facilitate effective communication (Duignan, 2006:30). However, in contrast to this suggestion, the empirical data from the interview respondents did not show strong communication among the stakeholders.

It can be deduced from the analysis of these effective communication issues that the role of the leadership team entity was very low. The issue of effective communication was not well practiced by the responsible leadership and management bodies of TT activities, which were taking place in the context of PolyCO and MSEs. Despite the tough communication concerning the core business in the polytechnic college and the MSE subjects, its operationalisation remained far behind the expectation. The MSE stakeholders did not hush up the distancing and contempt for the leadership role in carrying out the appropriate communication method. The interview respondents strongly implored the necessity of strategic improvement around leadership team function regarding effective communication.

5.5.4.3. Setting an environment and culture for TT and innovative activities

Institutional leadership and managers are responsible for providing favourable conditions for goal achievement (the TT project) and building a suitable environment for TVET trainees and trainers. Leadership plays a crucial role in

positioning the organisation's culture and environment for competitiveness in the face of change. Successful technologies as well as its generation require fully aware, innovative and technology-minded leaders. It is the task and duty of the institution's leadership team and managers to create a favourable environment for the participants to achieve the goal proposed. Such endeavours on the part of the leadership team would guarantee and create opportunities for both personal growth and the realisation of the institution's intentions.

So, to weigh the available status of setting a favourable environment, MSE owners, deans, department heads and top leaders were interviewed for that end. The interviews respondents coded with ID No PD42:18 noted the lack of a favourable environment and mentioned some challenges facing his work, as follows:

> “Setting a favourable environment for the work is very limited. We want to expand and create our business, but the place we work is very narrow. The other challenge to expanding our business is the scarcity of capital to further scale up the business. A comfortable place is not suitable for our enterprises. We badly needed these challenges to be solved to create a favourable environment.” (PD42:18).

Slightly in line with this idea, other MSE owner respondents coded with ID No PD 28:7 mentioned the delight of the prepared bazaar, though it needs activation:

> “Concerning setting the environment for our work, the technology donors, in coordination, have prepared bazaars and exhibitions that have widened market accessibility. Therefore, it has been delightful. That practice needs more activation.” (PD 28:7)

The department head interview respondent also confessed that as far as setting an environment for innovation and TT, effectiveness was very limited. The interviewee coded with ID No PD 34:7 explained that the coordination and integration of the key stakeholders were always a problem that influenced the operation. He explained the issue in his own words, as follows:

> “It is difficult to evaluate, of course. Its results are not as we expected or as the initiative of the program intended. It faces several challenges. The coordination and integration of the key stakeholders are always a problem. Indeed, this does not mean that there is no change or result.

> Though it is not satisfactory, changes and good practices are available. In general, to determine it, technology transfer needs very urgent improvement in its operation and the leadership system." (PD 34:7)

Yet, the technology receiver MSE owner respondent coded with ID No. PD 24:12 expressed the status of setting an environment for innovation and TT issues by highlighting on its problems. It is fragmented. In terms of setting the working environment, although it is not considerable in such a way, I can say that they have provided invaluable support (PD 24:12). Yet the structure interview respondent from the top leaders coded with ID No PD11:8 expressed this in broad terms in terms of improving the working environment; it is a situation where things are currently being done to keep the office in a better condition (PD11:8).

To wind up the status of the setting environment for innovation and technological breakthroughs, operationalisation was still very weak which did not go beyond starting far behind the expectations. The technology receivers, including the department head, were in consultation to reflect on the available problems that need activation and improvement.

5.5.4.4. Practices of PLT on TT in terms of boundary-spanning

Project leaders must transcend boundaries, exert upward and outward influences, and act as project champions to attract diverse constituencies for project success. The use of bridging boundaries in leadership, focusing on vertical and horizontal levels within a larger institution, are the responsibilities of knowledgeable leaders. This involves creating boundaries between hierarchical organisational levels, functions and stakeholders, demographics, and geographic areas (Chrobort-Mason, 2011: 248).

The technology receiver MSE owner commented on the state of the boundary spanning prevailing in the context of TT from PolyCO to the MSE manufacturing sub-sectors. The interview respondents noted the low status of the boundary spanning as one of the core businesses of the leadership entity to sustain and provide facilities, thinking and aiming at bringing diverse stakeholders together for

effective implementation of the TT activities. MSE owner interviewee coded with ID No PD 48:7 expressed the status of boundary spanning practice as very low as follows:

> "The leadership entity in every enterprise and the respective stakeholder groups should be given such training, [skill to plan]. Conversely, the support of the polytechnic college in extending the boundary beyond the fence of the polytechnic compound to attract various partners and stakeholders for technology transfers and other activities is very low, especially in the past three years, after the eruption of COVID-19. The cooperation they have rendered through training and seminars has become very weak." (PD 48:7)

The other respondent from the same respondent group noted in line with above in brief as 'Regarding spanning the boundaries and arranging the environment favourable for work, it is in a very weak status and needs focus in the future' (PD 47:12).

Boundary spanning is crucial for project success, as it influences both vertical and horizontal levels within an organisation, bridging the gap between hierarchical structures and diverse constituencies. The prevailing boundary-spanning practice was almost slowing down, especially after the eruption of COVID-19. The MSE owner expressed the presence of a low status of boundary-spanning practice in the context of TT from PolyCO to MSE manufacturing sub-sectors; though it was a core business of the leadership entity to sustain facilities and bring diverse stakeholders together. The polytechnic college's support for extending its boundaries beyond its compound, particularly in the past three years, has been weak. It implies the need for improving the boundary-spanning practice to push the frontier and widen the opportunity for training and seminars for enterprise leadership and other stakeholder groups.

In the lens of overall weighting concerning the TT practice in the bird's eye view rather than seeing issues in planning, effective communication, setting an environment for TT and innovation, and boundary spanning, there are interviews respondents who witnessed the benefit of TT practice despite its failure to meet its

intended objectives. Though to a limited extent, there are respondents who expressed that the level of TT has been implemented well.

> “It is in good standing. It has brought a good result to the recipients, MSE, though it is difficult to say that it is as we expected or as the initiative of the government assignment. Consequently, the experience gained on both sides, on the part of the polytechnic and the MSE, is encouraging. Especially, the trainers here at this polytechnic college have learned much from the trial and error we have encountered so far. So, it is possible to use it as a platform to share experience and skill upgrades in the system.” (PD 15:2)

This has also been supported by the dean respondents as follows:

> The status of technology transfer is excellent, especially at the initial stage, though challenges creep into it as time goes on. First, the polytechnic should identify problems based on the needs of the enterprises so that the worked-out technology can be transferred to them, whereby the enterprises can start producing it and selling it to the users (PD 7:2).

In conclusion, the practice of leadership in TT did not reach the level of quenching the needs of technology recipients. This, in turn, can demonstrate the need for a strategic shift to improve the existing practice. The solution was still in the hands of the leadership at the various levels, together with the technology recipients, MSE and the coordinator bodies of these entities at the sub-city and city government levels.

5.5.4.5. Leadership practice with regard to time usage

The PolyCO leadership team has been accused of focusing on routine administrative tasks, leaving core activities like training and technical support aside. However, the dean, department head and the trainees council representative respondent were interviewed concerning these issues, and only four respondents, including two deans and two department heads, have accepted the statement that described them as if they are spending time over the routine administrative tasks. The remaining four deans, ten department heads, and four trainees’ representatives, who are the majority, refused the description that was raised by the research to accept or refuse the statement "Polytechnic leadership

spends a large proportion of their time on administrative activities, leaving TT activities aside." Yet, eight respondents also did not decide on whether to accept or refuse this statement.

The department head respondents, with ID NO 15:10, noted that the leadership team, including the head of department, focuses on TT and training issues, in line with government interests, mentioning that it is difficult to deviate from core activities.

> **"I** do not think so. The leadership team, including us, the department head, is investing our time in working out technology and executing training issues. We are always in the fields and laboratories. Indeed, overburdening makes things difficult, and consequently, this worsens things in accordance with the government's assignment. In short, there is no time that the leadership team can invest in routine administrative tasks." (PD 15:10)

Respondent with ID No PD 17:9 noted that the leadership figures have coordinators and attendants underneath them to lead each problem, which allows the leadership team to keep, focused on the primary operations. Coordinators are constantly prepared to handle particular problems by gathering input through various channels such as meetings and discussions. Respondents, in brief, stated that coordinators are accessible under them to fix problems as they arise. They use platforms like meetings to collect input and fix problems. (PD 17:9)

The other respondents strongly argued that the description in which the leadership team was described as entities that spend time on routine administrative tasks by leaving the core issues behind was unacceptable, by highlighting that the PolyCO leadership team is currently actively involved in the training and TT activities and ensures that the core activities of the college, including training, TT and industrial extension, are set up as follows:

> "It is not right, and I do not agree with the saying because the leadership team in the polytechnic is always on the front lines of accomplishing the training activities and the technology transfer activities side by side. The people are always in the field in the real world of work to execute the core activities of the polytechnic college,

> including training, technology transfer, and industry extension." (PD 19:12)

Other respondent emphasised that the leadership team gives priority to core activities over routine tasks and focuses on appropriate tasks with its own authority and added that if problems arise regarding TT, the source of the problems comes from other entities rather than the issues of leadership focus. The interviewee put in her own words as follows:

> "The leadership team does not spend time on routine tasks; the team focuses on the core activities. There is no problem with investing time in the appropriate tasks. Each and every work has its own owner and authority. Rather, the problems come from other entities." (PD 35:7)

The leadership team prioritises key activities assigned to each leadership body, rather than wasting time on administrative issues, regardless of whether improvements are registered or not. In line with this, another respondent with the ID No PD 51:13 also expressed one's disagreement with the statement as follows:

> "I do not agree with that. The leadership team does not waste time on administrative issues. Rather, the focus—regardless of whether improvement is registered—is on the key activities assigned to each leadership body." (PD51:13)

In general, the department head respondents dominantly argue that the leadership team does not focus on administrative tasks but rather focuses on technology and training issues, which is in line with government interests, whether the expected result was registered or not. One respondent highlighted that even if the problem was prevalent, it was from other issues. They argued that the leadership teams have prioritised core activities over routine tasks and focuses on appropriate tasks with their span of authority.

As mentioned earlier, half of the deanship did not agree with the statement that states as "Polytechnic leadership focuses on routine administrative tasks by leaving the core activities behind'. To substantiate this with evidence from the interviewees own words, abridged quotations are mentioned from the interviewee's own words in the following line. The dean interviewee with the ID No (PD 1:14)

expressed his disagreement by highlighting his opposition to the statement that there is no inclusive situation where every job has its own owner and the presence of an independent vice dean responsible for each core activity and routine task make the mentioned accusation void because every responding person was there and put as follows:

> “I don't agree (laughs). As I tried to explain earlier, there is an independent vice dean who leads the management process. The college dean is also there. Moreover, there is a dean in charge of academic affairs. There is another independent vice dean who manages technology and the overall micro- and small-business support environment. Therefore, I don't agree with what is said because there is no inclusive situation where every job has its own owner.” (PD 1:14)

In addition, the respondent with the ID No (PD 7:12) elaborately expresses, focusing on describing that the leadership team is often focused on passing time in the field, busy doing the work of training and TT activities. He insisted on describing the leadership team, which has prioritised core activities as follows:

> “Well, I do not agree on such issues for the leadership team in one way or another; it invests the time for training and technology transfer issues. The leadership is used to passing its time in the fields and at the office pondering leading and coordinating the core business of the institution that is training technology transfer and concerning the trainees issues here within the compass and outside there in the real world of work. The leadership sometimes focuses on some routine tasks, like meetings, by putting critical activities aside. But this does not mean that the leadership team has been detached from the core activities.” (PD 7:12)

Last but not least, the trainees’ representative respondents with the ID No PD 56:7 and PD 58:7 expressed their disagreement consecutively as follows:

> “I don’t agree with it. Of course they do have their own jobs, and there is our concern for the trainees’ affairs as a duty. Currently, they are getting better and better; it is somewhat good that they have started supporting.” (PD 56:7)

Other respondent also expressed disagreement with one’s words by saying,

> “I disagree. They don't focus on small jobs. They focus on education and training jobs.” (PD 58:7)

In contrast to the majority of the respondents, there are interviewees who accepted the statement that states as ‘polytechnic leadership spends a large proportion of their time on administrative activities, leaving TT activities aside’, and mention some points to substantiate their sayings. The respondents highlighted that polytechnic leadership spends a large proportion of their time on administrative activities such as attending meetings and signing memorandum of understanding even though they know that they do not enter into the practice, which cannot add value. The department head interviewee with ID No PD 39:19 put the issues as follows:

> “In contrast to the above, you can also see the allotment of time for unnecessary tasks that cannot add value. The leadership team is observed signing memorandum of understanding with many firms and enterprises without preparing themselves to enter into action and cooperation. Sometimes, when the trainers are immersed in working out unnecessary technology that is not appropriate for that local market, the leadership team keeps silent.” (PD 39:19).

The dean respondent with the ID No, PD 5:11 emphasising the leadership manner of leadership behaviour and commitment level towards the activities. He described as follows:

> “I believe it is correct. As I previously stated, the reason lies in the absence of positive will. You see, the process of TT is not encouraging. For example, every year we try to work with the technologies that we develop and the technologies that we provide in high quality. For the reasons I have listed, the trainers are obliged to work out and transfer technologies, though such tasks are not considered regular duty.” (PD 39:19)

Although the number of interviewees who accepted and who were still in the dilemma of whether to accept or refuse the statement that accuses the leadership team for their time investment practice respective to the core activities and the routine administrative tasks is few in number, nonetheless, their ideas cannot be ignored and diminished. It must be clearly recognised that the idea is to lable the

leadership team on the routine task of leaving out the fundamental activities, the idea that they go further to the extent of the administration. Furthermore, respondents to ID No. 19:9 mention some issues related to leadership practice, such as the neglect of key activities owing to a multitude of overburdening tasks. However, in general, respondents did not deny that the leader's main focus was on training and technology activities, making it difficult to measure and proportion these activities.

5.5.5. Leadership style in leading TT activities

These two rubrics are extensions of motivation theory. Transformational and transactional leadership styles, being repeatedly tested as theories of leadership, are supporting leaders of an organisation to energise, motivate and inspire (Wolverton & Gmelch, 2002; Boateng, 2012). In the quantitative analysis section 5.4.3 and under consecutive sub-sections 5.4.1.1 and 5.4.3.2 above, the analysis concerning the leadership style used from the perspectives of transformational and transactional leadership was analysed.

In alignment with the sub-question “To what extent do the polytechnic college leadership teams of Addis Ababa use both transformational and transactional leadership styles in the practices of leading TT?" Structured interviews were forwarded in this qualitative data analysis for top leaders, deans and department heads at PolyCO, and their opinions were analysed in the section that follows. The analysis was made in terms of the extent of transformational and transactional leadership styles.

5.5.5.1. Transformational leadership style in leading TT activities

The findings of the interview revealed that the leadership team uses both the transformational leadership style and the transactional leadership style based on the context at hand during the decision or operation. And yet other groups of

interview respondents stated that they use a more transformational leadership style. The extant literature underscores the importance of transformational leadership to foster a positive knowledge dissemination environment and through transactional leadership style to enhance knowledge transfer by establishing formal, technical-technological, and structural conditions in creative organisations (Girdauskiene & Savaneviciene, 2012:18). Yet the other perspective of the respondent has also argued that they are using the context and emphasising the prevailing context to determine the style of leadership practice. Yet they have also added that they were not only using transformational and transactional leadership but rather various traditional and the present day introduced leadership styles such as distributive leadership, democratic leadership, etc. following the situation.

Both types of leadership interviewees, namely, department heads and deans, discussed the leadership use of transformational leadership styles and transactional leadership styles. For instance, department heads coded with ID No (PD 41:9, PD 40:9, PD 39:10, PD 19:8, PD 14:6, PD 15:4, PD 15:5, 16:5, and PD 17:4) reported that they were using both types of leadership styles. The interview respondent coded with ID No PD 14:6, expressed his ideas in alignment with this notion, not missing the difficulties of drawing a clear borderline between the two leadership styles as follows:

> The leadership team tries to use both leadership styles, though it is hard to draw a clear-cut borderline between the two styles. There is time for the leadership to focus on inculcating vision, encouraging strategic issues and bringing a motivating agenda that attracts the trainers and the whole polytechnic community more toward transformational leadership. On the contrary, the same leadership team would focus on rendering tasks to the trainers and other entities by setting a timetable and certain parameters for the activities and receiving them at the same tempo, which is more of a transactional leadership style.” (PD 14:6)

Similarly, the respondent who coded with ID No PD 39:10 stated that, depending on the situation, they employed both kinds of leadership styles, which is consistent with the notion that has been put forth by others as follows:

> “We use both types of leadership styles. Some certain incidences or situations influence you to choose the appropriate style for that specific situation. You may not surrender the issues completely to the condition. You can determine which type of leadership style is best to achieve the objectives at hand at a specific time.” (PD 39:10)

In addition, other respondent coded with ID No PD 15: 5 briefly commented as follows:

> “It depends on the situation that faces you. The leadership team is always using both types of leadership strategies. Although it is not possible to separate the level of use of one from the other, the leadership team uses both styles at different levels.” (PD 15: 5)

To further strengthen the use of both leadership styles (transformational and transactional leadership styles), another respondent who was coded with ID No PD 17:4 noted that the leadership team uses both styles of leadership to help the performer solve problems via plan in the following manner, in his own words:

> “We use both types of leadership styles. This means that we initiate them, and we will do our level best to equip them with the necessary knowledge. We support them in leading their work with a plan. Based on their plan, we do our level best to help them solve their problems and achieve the objectives they have proposed to meet. We make an effort to solve their problems. Hence, this made them know what they did not know.” (PD 17:4)

The dean structure interview respondents coded with ID No (PD 1:11, PD 6:10, PD 5:8, PD 7:10 and PD 8.6) also gave their opinion in association with their department head subordinates. In the first place, respondent coded with ID No PD 1:11 noted the presence of using both leadership styles as

> “There is nothing that can be taken as a one-size-fits-all solution in this regard. In our case, we use a mixed approach by combining transformational and transactional strategies accordingly.” (PD 1:11)

In congruent to the preceding department heads respondent appreciating the difficulties of making a clear-cut distinction between the use of transformational leadership style and transactional leadership style, respondent with the code ID No PD 7:10 explained as follows:

> “We do both. The leadership team applies the leadership style that could be appropriate for the context. It is difficult to draw a borderline among the many types of leadership styles that we are running through according to the situations we face. Knowingly and unknowingly, we apply various types of leadership platforms and frameworks. The context determines it.” (PD 7:10)

Another dean coded with ID No PD 8:6 expressed this clearly in a different way in congruence with the preceding respondents by focusing on the application of both leadership styles, whatever they use, and other additional leadership styles. He put it as follows, in his own words:

> “The context decides. Not only do we use these two types of leadership styles, but we also use many others in accordance with the problems and agendas we face. That means we use both transformational and transacctional leadership styles. The proportion might be different from context to context.” (PD 8:6)

As far as the leadership style that the leadership team used while leading and managing TT is concerned, a large portion of the leadership team, the department head members, implored that the leadership style they were applying was more of transformational.

They are consistently using the transformational leadership style, which enables the leadership team to transform the organisation they are assigned to lead by focusing on initiating, energised and inspiring the trainers and the whole community of the polytechnic college towards the vision achievement. According to their notion, using transformational leadership styles outweighs using transactional leadership styles. The department head interview respondents coded with ID No (PD 41:12, PD 41:13, PD 15:6, PD 51:10, PD 40:8, PD 37:8, PD 19:6, PD 35:6, PD 33:10, PD 36:9, and PD 36:8) discussed the issues by supporting the notion of using more of a transformational leadership style in the polytechnic college. In line with this idea, the department head interviewee, coded with ID No PD 36:9, stated the issue as follows, supported by another respondent coded with PD 36:8.

> “The activities and our assignment of organisation urge us to initiate, motivate and morally agitate the trainers for innovation and to

> transform the sector to the level that it can help the community develop socially and economically. We do not wait for results while sitting in the office. Participating, coaching and supporting the stakeholders in the fields and laboratories where the activities are available is highly needed in our case. That is what I can say on this question: We need to go down to the coordinators. Our role is not that of the manager; expect results while sitting in the office well. Both types of leadership styles are very pervasive. Even so, various leadership styles are introduced with enough theoretical background and practically tested status. These are very important to apply when conditions demand it. In the TVET sector, as per your question, most of the time, we use a transformational leadership style. (PD 36:8)"

Within this group of respondents, there were those who refused to discount the significance of the situational and contextual factors that influence leadership style selection. Yet they want to remind them of the use of both leadership styles, including other types of leadership styles. The dominantly used leadership style had been more of a transformational leadership one and the respondent coded with ID No PD 35:6 and PD 37:8 expressed almost the same description here, in their own words:

> "To answer the question directly to the point, in short, we use both types of leadership styles as the conditions demand. Hence, it is contextual. However, if the question is raised from the perspective of a dominantly used leadership style, we definitely use the transformative leadership style more abundantly." (PD 35:6)

> "Well, Both types of leadership styles are used at our college. Not only the mentioned leadership styles are used in our college, but every other leadership strategy is used in accordance with what the situation demands. The leadership team is accustomed to using both leadership styles to effectively move the work forward. If the question is a matter of which strategy is used dominantly, without any hesitation, it is the transformational one." (PD 37:8)

Furthermore, department head interviewee coded with ID No PD 51:10 confirmed that their transformational leadership style guides their polytechnic college's mission and goal for the overall activities and the TT activities via keeping the balance among the various competitive tasks:

> "Well! Our leadership team uses a transformational leadership style in leading the overall list of activities put forth as the mission of our polytechnic college. This does not mean that we are completely immersed in using only one leadership style. Leadership strategy is a matter of either pulling or pushing the activities of various core activities." (PD 51: 10)

The other department head interviewee seemed to argue that the transformational leadership style was the primary strategy that the leadership team utilised at the Polytechnic College. The respondent coded with the ID No PD 37:8 noted as follows:

> "The transformational leadership style is supposed to be the main and preferred one. It is better if it focuses on change. However, both systems are observed in operation. What is needed is based on transformation, and it is better and more supported if it is based on change and initiation". (PD 37:8)

In conclusion, members of the department head were advocating the opinion that confirming the use of a leadership team dominantly used the transformational leadership style, which in turn was believed to be more effective in transforming the organisation and inspiring trainers and the community towards achieving the college's vision. Therefore, TT activity is among them. The dean interviewees also expressed their support for the notion forwarded by the department head. However, this does not mean that the college did not exclude other leadership styles in its day-to-day operations. The core intent was that respondents acknowledged the importance of situational and contextual factors in leadership style selection. But they also acknowledged the use of both transformational and other leadership styles, with the dominant style being transformational leadership. Both styles are used accordingly. A significant amount of effort is believed to be effective in promoting innovation, risk-taking and satisfaction when properly managed with transformational leadership (Avolio & Bass, 2002:2–3). It seemed that the rationale for using more transformational leadership was its criticality in guiding the polytechnic colleges' mission and goals by keeping balance.

5.5.5.2. Transactional leadership style in leading TT activities

Transformational leadership is required to make corrective transactional action meaningful and successful on the part of followers. This has been confirmed through repeated scholarly research and empirical tests. Leaders who are in favour of applying transactional leadership style always place a higher priority on getting the work done in the usual status quo rather than paying attention to change and inspiring the followers (Basham, 2010:143). Unlike transformational leadership, transactional leadership depends on the results of the followers as per the agreement fixed between the leadership and the followers. Hence, such notions can signify the presence of a complementary nature between these two leadership styles for the effective running of the entire activities of the organisation. In support of this idea, respondents reflected on their views, insisting on explaining that whatever the degree of usage, not only these two leadership styles but other types were used mainly based on the context.

Additionally, the interviewees stressed how one leadership style cannot be separated from another in terms of its impact on the practices of leadership entities when comparing these two leadership rubrics. Most of the interview respondents expressed the application of both transformational and transactional leadership to various degrees. The participant interviewees have exhaustively discussed the application of both the transactional leadership style and its inseparable twin, the transformational leadership style. For instance, the respondent coded with ID No PD 13:7, noted briefly 'It is contextual. We use it as the situation demands. So, in our case, we use a mixed approach by combining the transformational and transactional styles (PD 13:7). In addition, another respondent added his view, focusing on explaining the differences and similarities between the two leadership styles and not denying the fact that leadership style is contextual and varies depending on the context, as follows:

> "Whatever the case may be, leadership style is contextual. We may not have a consistent style. But we use a mix of both types of styles. It depends on the context, and we act accordingly. When we say transformational leadership style, we mean what we do to transform the college or to bring it from its current level to a higher level.

> Sometimes we use a transactional leadership style based on the principles of giving and receiving." (PD 5:7)

The dean interview respondent coded with ID No PD 39:9 explained the use of both leadership styles (transformational and transactional, side by side) following the situation demand. He tried to reflect his ideas by describing the features of transformational leadership using the concept of involving, motivating, energising, initiating, and inspiring trainers and using the concept of binding conditions, requiring specific activities and indicators for trainers to meet, and preparing them for praise or punishment as follows:

> "Leadership style depends on the context. Motivating, energising, initiating, and inspiring through communicating the visions and mission of the organisation are the activities the leadership is rendering to the trainers and other stakeholders, though to a lesser extent. Making the trainers enter into binding conditions is also another side of managing the followers. The leadership renders certain activities with the identified indicators and parameters that the trainers are required to submit in the required quality that prepares the trainers either for praise or punishment." (PD 39:9)

Conversely, only a few numbers of interview respondents coded with the ID No (PD 41:13, PD 21:8 and PD 40:9) expressed their opinion that transactional leadership is preferable and dominantly used in the undertakings of the TT activities in polytechnic college, which is deviant from the majority. Respondent coded with the ID No PD 40:9, for example,expressed at length as follows:

> "A transactional leadership style will be preferable if it is based on the beliefs and interests of the performers on the condition that they are supported on the issue that is in question for operation. It is difficult to describe the institutionalisation of certain leadership styles 100 percent. Regarding our polytechnic college, the leaders are young and experienced; so, they focus strongly on transforming the college. When you are strong, you will be liable for transformation and change. Whatever the case may be, we use both types of leadership styles as far as our college is concerned." (PD 40:9)

Transactional leadership is used when wishing to bring about change in an organisation or industry. The respondent supported the notion of focusing, giving very specific tasks to be performed within defined and agreed parameters. The respondent emphasised the promotion of 'giving and taking' principle in the industry. This approach encourages exemplary behaviour and adherence to the given task's nature and is described as follows:

> "In accordance with the nature of the work, we use a transactional leadership system if we happen to bring about a change in the industry by giving the assignment quantity and number to accept in the same manner where the focus is to get the work done through the give-and-take principle principle. It is done through showing and by being exemplary. This leads to the use of transactional leadership styles. Here, you will give the task a defined quantity and number." (PD 41:13).

To sum up, the polytechnic college's leadership employs both transactional and transformational leadership philosophies. However, it is seen in depth that the respondents revealed that the use of the transformational leadership style is more prevalent than the transformational equivalent when leading the task to completion through trainers. In undertakings of the leadership style while leading certain activities, the situation determines much in selecting the appropriate strategies. As far as transactional leadership is concerned, it is utilised in the work environment to facilitate change by assigning a defined task quantity and number, focusing on the give-and-take principle, demonstrating exemplary behaviour, and achieving the desired outcome.

5.5.6. Key stakeholders' perceptions towards TT support

In the previous quantitative data analysis Part I, the current existing perception status of the trainers, leadership team and MSE technology recipients in the PolyCO-MSE manufacturing sub-sectors was analysed. In that analysis, the prevailing perceptions of the trainers, the TT leadership team and the MSE were identified, locating the association and significant differences using inferential statistics. In line with that, in this qualitative data analysis, the forward perceptions

of these three types of respondents are analysed in the following sections. Then, comparing and contrasting the forwarded suggestion and view of the response is made, and finally, integration with the results of the quantitative data analysis is made to answer the forwarded question, "What are the perceptions of the polytechnic college leadership team, trainers and technology recipients (MSE) concerning the leadership support rendered currently?”

Having this in mind, the presentation and analysis of the data obtained from the respondents focused on analysing the discourse of the stakeholders’ responses to the interview question, “How do you evaluate the perceptions of key stakeholders, like trainees, concerning the support you provide to micro- and small enterprises in TT activities?”

5.5.6.1. Department heads’ opinions on the MSEs’ perception towards TT support

a/ positively described ideas towards the MSEs’ perception towards the TT support by Department head respondent

The department head, those who put their evaluation of the perception of the MSE towards the rendered TT support is "positive," mentioned some reasons like the presence of good support from the PolyCO, the relationship being mutual relationship and the knowledge and experience obtained in the sector. They mentioned that despite the presence of the problems on this part, problems that go beyond the service scope of the PolyCO causes disappointment for the MSEs frequently. In general, the dean respondent who evaluated the perception has positively witnessed the improvement of the MSEs’ perceptions from time to time.

Respondents who were hesitant and willing to accept the presence of a weakening of positive perception as time passed arguably underlined the availability of positive perception for the service delivered to support TT, according to the respondent with ID NO 17:5, PD 17:7 and PD 15:7. For instance, the department

head respondents expressed the perception the MSE has for the service rendered by PolyCO is positive as follows:

> “It has become better and better from time to time. We support the MSEs using four packages: technology copy and transfer; entrepreneurship support; KAIZEN; and filling the skill gap they have. Therefore, among these, technology transfer support is one of the pillars on which we are discharging our assignment. During the time when we started the support, they were not willing to respond to our support. But now, when we transfer technology to them, despite the presence of a lack of capacity in skill and input, a scarcity of finance, and a skill gap that is creeping to be a barrier to their performance, they are volunteering and developing a positive perception of the support we are delivering to them.” (PD 36:11)

In addition, the other department head respondent with ID No PD 37:9 has also noted that the MSEs' perception towards TT support has been growing better and better in time despite the presence of problems stemming from resource scarcity, which cannot be denied. This underscored the four packages the PolyCO is currently providing for the MSE, as follows:

> “Well, there is still a problem; this cannot be hushed up. However, it has become better and better from time to time. We support the MSEs using four packages. When we started the support, they were not willing to respond to our support. But now, when we transfer technology to them, despite the presence of a lack of capacity and resource scarcity, thereby a shortage and absence of input, which lurks in the activities of the technology transfer process, their perception of us improves as time passes. Of course, it has improved from time to time.” (PD 37:9)

As another illustration, the department head respondent with ID No PD 40:10 has appreciated that the prevailing perception the MSE has towards the PolyCO support regarding TT is positive. The respondents mentioned the overt appreciation of some MSE personnel on various platforms, expressing their appreciation even by calling their names in public.

> “I see it in both ways. One of them is that you can determine it to be positive. There are various interests and intentions. Many trainers give them good support, enlighten them and give them the power they need,

> and under these conditions, the attitudes they have towards us are positive. Even they name some names of the trainers to praise the service and support they provided to them during the TT process. Such an attitude makes it positive. Sometimes, some trainers also report as if they were providing support without any support. In contrast, some members of the enterprise do not bother with the technology support ready for them. They neglect the support they are given." (PD 40:10)

b/Negatively described ideas by Department head respondents

In contrast to the department head, who supported the notion that the MSEs' perception of TT support is positive, opponents argue that the MSEs' perception is 'negative' and have listed ideas that strengthen their views. The TT support, currently being rendered by PolyCO and other supportive entities, is not welcomed by the MSE.

All eight department head respondents supported the notion that the perception of MSE towards the TT support rendered by PolyCO is not motivating. For instance, the respondent with ID No PD 14:7 expressed his personal suggestions as "I can say that their perception of us is poor. They are not satisfied with our service at the TT, and in support we render for them in general."

The respondent with ID No PD 13:8 and ID NO PD 17:6 has explained their ideas as follows:

> "I cannot say that they are happy with the technology transferred from us and the support we secure for them. They need ready-made technology that can change their lives without doing their best. Beyond all that they need from us, that is not our mandate. For example, among the serious problems raised by the institutions, the first is the expansion of the market; the second is the workplace where they do their work; and the third is the loan service. The bad thing is that the things they urgently need are not our actions." (PD 13:8).

> "They are used to becoming fed up with the activities rendered related to the technology transfer, especially in past times. As they stay two, three, four, and five years, some of them become fed up with the support we gave concerning TT." (PD 17:6).

The respondent with ID No PD 21:9 has also put this very precisely: ‘Undoubtedly, the perception the MSE has developed for our general support is not motivating’. The other department head respondents’ negative perception of MSE described it by associating it with their low awareness level as follows:

> “They are not satisfied with this and similar things, and because they do not understand the long-term importance of technology transfer, their attitude towards us is often not good. They are not satisfied.” (PD 13:10)

Yet, other respondents expressed the practice of sabotaging the unethical trainers from the PolyCO and MSE personnel to prepare fake documents that confirm the technology workout accomplishments jointly at the college without any real practice.

The department head respondents have also noted the reason for the MSE's unfavourable perception of the TT support rendered. The respondents have suggested services that are beyond the scope of PolyCOs as a source of the prevailing unfavourable perception. As it is known, PolyCO supports MSE in four packages: Kaizen, Training, Entrepreneurship, and Skill Gap, whereas issues of the workplace, market extension and financial accessibility are addressed by other offices. According to the respondents, such undelivered service by the responsible offices caused the MSEs to gradually develop an unfavourable perception towards the TT support the PolyCOs are giving. The MSEs expressed their grievances owing to the absence of a working place, capital scarcity and market inaccessibility. Regarding this, the department head with ID No PD 13:9 has expressed it as follows:

> “They require a speedy resolution to various problems they are facing in the real world in their work areas. They completely wish for technology that could be sold immediately without any hard work. Most of the time, hard work is not wanted by the stakeholders; they want shortcut methods. They do not like the process that the technology transfer demands.” (PD 13:9)

Department head respondents have also explained the factors that influence the MSE to have an unfavourable perception of the TT support they got from PolyCO, mainly appreciating perception that has not been developed overnight but rather developed gradually based on service expectations.

> "Well, there is still a problem; the perception has not developed overnight but rather developed partially from the perception that the community has for the TVET sectors. But dominantly, the service we are giving is compared to what their expectations are, which determines the perception that the MSEs have. This logically and dominantly leads us to conclude that, though they are not satisfied with the service rendered, their perception of our service is somewhat positive." (PD 51:12)

In the same way, the other department head respondent also underlined that some MSEs are always wishing for technology that could instantly be sold, mentioning that observing while stakeholders avoid hard work is common.

To sum up, the respondents who supported the presence of negative perception of the MSE to TT support have mentioned some action of the MSE which involve preparation of false documents of participation, being fed up with the TT support, showing disrespect to the TT activities rendered by PolyCO, etc.

c/ Summary of the department heads' interview analysis regarding MSEs' perceptions of the TT support

The opinions of the department head respondents who have given the interview regarding the status of the perceptions and attitudes of the MSEs' towards the 'TT support' they have received have been analysed. They revealed the presence of both positive and negative perceptions. In a broad sense, the respondents' opinions have been divided into two broad categories on this idea. Hence, some respondents suggested the prevailing perception the MSE has of the TT support is 'positive'. The remaining respondents have argued that the existing perception is that the MSEs have fallen into the 'negative' category.

Among the department heads that have put their opinion on the issues, 11 segments (quotations) have witnessed that the perception of the MSE towards TT support is positive. The respondents have underlined some issues to support their views. Those who are in favour of the MSEs' perception being positive have insisted on mentioning the following as facts to strengthen their views. These incorporate the incremental improvement of the perception of the MSE, the knowledge and experience gained in the sector, and the registered change of perception from complete avoidance of PolyCO TT support to attending it. Moreover, the development of mutual relationships between the PolyCO and MSE, including the changes brought on by the status of enterprises, was also identified as a supporting notion for the MSEs' perceptions towards TT support.

In contrast, those who have supported the notion that the MSEs' perception of the TT support is 'negative' have raised ideas that involve the preparation of fake documents, taking notice of the PolyCO help, boycotting the participation of TT, and not being found in the area when the trainers have arrived at the MSE working place. As mentioned in the above section, eight quotes have been found that support the MSEs' perception of TT support as 'negative'. These opponent groups have mentioned the production of false reports describing the trainers' TT support, the complete ignorance of TT support on the part of the MSE, disrespecting the action and the coming of trainers to them, and withdrawing from the participation of TT undertakings.

5.5.6.2. Dean and top leadership respondents' opinions on the MSEs' perception

a/ positively described ideas by dean respondents towards the MSEs perception of the TT support.

The dean respondents, who stand by the sides of those who put their evaluation of the perception of the MSEs of the rendered TT support as "positive," have raised the following major ideas to substantiate the suggestion they support:

- *Identification of problems through the cooperation of PolyCO and MSE.* (PD *50:13, PD 36:4)*

- *Highly improved relationship between PolyCO and MSE from time to time. (PD 50:13)*
- *Trying to use TT in the PolyCO as an opportunity. (PD1:30)*
- *Excellent, though there has been a cooling trend over time.* (PD 6:2)

The dean respondent with ID NO PD 50:13 has given their opinion, focusing on the improvement of the perception that MSEs have of the TT support.

> As I told you, their perception of us has been highly improved from time to time. Previously, they were not willing to respond to our support. But now, seeing the MSE, which brought improvement based on the four types of support we are giving and motivated by such practices, there are MSEs that have brought real change, accepting our help and improving their perception of us. However, when we transfer technology to them, the lack of capacity in skill and input is undeniable on their part. (PD 50:13)

The other dean respondent has also mentioned the favourable perception that the MSEs have developed through time from the cooperation angle; both the PolyCO and the MSE have demonstrated good cooperation in identifying the problems facing the TT activities. The dean's respondents have put it as follows:

> “The status of technology transfer is very encouraging. At the very beginning, the polytechnic and the MSE should identify problems based on the needs of the MSE so that the prepared technology can be transferred to them. Technology copy and technology transfer are two of the core strategic approaches of the technical and vocational education and training sectors. Then the enterprises could multiply, use and distribute to the community. These activities are going well, though some staggering is there.” (PD 36:4)

In line with that the other dean respondents have mentioned that despite the presence of the problems on this part, problems that go beyond the service scope of the PolyCO causes disappointment for the MSEs in most of the time. In general, the dean respondent, who evaluated the perception, has positively witnessed the improvement of the MSEs’ perceptions from time to time.

Dean respondent with the ID No 6:21 who were hesitant and willing to accept the presence of a weakening of positive perception as time passed arguably underlined the availability of positive perception to the TT support.

> "The status of technology transfer is excellent, especially at the initial stage, though challenges creep into it as time goes on. First, the polytechnic should identify problems based on the needs of the enterprises so that the worked-out technology can be transferred to them, whereby the enterprises can start producing it and selling it to the users." (PD 6:21)

The dean respondent also is in support of the same idea, revealing the mutual relationship between the PolyCO and the MSE in terms of restoring orchestration to address the problems facing the wider community.

Surprisingly, the top leader respondents' opinion towards the perception that the MSEs have towards the TT support being provided currently has been 'positive'. However, he did not overlook the presence of problems influencing the context of leading and managing TT activates. A top leader respondent with the ID No PD 12:21 has noted the issues as follows:

> "Some gaps are creeping among a few micro- and small enterprises in that they express that support is not needed for them. They wrongly saw it as wasting time simply by seeking very urgent things that they have not processed. But they are also open to our technology support." (PD 12:21)

b/ negatively described ideas by dean respondents towards the MSEs perception of the TT support.

The dean respondents' suggestions were found to express the available perception of the MSEs toward TT support as negative. The dean respondents were highly focused on expressing the potential reasons for the development of the prevailing negative perception towards TT support. According to the respondents, holistically, they have expressed the following ideas as responsible for evaluating the negative perception:

- The presence of weak perception due to not having full satisfaction and being dependent on other stakeholders' contribution for the effective TT support
- The presence of TT support delivery under role confusion.
- MSEs' showing overt ignorance of the PolyCOs' technology support.

- The MSEs' expectation that the polytechnic college should fulfil all the technological support for MSE.
- A seemingly and an unethical practice of some MSEs.

Mentioning such ideas as supportive evidence, the dean respondents try to evaluate the status of perception in detail.

These include the following: deans' detailing to indicate the presence of negative perception of MSEs' towards the TT support. For instance, the dean respondent with the ID No 7:11 has forwarded as follows:

> "First the perception of these key stakeholders, MSE I think is weak. Many reasons can be mentioned for this case. First, they do not have full satisfaction on the technology support we are rendering. Our technology transfer task is dependent on other stakeholders' contribution. There are many packages part that would be serviced by other sectors such as Finance Bureau, industry and trade office in its previous naming and others. All the problems that are streamed from these companions are always worsening the perception the MSE have to us. They wanted us to solve the market extension issue. The scarcity of place for working e.g. shade house, the financial accessibility is also other problems that aggravate the prevalent problems." (ID NO 7:11)

In addition, the dean respondents with ID No PD 5:9, PD 5:10 and PD 5:0 have mentioned related reasons for appreciating the availability of negative perceptions of MSEs' towards the TT support as follows:

> "Yes! It cannot be said that it is positive. The reason is that the current leadership practice of technology transfer is conducted with a problem of role confusion, and the enterprises have difficulties accepting and transferring the technology that we bring. I don't think they will see the support we provide in a positive way because, most of the time, the enterprises focus on temporary needs, for instance, market linkage and the like, rather than producing new products by accepting technology." (PD 5:9)

> "The enterprises focus on these market linkages, loan proximity and sheds or workplaces. However, for us in technical and vocational training, the package offered to us focuses on technological skills, entrepreneurship, Kaizen training, etc. So, it is impossible to say that they will see the support or technology transfer that we provide in a positive way." (PD 5:10)

> “In the enterprise case, they do not work on the technology that We [Polytechnic College] provide for them because they either give attention, as I mentioned earlier, they give priority to urgent and temporary support rather than technology transfer process. In addition, it is impossible to say that we are giving full time to focus on technology transfer activities. So, this is also the cause for the TT activities to lag behind.” (PD 5:10)

The other dean respondent has also mentioned a little different ideas from his partners focusing on the unethical practice of the MSE for situated TT support in the following description: The respondents have reported that MSE is participating in the TT activities not to lose the opportunity, such as the working shed, license financial accessibilities, etc., they have received from the organiser entities. The dean respondent has detailed this as follows:

> “The perception that the MSE has emerged from the general atmosphere currently is prevailing. I have told you that most of the MSE participants are seemingly acting in the operation of technology transfer. They did that in fear that they could be deprived of the right to use the business shop and license they have been given. Hence, their participation in us is untrustworthy. They do not want us. It is not from evil behaviour; it is from poor awareness and knowledge. They give priority to their current income. They did not understand the critical competitive advantage of technology in the current market context.” (PD 5:10)

In conclusion, except for the top leadership respondent, both department head respondents and dean respondents have been divided in their opinion of the MSEs' perceptions of the TT support provided to them, which have been divided into two categories: 'positive' and 'negative' perception. The positive opinion from the respondents, however, exceeded the 'negative equivalent' suggestions.

5.5.7. The benefit obtained following TT Implementation

One of the prime objectives of industry extension established in 2011 was to obtain benefits from its contribution to the process of realising prosperity and job generation. Technology capacity building for MSE via TT was one among packages under the umbrella of industry extension to have socioeconomic

prosperity for the enterprises and to contribute to the nation at large (MoSHE 2020:39). In line with this, the qualitative data revealed various advantages gained from the accomplishment of TT, as reported by the MSE owner-structured interview participants. Respondents coded with ID No (PD 22:08, PD 23.07, PD 24:06, PD 25:10, PD 25:14, PD 26:07, PD 29:06, PD 30:07, PD 42:10, PD 44:13, PD 44:14, PD 45:09, PD 46:11, and PD 49:10) commented on the advantage gained from the TT cooperation between them and the polytechnic college. The following were the advantages of implementing TT from PolyCO to the MSE manufacturing sub-sectors: expanded planning knowledge, material reorganisation through Kaizen, increased revenue generation, deeper business skill sets, improved customer service, increased production quantity and quality, modernised design patterns and sketches, sophisticated production preparation, modernised operations, and secured competitive advantage and widened the horizons of the market.

The MSE owner respondents coded with ID NO PD 49:10 noted that there were various advantages gained from the support of Polytechnic College via TT. The respondents underlined the benefits gained in terms of knowledge on planning issues, customer service delivery, the platform-setting experience for the college, and training delivery in general.

> “There are various advantages. The kaizen, the planning practice, the customer service delivery, and various technical knowledge that we have received from them are all advantageous and beneficial to us and to the community we are serving. It is also advantageous for the polytechnic college in that they are doing their duties and becoming happy when we are changed as per their training and TT endeavours.” (PD 49:10)

The MSE owner respondents coded with ID No PD 25:14 noted that there were various advantages gained from the support of polytechnic college via TT. The respondent gave his opinion in support of the change, though it was limited in scope. Because of the forwarded views of the respondent, the TT accomplished

and the rendered support by the polytechnic college enabled the MSE to increase the quality and quantity of production, including business organisation skills.

> “We are the work area in which they try to fulfil the responsibility the government assigned them. Though it is not that attractive, the TT experience helps us organise our business and increase the quality and quantity of our production. We focused on producing consumption goods; so, we used their support to improve whatever it was a little bit.” (PD 25:14).

A respondent coded with ID No PD 45:9 noted, in brief, the benefit gained from the market extension advantage perspective. The respondent underscored the experience gained on Kaizen and the impact it had on income generation.

> “Well, we got various benefits, like training. We have developed excellent skills in dealing with revenue and expenditure issues. Kaizen training is very useful from the workplace to our homes. I thank you for that” (PD 45:9).

Moreover, another respondent coded with ID No PD 30:7 added views on the benefit gained in terms of market extension advantage:

> “Well, we have various advantages, such as training, various forms of seminars, exhibitions, and bazaars, which were also organised to widen the market opportunity (PD 30:7).

The respondent belonging to the same group, who was coded with ID No PD 23:7, revealed how better cooperation improved technology, technical support and capacity, enabling the MSE to pursue a competitive and profitable path. The respondent also mentioned the advantage the polytechnic college leadership obtained in terms of learning platforms for trainees to soothe the scarce resources.

> “It is very advantageous for both of us. Especially if cooperation is improved, we can get technology that facilitates our work; technical support and capacity would be improved. This can make us competitive. It has economic advantages for the community, and even for the nation's development, it is a determinant. The polytechnic can

> also have the advantage of discharging its great responsibility. Though it is very limited, this TT cooperation is a learning platform for their trainees." (PD 23:7).

The respondent belonging to the same group, who was coded with ID No PD 46:11, underscored the advantage gained by increasing production and productivity, modernising operations, and securing market advantage, and put it in one's own words as follows:

> "Theoretically, technology transfer and the opportunity for technical and technological support for enterprises are the great assignments of polytechnic colleges. Whatever the case may be, the technology transfer activities are very interesting. The polytechnic can also have the advantage of discharging its great responsibility. Though it is very limited, the polytechnic college and the micro and small enterprise offices worked together to provide this assistance." (PD 46:11).

The respondent coded with ID No PD 43:14 reported the benefit gained by focusing on the necessary skills and methods that enable one to become competent. He described the criticality of skills and gained methodology to increase both the product and productivity, underscoring the danger of going off track owing to the weak performance in this area and its difficulty in getting back to the normal route in the business world as follows:

> "It is very beneficial. Unless we improve our skills and way of operating to increase production and productivity, we will be off track. With the support that was given as an initial step in starting the cooperation, we have an advantage. In the short term, it enables us to produce our production, taking the training and KAIZEN as tools to fast-track our operations at the work site. In the long run, it is very useful to develop the nation both economically and socially." (PD 43:14).

In conclusion, the qualitative data revealed that the MSE acclaimed the benefits that were registered: success in kaizen, cooperation in planning and technical skills training, and customers' service and technical knowledge. As a strategy, the

current communication that is available is good. However, to fix the pitfalls that the MSE and the polytechnic college leadership entities have encountered, the communication needs to be strengthened. To a limited extent, the TT made to the MSE helped the MSE improve the quantity and quality of the production portion as well as their soft skills in business organisation.

5.5.8. Challenge facing the leading practice of PLT about TT

The interview transcription for all the respondents' types is coded in association with the challenge facing the leading practice of PLT about TT and comes out with regulation associated challenge, promotion-associated challenge, and capacity gap-related challenge, lack of integration, the rank of the three serious TT challenge, and future resolution. The issues are discussed in order as follows:

5.5.8.1. Lack of integration among stakeholders

The available status integration among the responsible offices in supporting MSE, in one or another way, influences the effectiveness of the TT. Strong integration could lead the TT participants forward towards achieving purposes, while on the contrary, action will lead to challenges that levy a high cost on the enhancement of the TT. The inadequacy of collaboration, coordination and integration among the responsible stakeholders in running TT is one of the most contributing factors to making the operation ineffective (Mwabukojo, 2020:26–30). A department head interviewed respondents with ID No PD 37:4 who expressed the unsatisfactory move of TT in contrast to the early expectations and the issue of integration among stakeholders as responsible obstacles, as follows:

> "It is difficult to evaluate, of course. Its result is not as we expected or as the initiative of the programme intended. It faces several challenges. The coordination and integration of the key stakeholders are always a problem. Indeed, this does not mean that there is no change or result. Though it is not satisfactory, changes and good practices are available. In general, to determine it, technology transfer needs very urgent improvement in its operation and the leadership system." (PD 37:4).

From the integration and coordination of stakeholders' perspectives, the department head respondents have identified problems that range from the loose integration endeavours of leadership to the absence of established structural platforms. They have identified reflected problems such as partners' office negligence of the activities that the polytechnic college is doing concerning TT; the delaying of the MSE to sell the technology to the community and the absence of accountability and transparency.

The interviews respondents with ID No PD 21:17 reported unsatisfactory service in supporting TT in relation to weak coordination.

> "The weak integration among the stakeholders is also a critical problem that drags the activities down. The service delivery is not sophisticated. The supporter offices should provide the service in coordination and integration; otherwise, it would result in dissatisfaction and disintegration in the long run." (PD 21:17)

A limited number of deans also commented on the status of poor coordination among stakeholders. One dean respondent expressed how the leadership team at various levels has paid little attention.

> "The issue of integration among various key stakeholders has also received the least attention from the leadership body. This directly goes not only to the leadership body at the Addis Ababa city government level but also at the federal level. In one or another way, such inappropriate considerations greatly affect the enhancement and development of technology transfer activities for the benefit of the community and the sustainable development of the nation." (PD 21:17)

Yet, the MSE respondents have also evaluated the problems of integration and coordination in the following way:

> "They do not integrate themselves by introducing and orchestrating themselves. They simply came to us separately to fulfil the assignment the government had given. The commitment that is expected from us is really ignored by both of us, and we should take notice of the

> advantage. The working sheds and place, as well as market accessibility, are highly needed." (PD 25:15)

In general, the respondents complained about the visitation of the stakeholders without making any effort to orchestrate among themselves. The weakening of integration from time to time is an acute problem due to unresolved peace and security issues. The unreasonable interruption of TT support is mentioned as a challenging factor by the MSE respondents. These massively derive the issue into unsolved and answered questions from time to time concerning the chronic question of MSE regarding market network extension, place of work and solving financial scarcity.

5.5.8.2. Capacity gap-related challenge

Interview respondents have suggested various capacity gaps both for the college trainers and the technology receiver MSEs, which have been challenging the leadership team in the operationalisation of TT. The respondents identified the available gaps just for both the MSEs' and the trainers. The respondents underlined the problems reflected regarding the capacity gap on the part of the MSE. In the first place, the respondents described the presence of a capacity gap in making efforts to make the production available to the community. In the second place, the respondents forwarded their opinion that the MSEs were unable to pass the transferred technology to the clients after manufacturing it at the level of its expected capacity. Finally, the MSE personnel were likely to leave the sector due to their being incompetent and lacking confidence in the enterprises in which they are engaged. For instance, related to the limited capacity, the dean respondents expressed the available capacity gap as follows:

> "Most of the enterprises in the manufacturing sub-sectors lack capacity in understanding that the transferred technology intends to produce substitute products and to improve the products and productivity for them. There are capacity problems in devising the effort made to make the TT effective." (PD 5:4)

From the grassroots level in the field of operationalisation, a department head respondent expresses his opinion that the MSEs are shortsighted in sensing the TT support from the polytechnic college via the trainers in the following manner:

> “They ignore the support we are giving through the technology transfer support package. They are very shortsighted in that they only want simple things that can be done overnight and that can be sold overnight, too. They do not want to invest their resources in technology transfer. So, much is expected in raising their awareness level.” (PD 12:12)

The interview respondents have conveyed their suggestions for a solution that aligns with the issues they have identified. Training that could improve issues with awareness level and the skill gap has been suggested as a solution to these capacity gap issues.

Dean interview respondents have raised the presence of a capacity and skill gaps among the college trainers. The suggested capacity gaps were reflected and described in various contents. According to the dean respondents, the skill and capacity gap resulted from not being capacitated with skills relevant to the current situation. The capacity gap result from not being skilled in devising TT activities and the failure to complete one's task with commitment and devotion are the prominent Achilles heels suggested by the dean respondents. A dean respondent, with ID no (PD 7:21), has stated his opinion as follows:

> “I think the top problem in the technical and vocational sectors is an absence of capacity. Technology transfer is an artistic work that requires the youth to have capacity and commitment. The perception that all trainers must transfer technology has currently created a barrier.” (PD 7:21)

Dominantly, the department head interview respondents have expressed that the capacity gap reflected on the part of the leadership is shown in the following conceptualisation. According to the department head respondents’ description, the leadership team, especially at the top level, lacks detailed knowledge of the sectors they are assigned to lead, which is currently occurring owing to high turnover, and

the support delivered to support TT activity is not satisfactory. The department head with ID No. PD 51:21 has expressed this in his own words as follows:

> “The other critical problem is the high rate of turnover of leadership, both in the office coordinating the enterprise and in the TVET sector, especially around top management at the sub-city and city government levels. Since the turnover of top leadership is high, some top leaders do not have detailed knowledge about the sectors. When they accumulate some sort of experience, they will be transferred or changed from their place. When the newcomers come to the position, it might be starting again from the beginning. The system does not work.” (PD 51:21)

A department head with ID No PD 36:4 has stated the following concerning the capacity gap that is reflected regarding the inability to provide adequate training and monitor the status of TT that is pervasive from the polytechnic college to the city government level at the far top level regarding TT activities:

> “Yes, that is, if the question is raised related to the leadership above, the leadership support to make the trainers use technology and help them with training is not satisfactory. Technology transfer is confirmed when the MSEs transfer themselves and the community to the enterprise. Problems are common here. Therefore, their help in terms of leadership is limited. The use is one-of-a-kind. From the very polytechnic college to the leadership layer at the city government level, problems are pervasive.” (PD 36:4)

In addition, the leadership capacity gap is reflected in the high workload, especially during the bazaar and exhibition preparation time. A dean respondent has briefly noted the following:

> “The other is the leadership gap; the leadership does not have the capacity to fit as such. The leadership team is immersed in the hurry of operation when exhibition time is approaching. The leadership does not have that much awareness of technology and does not engage in activity.” (PD 6:23)

As stated in the preceding opinion of the dean, the demarcated incidents could drive all leadership to focus only on the accomplishment of that particular task, which would then lead to taking no notice of the other remaining core businesses.

The other issue of a capacity gap is found in the polytechnic leadership context, where the gap would be the inability to coordinate and integrate the available works at hand.

5.5.8.3. Promotion-associated challenge

The respondents were asked through structured interview questions to state the challenging factors facing the leadership in the operationalisation of the TT activities, and they came up with varied ideas among themselves and even produced challenges that were not mentioned in the quantitative phase. The promotion-related TT challenge theme is a good example among others that the interviewee emphasised as the source of complaints of the polytechnic college trainers and consequently, greatly influences the functionality and quality of the worked-out technology.

The participants identified various promotion-inflicted ideas that ranged from massively producing inferior-quality technology, which is unusable for the real work of the MSE, to using it only for the sake of promotion participation. The production of inferior quality and mafunctional technology, which is lower in quality, would be subjected to being dumped, which tempted the leadership team to retreat from coordinating the activities. Finally, it influences the stakeholders, particularly the trainers, to develop a feeling of contempt for TT by attaching it to a mere promotion tag and imposing pressure from above, causing a waste of millions of Birr from the available limited budget as well.

The interview respondent (ID No PD 21:4) expressed his views on how such practices are deteriorating the quality issues of the technology worked out or produced as follows:

> “The motivation established is not encouraging that the attachment of TT issues with the promotion affairs has taken in the wrong direction; it has affected the quality of technology and tempted the trainers to work out inappropriate technology, which is crippled to bring about change

> and benefit for the customers in particular and for the community in general.” (PD 21:4)

The respondent with ID No PD 39:4 evaluated the status from two perspectives. He concluded from a quality standpoint that the technology lacks compatibility and functionality. Secondly, the status of TT lacks appropriate leadership focus in terms of sharing appropriate leadership functions and coordinating as follows:

> “Well, it is better to see the status of technology transfer from polytechnic colleges to MSEs from two perspectives. In the first place, the content of the technology transfer is where we should focus. Content-wise, the transferred technology lacks compatibility and quality. In one case, the trainers' massive participation in copying and transferring technology is undertaken with the prime purpose of achieving promotion or career development, you see. Its functionality is also under question, which causes further problems. The second point of evaluation, I think, is the process of transferring it. It involves leadership and the issue of technology transfer management. It lacks focus and integration.” (PD 39:4)

The dean respondent with ID No. PD 5:6 expressed the unfavourable result of attaching TT to the trainers' promotion. The respondent further observed that the prevailing rule and regulation bind the issue. He stated the affairs in his own words, as follows:

> “Well, in my view, this really is interrelated with the institutionalised working convention of connecting technology transfer affairs with the issues of promotion. The existing rules and regulations prohibited the trainers from participating in promotion (upgrading competition) unless one trainer worked out the activities of technology transfer. This tempted the trainers to miss the big picture and benefit of TT in that it enables them to enhance production and productivity while supporting the MSE in order to capacitate them to back up the nation through transitivity. So due to such unnecessary working practices, this part of TT has received weak attention from the leadership team.” (PD 5:6)

Among the dean respondents who have expressed their opinion on the challenging factor facing the TT activities in general, respondents with ID No PD 7:7, PD 50:20 and PD 6:6 have forwarded almost the same ideas by raising the problem intensity via describing the problem criticality of attaching TT with promotion that leads to

obtaining technology results with defected functionality. They were also overwhelmed by inferior quality technology inflicted from focusing on working out technologies for the sake of fulfilling the promotion prerequisite, and in general culminated in missing the purpose the TT is supposed to fulfil.

The two top leadership respondents with ID No PD 10:2 and PD 10:15 have commented on the challenging factors facing TT activities. Respondent with ID No PD 10:2 strongly forwarded ideas in agreement with the department head opinion by appreciating the presence of problems inflicted from attaching the operationalization of TT activities with the trainers' promotion procedure that is currently done once in two years. In contrast, another respondent with ID No PD 10:15 has expressed that the customers feel hesitant to buy the technology produced via TT because they suspect that it is of poor quality.

5.5.8.4. Regulation associated TT challenge

In describing the rule and regulation, the top leadership respondent and the dean interviews respondents have commented on the prevailing rule and regulation-related challenging factors facing the implementation of TT in a broad sense. One top leader respondent has commented on the challenge factor facing the TT about the rule and regulation as a barrier. The respondent has raised an issue of accountability. He emphasised the presence of a loose legal relationship with the MSE, especially for the polytechnic college that is transferring technology. No rule or structural accountability binds participation in the operationalisation of TT activities. The top leader interviews respondent expressed his opinions as follows:

> "Since these enterprises are accountable to these entities [the Ministry of Labor and Skills], we are not in a position to force them. So, a certain bottleneck is at hand. It is on this basis that we provide industrial extension support based on needs. Hence, focusing on collaborative working endeavours is still weak. Much work remains here that needs attention. There is something left to be done by both of us talking about the issue with attention and working together, avoiding pushing each other. I have already explained this." (PD 12:12)

Apart from the top leadership, seven department head interview respondents have commented on the available challenges facing TT operationalisation owing to regulation-related barriers. They have identified barriers in the following manner: In the first place, the challenging factor raised was related to the regulation that prohibited the polytechnic college from selling the developed technology via TT activities. However, the polytechnic college was not allowed to sell or exchange the technology worked out. To make matter worse, it is on the way to correcting with direction from the Ministry of Labor and Skills to permit the polytechnic college to produce technology and to participate in selling and exchanging to strengthen internal revenue.

The absence of a binding rule that checks the MSE's ability to actively participate in the TT activities operationalised by the polytechnic college was another issue that caught the attention of the department head respondents. Thirdly, the imposition of pressure on trainers to carry out TT to fulfil the requirements of their promotion was the centre of complaints about TT activities. The respondent strongly condemns this regulation practice because, according to the department head respondents, it could deteriorate the quality and functionality of the technology worked out. Fourthly, the disappointing government purchasing procedure was also mentioned as a critical barrier and cause for delay and complete distortion of TT activities and implementation. The lateness or complete interruption of purchasing the raw material (input for TT) makes the TT activities deteriorate. The other mentioned regulation-related barriers dictate the relationship and sustainable continuation of TT fate. Once the technology is transferred, issues such as the ones that follows regarding the compensation procedure if there is any loss of the transferred technology—and the types of contractual agreements between the technology donor polytechnic college and the technology receiver, the MSE—were not demarcated. Various working procedures and guidelines that could sustain the operation were missing, according to the department head respondent with ID No PD 40:23. The other department head, with ID NO PD 41:8 underlined the challenging factors in the context of input problems for TT and expressed them in his own words as follows:

> The available material technology is geared towards these departments. The leadership team focused on the execution of technology within these departments. The predominant gap here is the issue of inputs. It is difficult to have input in due time. The government's working procedure is not conducive. After requesting the material needs of TT for purchase, it might not be available, might be very expensive, or might be bought very late. It may impose barriers on TT. It is the available gap. (PD 41:8)

The other department head interviews respondent with ID No PD 51:09 also expressed the challenges facing the TT leadership. The respondents insisted on saying that, owing to the absence of binding rules, the withdrawal of MSE from taking the technology after all things related to the TT process are completed was a very common problem. It subjected the polytechnic college to a huge loss of budget from that limited and scarce resource.

5.5.8.5. Order of three serious TT challenge

a. Department head respondents' view

Among the 14 department head respondents who have identified the first serious TT challenge, four of them expressed that the lack of integration among stakeholders stood first as the TT challenge, while two respondents expressed that the functionality and quality problems of technology copied and scarcity finance could stand first. The rest of the seven department head respondents suggested their first serious TT challenge from their own angle. The respondents shortlisted various challenges. These included the delay of MSEs to transfer TT, the MSEs' attitudinal problem towards TT, MSEs' limited capacity for TT, the mismatch of needs between the technology donor and recipients, the less comprehensiveness of the TT document and the price fluctuation of TT inputs.

Table 5.10A: Department head suggestions on the rank of the three serious problems

1st serious problems	Freq	2nd serious problems	Freq	3rd serious problems	Freq
Lack of integration among stakeholders	4	Finance scarcity	2	Lack of integration among stakeholders	3
Lack of quality and functionality	2	MSEs' attitudinal problem towards PLTs' support	1	Ddelay of MSEs to transfer TT	1
Finance scarcity	2	Lack of integration among stakeholders	1	Finance scarcity	1
Dalliance of MSEs to transfer technology	1	The high price of input in the market	1	Lack of quality and functionality	1
MSEs' attitudinal problem towards TT	1			MSEs' attitudinal problem towards PLTs' support	1
MSEs' limited capacity	1			MSEs' limited capacity	1
Need mismatch between PolyCO and MSE.	1			The bureaucratic procurement process.	1
The document for TT lacks comprehensiveness.	1				
The high price of input in the market	1				
The technology copied lacks quality.	1				

Source: structured interview

Five department head respondents with the identity (PD 14:15, PD 21:16, PD 33:17, PD 36:18, and PD 17:14) have suggested four various types of the second most serious TT challenges of their own. The interview respondents identified challenges including finance scarcity, MSEs' attitudinal problems towards PLTs' support, a lack of integration among stakeholders and the high price of input in the market. The three most prominent challenges identified as the TT activities were 'lack of integration among stakeholders', 'MSEs' attitudinal problem towards PLTs' support' and 'the high cost of input in the markets. 'The high cost of input in the markets was also mentioned in the 1st order rank by respondents. 'Finance scarcity' is suggested by two department head respondents as the second most serious TT challenge.

When we come to observe the third most serious TT challenge, nine department head respondents have given their opinion of the third most serious TT challenge in the undertakings off TT activities from the polytechnic college to the MSE. Surprisingly enough, three respondents confirmed that the lack of integration among stakeholders is the third most serious challenge.

It is possible to summarise the suggestion of the rank of the most serious TT challenge based on the analysis result. The most serious TT challenge could be listed as follows, from most serious to least serious. These could be listed from ‘lack of integration among stakeholders”, “lack of quality and functionality”, “lack of quality and functionality,” “reluctance of MSEs to transfer technology”, “MSEs' attitudinal problem towards TT”, etc.

b. Dean respondents’ view

Among the seven dean respondents who have identified the first serious TT challenge, two of them expressed that the lack of integration among stakeholders stood first as the TT challenge, in accordance with their department head partners. The rest of the respondents were divided on their suggestions. Hence, they identified five types of TT challenges of their own as follows: budget scarcity, the awareness problem of MSEs to TT, the bureaucratic procurement process, leadership's weak focus on core activities, and the limited capacity of the TVET sector.

Table 5.10B: Dean Suggestions on the rank of the three serious problems

1st serious problems	Freq	2nd serious problems	Freq	3rd serious problems	Freq
Lack of integration among stakeholders	2	Lack of stakeholder involvement	1	Lack of quality and functionality	3
Budget scarcity	1	The trainers' capacity gap	1	MSEs' capacity and financial incapability	1
The awareness problem of MSEs' to TT	1	The attachment of TT with promotion	1	MSEs' attitudinal problem towards TT	1
The bureaucratic procurement process.	1	Awareness-related problems	1		
Leadership loses focus on core activities.	1	MSEs' limited capacity	1		
limited capacity of the TVET sector	1				

Source: structured interview

In the same way as the department head respondents, five dean respondents with the same identity (PD 8:13, PD 5:17, PD 6:22, PD 19:16, and PD 2:13) have suggested five varied types of TT challenges that could stand as the second most serious TT hindering factors. These include lack of stakeholder involvement, the trainers' capacity gap, the attachment of TT with promotion awareness-related problems and MSEs' limited capacity. This indicates that they do not have the same level of problems; at least, that could be the second. All five respondents have faced different challenges.

As the third serious TT hindering factor, three dean respondents identified in their interview a lack of quality and functionality, MSEs' capacity and financial incapability, and MSEs' attitudinal problem towards TT.

It is possible to summarise the suggestion of the rank of the most serious TT challenge based on the analysis result. The most serious TT challenge could be listed as follows, from most serious to least serious. These could be listed from '"Lack of integration among stakeholders", "limited capacity of the TVET sector",

“The awareness problem of MSEs' to TT”, “budget scarcity”, “Lack of quality and functionality” etc.

Among the four MSE respondents who have identified the first serious TT challenge, two of them expressed that the 'ineffective communication' between the polytechnic college leadership team and the MSE stood out first. This strongly supports the serious TT challenge identified in the quantitative data. The rest of the respondents contradicted one another on their suggestions. The other two respondents suggested two types of TT challenges, which involve budget scarcity and a lack of integration among the stakeholders, which confirm the deans' and department heads' views. The absence of cooperation and integration is the first problem that disrupts our work. It would be better if they united and integrated to deliver their support. Without integration, the strategic advantage of TT cannot be achieved. One of the MSE respondents expressed the acuteness of the communication as follows.

> “The absence of cooperation and integration is the first problem that disrupts our work. It would be better if they unted and integrated to deliver their support. Without integration, the strategic advantage of technology transfer cannot be achieved.” (PD 44:16)

The top leaders at the AATVTTDB also supported the notion that the seriousness of the problems encountered by TT. One top leader respondent noted, ‘the main constraint is the scarcity of finance. The financial scarcity is daunting’. MSEs’ respondents’ suggestions on the rank of the three serious problems

Table 5.10C: Mses' respondents' suggestions on the rank of the three serious problems

1st serious problems	Freq	2nd serious problems	Freq	3rd serious problems	Freq
Budget scarcity	1	Finance scarcity	3	Mses' attitudinal problem towards PLTs' support	1
Lack of integration among stakeholders	1	Input scarcity	1	lack of sustainable TT support	1
ineffective communication	1	Lack of incentives	1		
ineffective communication	1	Market inaccessibility	1		
		the problem of peace and security	1		

Source: structured interview

They presented their individual opinions by naming input scarcity, lack of incentives, market inaccessibility, and the problem in describing the second most serious TT challenge. Among the seven interview MSE respondents who have given comments on this issue, 3 (42.85%) of them have expressed finance scarcity' as the hindering factor for TT. The other four MSE respondents suggested peace and security.

When we come to observe the third most serious TT challenge, only two MSE respondents with the respective ID No PD 27:14 and PD 28:12 have given comments and come up with the following ideas: Mses' attitudinal problem towards PLTs' support and lack of sustainable TT support, respectively. The MSE interviews respondents expressed their available perceptions of Mses' towards the general rendering of the service related to the TT:

> "In addition, there are attitude problems on our side. Many enterprises are not satisfied with the technology support from the polytechnic colleges, and this makes them not fully collaborative in their work." (PD 28:12)

To summarise two MSE respondents identified attitudinal problems and lack of sustainable TT support as the three most serious challenges in the provision of TT services. MSE respondents identified input scarcity, lack of incentives, market inaccessibility, and finance scarcity as major challenges for TT while others advocated for peace and security. Four MSE respondents identified serious TT challenges, with two highlighting ineffective communication between the polytechnic college leadership team and MSE. Four MSE respondents identified serious TT challenges, with two highlighting ineffective communication between the polytechnic college leadership team and MSE. Other respondents suggested budget scarcity and lack of stakeholder integration. The absence of cooperation disrupts work and hinders strategic technology transfer. Integration is crucial for success. The study findings revealed that 42.85% of interviews MSE respondents identified input scarcity, lack of incentives and market inaccessibility as the main challenges to the TT in the TVET sector. The remaining respondents suggested peace and security. The third challenge was identified as Mses' attitudinal problem.

The practice of PLT faced various hindering factors that drifted from both the internal and external arenas to disrupt the technological transfer activities. Lack of integration among stakeholders (section 5.3.2.8.1), capacity gap-related challenges (section 5.3.2.8.2), promotion-associated challenges (section 5.3.2.8.3) and regulation-associated TT challenges (5.3.2.8.4) were identified as the major challenging factors that disrupted the implementation. In addition to these, the high turnover of top leadership, the lack of detail knowledge about what the top leadership assigned and TT were found to be additional hindering factors in the achievement of TT. Moreover, the other challenge occurs when the key stakeholders are completely immersed in casual events such as exhibitions and bazaars, leaving behind planned core activities. Furthermore, the available loose integration from the lower level to the top and across the sector, including unsatisfactory training delivery, intensified the problems (section 5.4.2.1.3).

5.5.9. Strategies to better improve the PLTs' TT activities

The dean and the department head were asked to suggest enhancing the TT activities by concentrating on the difficulties of TT integration. This is how the leadership team at each level should implement the improvement in focus to support and assist TT activities. The results showed that there were several obstacles to TT from polytechnics to micro- and small businesses. They iidentified a lack of leadership focus and vision, financial scarcity, a lack of cooperation, and rule and regulation-related bottlenecks. Such problems and the potential hindering factors need to be fixed. Hence, devising strategies for implementation in the short- and long-term plans is an essential milestone in sustaining the organisation of the development scheme as a government initiative. In line with the structure of the interview, respondents discussed these in brief in the section that follows.

5.5.9.1. Views provided to enhancing involvement of stakeholders

In alignment with the identified hindering factors facing TT activities from the PolyCO to MSE manufacturing sub-sectors, interview respondents forwarded their recommendations. The top leadership respondent, with ID No PD 11:29 commented, focusing on underscoring important issues for the enhancement of TT activities. These include appreciating the criticality of developing proper technology for a copy that suits the needs of the technology receiver. Secondly, it emphasises the importance of considering quality over quantity in TT activities for its influence and backwash effects to deter stakeholders if the quality is poor. The other issues that have received focus in the bureau comments were the need to allocate the necessary resources for TT and changing the unfriendly rules and regulations that tie activities together to prevent moving forward. For instance, the rule that prevents the polytechnic college from selling what they have produced through TT activities needs improvement. In addition, connecting the trainer's promotion with TT activity does not nurture TT activity; rather, it caused it to decline in quality because the trainers focus only on fulfilling that binding task, considering it a 'curse' rather than considering it as a means to bring about socioeconomic development.

For instance, the top leader with ID NO PD 40:7 put this underlining the importance of eliciting involvement by his own words as follows:

> “If it is manufactured for the enterprise without its involvement and needs assessment, it will have less value. It will be better if the enterprises are provided with the technology after they are invited to participate and make it known to them that it obliges them to invest money and convince them to participate, for it makes the transfer effective. We have the recommendation that it would be better if they took the technology on their own initiative rather than imposing it upon them.” (PD 40:7)

The important suggestion articulated from the trainees' representative respondent with ID NO (PD 58:10) was the recommendation rendered to enhance the current and the future context. She underlined the importance of conducting training on the emerging technology that would happen in the near future as follows: “It is important to note that since new technologies are constantly emerging, they should provide training appropriate for these new technologies.” (PD 58:10)

The respondent with ID No PD 57:11 suggested enhancing cooperation with trainees as stakeholders to address polytechnic issues and strengthen the TT, as per the aforementioned issue.

> “Well, well! There is no gap. Everything is sound. However, some new innovations may come during this period. Polytechnics should focus on solving potential problems and helping the community to improve itself. Above all, I think they should establish relationships with the trainees. They should communicate with the trainees.” (PD 57:11).

The respondents strongly suggested the criticality of pushing the MSE personnel to participate in generating technological ideas. They were strong especially in practical affairs despite the fact that they were less qualified in comparison to the human force in the TVET sectors.

The department head respondents with ID No PD 21:23, PD 34:14 and PD 40:7 have also supported the top leadership comment that capitalised on the criticality

of the involvement of stakeholders. As to the respondents, involvement should be strengthened by eliciting the participation of the technology receiver, focusing on quality rather than quantity while planning, stretching the involvement eliciting process beyond the technology-related department and developing the technology aiming at the needs of the technology receiver. This action, in turn, would enable PolyCO to identify the potential of that particular local area, obtain fresh ideas for the undertaking of TT and finally enable it to convince the TT participants at ease.

Finally, the department head respondents also strengthened the idea by underscoring the necessities of all the PolyCOs' leadership in exemplifying the effort to reinforce TT activities and act on the identified problems as follows:

> "The problems are identified and known from each practice movement, and each problem must be addressed with a prepared plan and strategy with the full involvement of the key stakeholders. The regulation centre is also, I think, very essential. The government in general and the Technical and Vocational Technology Development Bureau should give priority to the revitalisation of integration problems." (PD 20:14)

Important advice was forwarded to the leadership team at various levels. The first important recommendation was given regarding identifying and prioritising the problems to be tackled. Secondly, the respondents noted that effective commitment was also appreciated for the implementation of TT. The criticality of need assessment for TT was also underlined for the effectiveness of TT activities. Last but not least, the TT activities should not be connected or taken as a prerequisite for promotion purposes.

A dean respondent with ID No PD 50:25 strongly condemned the practice that was pervasive in ignoring the expertise for the TT activities issues from involvement. He strongly implored the essentiality of participating in the expertise; otherwise, the result would be naïve**.**

> "The leadership body was more often seen travelling to China or Germany for experience-sharing visits than a technology expert.

> Therefore, by paying attention to that, it was necessary to send an expert to bring about the necessary technology. Well, if the leadership bodies were bound to visit, they should take the experts with them in order to appropriately copy technology. It was necessary to send experts who have the knowledge and skills to bring experience. Special attention should be given. If this is not the case, it will go back to the old times." (PD 50:25).

The sector must be led by a personality who has the sector's background, knowledge and reasonable experience. This would be an additional opportunity.

5.5.9.2. Views provided on the criticality of improvement on various issues

A recommendation concerning the improvement of the rule was underlined, for it critically tied the movement and working accomplishments in the implementation of TT. The top leaders from the TVET and Technology Development Office at the city government of Addis Ababa underlined the necessity of fixing the problems related to attaching TT with trainer's promotion procedures and improving the rule that prohibited the college from selling the technology introduced that influences the TT as follows:

> "Time matters to make the best technology. Maybe if we can fix the existing bureaucratic bottleneck, for example, we can create a favourable environment for the colleges in which technology transfer is detached from promotion issues, and we could create favourable conditions for the college to strengthen their income by selling the produced technology there, there would be a better capability there [in the college] (PD 11: 23)

The department head also noted the offending purchasing process of the government and recommended improvements in the rules and regulations of the purchasing process in his words, as follows:

> "The acute problems of bureaucratic red tape in the process of purchasing materials necessitate that an important project be done with great attention. Much is expected from the government side at various levels of administration. This is not a serious problem that is common nationwide. It also obstructs various important and graduate projects due to the long process of purchasing." (PD 51:29)

The leadership team was provided with significant recommendations on multiple levels. The first major recommendation was made regarding the identification and prioritisation of the issues that needed to be addressed. Second, the respondents mentioned that the implementation of TT was also seen favourably in terms of effective commitment to ensure that TT initiatives were successful, it was also stressed how important it was to assess the need for TT. Lastly, and perhaps most importantly, the TT activities need to be deemed necessary to achieve marketing objectives.

5.5.9.3. Views provided on the Ways to improve TT

The respondents underscored the criticality of need assessment, identification and prioritisation of possible hindering factors via rigorous study, eliciting the involvement of MSE to generate technology and deliver technical and vocational training. The interview respondents recommend to the leadership to focus on fixing the identified problems, detaching TT from trainers' promotion procedures and establishing a service delivery centre. Chronic financial problems should be solely resolved through confidence, devotion and commitment. Here, the respondents appreciated the necessity of monitoring and cross-checking the progress of the activities in commitment thereby from the PolyCO to the respective top leadership layer context.

In relation to foregoing, MSE personnel respondents with (ID No PD 45:11) has extendedly explained the issue to recommend the appropriate procedure and measures as follows:

> “First of all, the problems facing the enterprises should be studied in detail. Then comprehensive solutions that can bring TT activities to the forefront should be promoted. This good start should be intensified. As we know at this time, we are on the verge of disintegrating, and everything seems more complicated. There must be a cross-check system. Unless we operationalise the TT practice as the government forwarded, talking that is detached from real practice cannot take us a long way. The polytechnic college and other services like enterprise

> development and industry extension bureaus should integrate to provide their services in proximity to the enterprises. Various service centres need to be strengthened. These include loan service, market accessibility and promoting the goods produced." (PD 45:11)

In addition, other MSE personnel respondents with the ID numbers PD 47:19, PD 42:13, PD 44:19 and PD 43 have forwarded their ideas focusing on recommending the proper fixation of loan service, problem fixation in dynamic modality, need assessment before TT, and delivery of more technical and vocational training through the supporters of PolyCO and other leadership layers.

The trainee respondents dominantly recommending some ideas for the PolyCO leadership, focusing on various themes, including the following focus of themes: support to enhance participation of stakeholders; considering the current and future condition in the activities of the TT, general transformation, and heightening the PolyCO activities focusing on supporting innovative ideas and improving the platforms to support trainees. The respondents with the ID No (PD 55:6) beg the leadership to liberate their focus from influencing the only going of the usual and common schedule and rather, as he/she suggested, focus on agitating new ideas from the trainers and other stakeholders.

> "Since we are expected to proceed on the usual and common path, ideas that could be raised with a difference would be encouraged. We are only tempted by training places that are already scheduled. We are only expected to finish the common things in training institutions. These two things cause it to become ineffective." (PD 55:6).

Moreover, the respondent with the ID NO PD 59:12 underlined the necessity of focusing on strengthening the cooperation with the proper stakeholders to fix the financial problem mainly prevailed in PolyCOs regarding the TT activities.

> "It is better to cooperate and participate with the proper and various bodies in order to fix the problem rather than facing the hardship one by one individually. It needs working out and carrying it out in short. It is better to work with various partners, like the government and private organisations, to solve the budgetary problems." (PD 59:12).

In short, the trainee respondents have mainly recommended ideas for PolyCO leadership, focusing on improving stakeholder participation, taking into account current and future conditions in TT activities, general transformation and strengthening PolyCO's activities. They urged leaders to focus on stimulating new ideas from trainers and other stakeholders rather than on influencing the usual and common schedule.

5.5.9.4. Views provided on the ways to improve capability and capacity

The dean respondent with ID No PD 1:27 recommended as follows underscoring the necessity of focusing on capacity building: PolyCO needs to build its capability by selling the technology it produces.

> "Next, we will focus on how to build the capacity of the enterprises. Aside from that, colleges must increase their revenue by multiplying the technology they developed and selling it to the community at a reasonable price." (PD 1:27)

The other respondents with ID No PD 6:9 have also strongly claimed the involvement of trainers who have creative and unique minds in TT, as follows:

> "I think it would be better if trainers who have creative minds or are unique were to participate in technology transfer after rendering appropriate training. It is that it has received little attention." (PD 6:9)

Other MSE personnel interviews respondents described the criticality of improving capacity and capability. For instance, respondents with PD 5:23 noted the presence of an opportunity to obtain operational system support focusing on quality rather than quantity. Yet the other respondents with ID No PD 5:24 underlined the need to follow different strategies in that TT activities must be liberated from the traditional shackle, they have to be performed with special experience and special follow-up, and they would culminate with strong incentives in his recommendation.

The other issues that attracted the attention of the respondents were the affairs of delivering capacity-building improvement training for stakeholders and the leadership team. Dean respondents with ID No PD 1:26, PD 6:25 and PD 7:17

have underlined the imperative importance of delivering training for TT activity participants. For instance, among these respondents, an interviewee with ID No PD 6:25 noted it as follows:

> "Capacity-building training should be given. In the first place, training must be given to the leadership and to the stakeholders, starting with the technology concept, its benefits, how it is produced, and the way it is transferred." (PD 6:25)

PolyCO needs to devise a policy to divert the prevailing problems. Integration also needs improvement, together with accountability and transparency. Establishing a control centre was also recommendable. It was deemed that improvement was a must in policy and a rule to address the existing hurdles. The financial scarcity needs a solution; otherwise, as the respondents strongly implored, the PolyCO cannot fulfil its mission.

5.5.9.5. Views provided on improving TT from MSE to PolyCO

When talking about TT concerning the transfer of technology from a higher institution to the industry or firms, the first impression that could come to mind would be the transfer of technology from the higher institution to the industry. By the same token, in the current research, the TT activities were done in the context of TT from the PolyCO to the MSE manufacturing sub-sectors. Apart from such notions, the dean, department head, and MSE themselves recommend the improvement vice versa TT i.e. TT from the MSE to the PolyCO.

5.5.9.6. Views provided on the ways to establish motivation system

The absence of a motivation system for the TT activities is a critical challenge that the interview respondents strongly urged. Based on the challenges that they have experienced so far, they have recommended the need for incentives and special motivation for the undertaking of TT activities. They implore the essentiality of liberating the TT from the trainer's promotion attachment and established strategic motivation systems.

To see a little bit of how each type of respondent approached this, their individual suggestions have been forwarded here as an illustration. The dean respondent has underlined the need for special attention to the presence of a motivation system that can quench the thirst and grasp the attention of talent who has participated in the TT. The respondent with ID NO PD 20:06 noted it as follows:

> "The motivation is wrongly placed [so far, if available]. It needs improvement. Special attention should be established to attract those who have creative capability and talent in TT and related issues. From the very beginning, a trainer and other entities who are committed and who have appropriate knowledge should participate to enhance technology transfer." (PD 20:06)

In line with this, the department head respondent with ID NO PD 21:24 has put the strong need for special motivation for TT, having the talented and effective trainer in mind and letting them participate in the TT activity.

> "The incentive system needs great attention. The incentives for those who participate in the technology transfer and accompanying results must be very attractive; otherwise, creative minds and talents in the area may not come to the platforms to contribute to solving the problems that the community faces." (PD 21:24)

The top leadership respondent has focused on describing what types of technology results should be focused on while doing TT. The respondent noted that the technology result must be 'import substitution', and perfectly copied, mentioning the importance of securing patent rights for the participants to nurture the TT activities as follows:

> "When we carry out technology transfer activity, we need to make it real import substitution, standardised technology, and while copying, make sure to copy the tool itself perfectly. If we focus on innovation, the participants must operate by obtaining their patent rights, and all these activities that are at the initial level must be strengthened to enhance their real implementation." (PD 12:24)

In summing up the issue, from the perspectives of motivation issues, leading it with strict discipline in all leadership levels from top to bottom and establishing motivation as a system that would be responsible from identifying the best performer model to restoring transparency and accountability was underlined. The establishment of regulatory centre as independent entity was also underscored.

5.6. PHASE III: INTERPRETATION AND INTEGRATION OF QUANTITATIVE AND QUALITATIVE DATA

5.6.1. Introduction

This thesis sought to characterise the current state of TT practices used by the polytechnic leadership team from the polytechnic college to micro- and small enterprises (MSE) in Addis Ababa, Ethiopia. In this mixed research approach with sequential explanatory design, the researcher conducted data presentation and analysis in two phases: quantitative in the first phase and qualitative in the second phase in the previous section. As done consecutively, data were collected through questionnaires and structured interviews and analysed in terms of the leadership team function in the undertaking of the TT process in terms of planning, effective communication, setting the environment, and spanning boundaries. The presentation and analysis further focused on transformational and transactional leadership styles, stakeholders' perceptions of the status of the current TT practice, the success factors as opportunity and challenges facing the leadership practice of leading and managing TT and TT practice in the context of COVID-19, examining the impact of these practices on the TT project.

In this section, the researcher presents a discussion of the findings by integrating the findings from both the quantitative and qualitative phases. The researcher also triangulates the main findings in the level of PLT practice based on the results obtained from questionnaires and structured interviews data analysis and interpretation in this section, respectively, following the order of research question of the thesis in the same strategy as done above in the presentation and analysis section.

5.6.2. The practice level of PLT on TT from PolyCO to MSEs

As described in section 2.3.4.1. the core functions that the leadership and management of TVET discharge while leading and managing the TT process focus on are planning, effective communication, setting the environment for TT and innovation and spanning boundaries.

Further integration and discussion also follow based on other forms of leadership practice, which take into account the leadership styles used, the perception status of the key stakeholders on TT support status, the success factors and the challenges facing TT practice in the undertakings of leading and managing in the given order in the pages that follow.

5.6.2.1. Practice level of PLT in planning

The result of both the quantitative and qualitative analysis revealed the presence of both a good starting point and a weakness regarding the planning role of the leadership practice. The practice of leadership teams in ensuring the practice of joint planning of the PolyCO and MSE remained behind expectations.Although need assessment is done in a limited capacity, the transfer of technology was found primarily based on the scope of the TT, and this was attributed to the occurrence of a gap in fulfilling the objectives of the MSE to obtain a competitive advantage and meeting the big objectives of the TVET sector for joint planning was found to be absent.This finding directly contradicts the theoreticall foundation that state planning as leadership tool that aims to guide the direction, reduce resource waste, avoid duplication of activities and establish standard for monitoring and controlling TT project proceedings, (Muda & Abdul Aziz, 2020:65).Leaders must establish a comprehensive framework and plan for the development and future operations of an institution, and regardless of its size or governance arrangements as well (Gmelch & Buller, 2015; Pettigrew et al. (n.d.).The present study found that such a comprehensive framework was largely absent, with monitoring and controlling mechanisms rated as "poorly done" by trainers and MSE respondents.

The practice level of PLT from a planning point of view indicated ‘weaknesses’’ on certain indicators, such as “monitoring and controlling application," "inclusion of schedule to determine the time span of execution," inclusion of indicators,” and "problems of independent planning of stakeholders”.The adage 'failure to plan is planning to fail' expresses to plan is planning to failure' expresses this condition better. No strategically responsible entity controls, shapes and shares the respective actions of the TT stakeholders. The occurrence of a gap in coordinating the stakeholders, which ranges to the total negligence of the issue of TT, was common, which in turn potentially influenced the activities of TT, causing it to stagger.This finding aligns with the literature that statr the problems facing the accomplishment of TT are diverse. As a solution to take preventive measures and ease difficulties, the project planner of the TT project seems to adopt various alternatives, like a stage-gate sequence (Jagoda & Rananthan, 2009:380). The Ethiopian PolyCOs, however, have not adopted such structured approaches, leaving planning fragmented and uncoordinated.

To tackle such problems in the qualitative data finding, the stakeholders, from the PLT to the MSE technology receiver, claimed the establishment of the regulatory body to strengthen coordination.The link that connects actions actions at different stages and contexts to ensure smooth implementation of a systemic working culture regarding TT activities was not structurally in place This resonate with the works of Muda & Abdul Aziz, (2020) that focus on the sustainability of the implementation and monitoring of TT efforts depends on consistent planning and effective engagement with industry, agencies and communities, Moreover,Ganter de Otro ,J.P.,(2019:18) has underlined the importance of the integration of innovation in the TVET internal arena, thereby requiring the leadership to reflect the focus through planning, communication, financing, and internal monitoring. .The Ethiopian PLTs' failure to integrate these functions suggests a systemic weakness in the institutionalisation of planning practices.

The leadership team's efforts to involve technology receivers in planning were not effective according to the participants’ opinion drifted from the qualitative data

contributors for the role of creating the plat forms to make the TT participants aware and situating the latitudes to involve stakeholders in planning incidents (Wolverton & Gmelch, 2002:8) is the prime responsibility of the leadership team entity from lower to the top.The present study found that this participatory ideal was not realised in the Ethiopian PolyCO-MSE.context.Gebremariam et al. (2025) described that a rapprochement is possible only after Ethiopian leaders clarify roles and rethink organization within the “development army” structure.Yet the present findings indicate that such role clarification has not yet occurred in the TVET sector.

In conclusion, the PLT's leadership performance in monitoring and controlling mechanisms was deemed "poorly done." Hochberg’s GT2 test indicated opinion variation among key stakeholders in TT, where the variability drifted from the highest rating mean value of the PLTs, thereby indicating a perception gap that could affect the implementation effectiveness of the TT plan.Gachanja (2023) showed that academic leadership in Kenya is pivotal in creating robust linkages with industries, a finding that is diametrically opposed to the Ethiopian reality where leadership rhetoric is divorced from practice as a result of bureaucratic inflexibility.This implies that Ethiopian PLTs are not only in need of skills development in planning but also institutional flexibility to translate plans into actions.

5.6.2.2. Practice level of PLT in terms of effective communication

Effective communication, as described in section 2.3.4.1.2, is a crucial task in the leadership process, enabling interaction among actors and ensuring the engagement of the leadership itself through conveying vision, mission and the associated activities, whose centre of intent is managing TT activities effectively (Vilas-Boas et al. 2018: Jagoda et al. 2010).

The result indicated the presence of little performance of PLT concerning the indicator “making frequent contact with MSE. It fell into the poorly done practice category; the technology was criticised for the arbitrary sort of service delivery from the PolyCO side, which highlighted the presence of inconsistency in practising and

facilitating communication and meaningful support. Effective communication, being essential for leaders and managers to perform well and achieve assigned tasks, is crucial for both individuals and organisations. It is a foundation for development progress and success as it allows employees to obtain the necessary information, knowledge and to be motivated in general for better practice. Furthermore, it helps to eliminate misunderstanding to incrementally maintain better understanding (Dahiya & Luthra, 2018:128)

The MSE ratings were low, which predicted a gap between technology providers and recipients, highlighting the presence of ineffective communication operations in general.Understanding the organisation's purpose, behavioural rules and direction is crucial for stakeholders. Hence, a well-communicated plan is essential to avoid the organisation's goal of going nowhere, as without direction, which could contribute to its effort of achieving its objectives (Voehl et al., 2018:385).This finding was similar to Coleman and Glover’s (2010) notion that effective communication is essential for effective leadership and management; it was perceived as weak in many schools and colleges.The technology receiver, MSE, expressed their unsatisfactory experience concerning the communication they have had with PolyCO. They mentioned weaknesses such as inadequate communication platforms, inconsistent manners of communication and a lack of relevance in solving the real problems.In addition, Do (2023) elaborates that management support combines with dual institutional contexts between host and home countries, which is absent in Ethiopia. Leadership is key to developing knowledge sharing systems and building sharing cultures, which demands organisational trust, which is not in Ethiopia.This was also observed in the Ethiopian PolyCO-MSE context where the lack of structured channels of communication resulted in miscommunication and disengagement.

5.6.2.3. Practice of PLT in terms of setting an environment for TT

Both the quantitative and qualitative data findings suggest that setting an environment for innovation and TT activities in terms of the execution of setting

experience-sharing platforms and addressing barriers to TT activities seems unpractised in the undertaking of TT from PolyCO to MSE, manufacturing sub-sectors. The findings contrasts with the notion of UN_ECA,(2014) that the most important factor in fostering an atmosphere that is conducive to TT and innovation on the continent of Africa is the encouragement of a culture of taking risks and fostering entrepreneurship . In addition, the present findings also did not attain what Elkins and Keller (2003) have identified as important platforms for creating conditions that encourage innovation and TT in an organisation focusing on vision and participation.

From the setting environment/culture for innovation and TT angle, qualitative data findings from primary informants revealed complaints based on the various obstacles that disrupt the process of enjoying the environment in the engagement of TT activities. The challenges faced by the TVET sector, particularly in the TT activities, include a lack of motivational and incentive systems, inadequate quality training delivery, a lack of rules and regulations, rapid global change, leadership turnover and the absence of regulatory bodies.

The training delivery was also a source of dissatisfaction because the leadership teams, at different levels, have not developed a quality training delivery system; rather, it continues to create a bottleneck in operationalizing TT, which is congruent with the notion of Steinmüller (2001).

The TT implementation context lacks rules, guidance, and regulations that govern the sustainability of the TT undertaking for fruitful results. The role of the technology receiver, MSE, was not clearly defined, and many lingering problems, such as restoration and maintenance procedures during plant damage or failure, remained unresolved legally. There was also a lack of established support responsibility at different leadership layers, which left the TT stakeholders, especially the polytechnic leadership team and trainers, in loose integration with other stakeholders in the absence of transparency and accountability. The absence of necessary rules and regulations has created barriers to TT activities and sustainable development, both socially and economically, for the MSE and the

community. Yet the high turnover of top leadership was raised as a hindering factor facing TT implementation. The convention of continuing the previous leadership's foundation was weak, and the new leadership body often does not want to continue the previous accumulated experience, which, in other words, adversely affects the continuity and sustainability of the TT activities entered into operation.

5.6.2.4. The practice of PLT in terms of spanning boundaries

The finding revealed that the indicator “making communications between internal and external stakeholders" fell into the “moderately done” practice category, while other areas of focus remained behind expectations. As described in section 2.4.4.1.4, boundary-spanning leadership integrates varied experiences, perspectives, and backgrounds from several sources, which can spark an environment of creativity and invention (Ernst & Chrobot-Manson, 2011:30). However, the leadership team did not effectively span boundaries to engage diverse partners necessary for the success of technology transfer (TT). However, the leadership at PolyCO failed to fulfill their responsibilities to bring together the various entities essential for successful TT.

The quantitative data analysis result revealed that the level of the practice was low; for instance, two of the three items were forwarded into the “poorly done” category. The literature in chapter 2 underlined the need for leadership effort in exerting upward and outward influences across boundaries and often acting as a project champion to attract multitudes of constituencies for the success of the project (Elkins & Keller, 2003:595). Moreover, they emphasized that the project leader should also reach several constituencies; the project leader must push for upward and outward impacts across borders and frequently serve as a project advocate. Moreover, the low practice level of the leadership entity deprived the right of PolyCO and MSE to cross-boundary task management and TT activities. Due to the fact that there was a missed opportunity, the leadership team had low motivation and commitment for practicing and connecting the assessed and found organizations to make the TT activities successful (Crupi, 2021:43).

However, the Ethiopian PLTs showed low motivation and commitment to boundary-spanning practice. Moreover, Ackah et al. (2024) show that TT success in Ethiopia is possible but only within FDI enclaves, while the vast majority of informal MSEs and state-run TVET institutions remain untouched by technology spillovers. This structural constraint, the lack of a dense local supplier ecosystem, suggests that Ethiopia's TT challenge is not just about capacity but also about economic structure: TT is trapped without inter-firm networks.

The finding revealed that the indicator "making communications between internal and external stakeholders' fell into the "moderately done" practice category. This result indicated that the activities of making communication among internal and external stakeholders were found to be in good status, while the other areas of focus remained behind expectations. As described in section 2.4.4.1.4, boundary spanning leadership integrates varied experiences, perspectives and backgrounds from several sources, which can spark an environment of creativity and invention (Ernst & Chrobot-Manson, 2011:30). However, in relation to the leadership team's role in spanning boundaries to bring about diverse partners for the success of TT activities, the findings revealed that the practice status regarding spanning boundaries that the leadership achieved was very low in comparison to the authority's argument. The leadership at the PolyCO failed to discharge its responsibilities to bring the various entities.

The results of both the quantitative and qualitative analysis revealed that it was practised differently from the extant literature, capitalising on the need for leadership effort in exerting upward and outward influences across boundaries and often acting as a project champion to attract multitudes of constituencies for the success of the project (Elkins & Keller's, 2003:595). The quantitative data analysis result revealed that the level of the practice was low; for instance, two of the three items forwarded, namely, indicators "reached diverse participants across the boundaries" (M = 2.18) and "pulled people separated by boundaries for a common

good” (M = 2.19), indicate that the presence of spanning boundary activities was in the “poorly done” category of practices, declaring problems for the goal achievement. The practice was almost at the non-extent stage, on the one hand, which can deprive the MSE of the right to obtain a competitive advantage in sustaining themselves in the business track to contribute to the socioeconomic development at large, on the other hand. The qualitative findings revealed that it has remained at a very low status. This confirmed that the practice was almost at the meagre stage, which has, in turn, an adverse impact on the excursion of TT activities to bring about a competitive advantage for MSE in sustaining the MSE in the business track and, in the long run, contributes to the development of the nation at large.

As thoroughly seen from both the quantitative and qualitative data findings, all the types of informants reached consensus regarding the prevailing poor practices in “reaching diverse participants across boundaries” and “attracting or “pulling together people separated by various boundaries." The entire leadership team seemed not to dare reach out to various stakeholders to widen the influence of the PolyCO and make the working context smooth and cooperative for plan execution. Moreover, the low practice level of the leadership entity deprived the PolyCO and MSE of cross-boundary task management and TT activities because the leadership team had low motivation and commitment for practice and connecting the assessed and found organisations to make the TT activities successful (Crupi, 2021:43). The leadership did not spread out the influence on the likely stakeholders in particular and partners in general. The capacities of MSE would not be built to influence the community for the occurrence of socioeconomic development by disseminating the technology worked out through those diverse boundaries. Therefore, as Ernst and Chrobort-Manson (2011: 248) note, boundary-spanning needs to be further expanded to include different government agencies and stakeholders in different industries from different geographical locations. The leadership team in the PolyCO needs to give attention to making interactions beyond the compound, as they facilitate integration and bring common good for the execution of the planned activities such as technology and knowledge transfer,

whereas isolation can hinder results. For reinvention, leaders seek to unite various groups across stakeholder, vertical, horizontal, demographic and geographic boundaries.

n summary,the PLT's boundary-spanning practice was rated poorly across all respondent catagories , with two of the three items forwarded under spanning boundaries for respondents to rate falling into the "poorly done" practice category. . The leadership teams' low practice level deprived the PolyCO and MSE of cross-boundary task management and TT activities owing to low motivation and commitment on the part of the leadership entities to engage diverse stakeholders beyond the institutional compound.

5.6.3. The practice level of PLT in terms of leadership style

This section was intended to answer the sub-question, "To what extent do the polytechnic college leadership teams of Addis Ababa use both transformational and transactional leadership styles in the practices of leading TT?". Both the quantitative and qualitative data findings revealed that the leadership team in the PolyCO believed and reported that they used both transformational and transactional leadership styles. The interview participants confidently forwarded their views that they dominantly use transformational leadership style in their PolyCO even though the level of 'inspiration' and 'motivating' trainers practice was also expressed as indicators receiving low attention in the prevailing system. The performance level of the item, "making staff capable of fixing things in unusual ways," under transformational leadership style received a low mean (M = 2.05), falling into the "poorly done" practice category with a significantly similar opinion among the respondents, PLT and trainers, deducing an opportunity for the stakeholders . In contrast to this, in quantitative data analysis, the presence of a significant difference between the leadership entity and the trainers . As Duignan (2006:21) observed, the presence of variability predicts a challenge to bringing the key participants together for full cooperation in the realisation of the TT activities at hand via the institution plan.

In the qualitative finding, the participants confidently and proudly reported that their leadership team was using a more transformational leadership style while holding the assignment of day-to-day operations in their PolyCO. Avolio and Bass (2002: VIII) assert that better leaders use both transformational and transactional leadership styles and yet sustain even higher motivation to use transformational leadership. However, it was difficult to accept that the leadership team used the elements of this leadership style critically. Some characteristics of transformational leadership practice, such as "being a role model for the followers," “motivating and inspiring," “stimulating the behaviour of innovation and creation,” and “considering individual affairs,” were found to have very weak status in quantitative data analysis,which was quit different from what Avolio, and Bass (2002:1) briefed. Regarding the experience of leadership in leading change, the empirical work of Kedir and Geleta’s (2017:49) finding supports the primary result in that they came up with the finding that the five transformational leadership models were practiced at a low or below average level in the TVET institutions. Moreover, it was assessed to what degree transformational leadership was practised in Ethiopia using a sectional survey research design. So, the leadership team should give enough attention to critically using the transformational and transactional leadership style elements in devotion and commitment to bring about felt change in the capacity and initiation of the TT stakeholders and employees.

As discussed in Chapter 2, 'leadership is the process of influencing followers towards the achievement of certain goals, and it is central to all organisations and all sector types. There is no agreement on the leadership trait, behaviour or situation that impacts success but there is a strong consensus that leadership is critical to any organisation (Boateng, 2012, p. 46; Ganter de Otero ,J.P. 2019, p. 18).The item “making staff capable of fixing things in unusual ways” under transformational leadership style had a low mean (M = 2.05) which falls under the “poorly done” practice category.

Avolio and Bass (2002, p. viii) found that better leaders use transformational and transactional leadership styles, but are even more motivated to use transformational leadership.However, the present study discovered that the PLTs had difficulty in operationalising these styles effectively.Gachanja (2023) assumes leadership to be a bridge between academia and industries. Functional institutions are needed. Ethiopia does not yet have the functional preconditions, and Gebremariam et al. (2025) described the possibility of rapprochement only after Ethiopian leaders clarify roles and rethink organization within the existing institutional structure.

In summary, the leadership entity showed limited commitment to stretching out systemic motivation platforms for better achievers in TT activities. This would devalue the overall activities of the TT process, for it would deter talented and creative minds rather than attract them to the sector in general and to the TT and innovation activities.

5.6.4. Perceptions of stakeholders on the practices of PLT on TT

This section aimed to answer the sub-question, “What are the perceptions of the polytechnic college leadership team, trainers and technology recipients (MSE) concerning the leadership support rendered currently?” The researcher tried to answer the question having in mind the objectives of determining the existing perception among the PLT, trainers and technology receivers (MSE) concerning the leadership support rendered in terms of bringing results regarding innovation enhancement, knowledge accumulation activities, effectiveness and efficiency improvement, and cooperation and participation strengthening as well.

As far as innovation enhancement is concerned, quantitative data analysis shows respondents perceive the PLTs’ practice as hardly institutionalised, contrasting with the PLTs’ beliefs in the issues of “fostering innovation," "showing devotions for creating an innovation environment” and “paying careful attention to contemporary practice and innovation.” This finding is in alignment with idea reviewed in chapter

2 form the work of (Lai & Tsai, 2009; Al-Mobaideen, 2012which indicated that the presence of positive perception predicted the presence of readiness for TT activities. The presence of positive perception is essential to obtaining an opportunity for success, as a positive attitude leads to a greater opportunity for success for the TT project

In contrast, the MSE respondents rated the indicators “fostering innovation” and “showing development for contemporary practice and innovation” (M = 2.08) and (M = 2.31), respectively, which is lower than the PLT and trainer respondents’ ratings. This finding is found to be consistent with the empirical research result held in Australia concerning the opinion difference of leaders and instructors on the efficacy of leadership (Cedefop, 2011). The qualitative data analysis of this study indicated the presence of views differences among respondents, even highlighting great variability among the same type of respondent category.

The leadership entities believe the presence of a high institutionalisation level of the introduced activities, while the technology-receiving entities deny such a leadership opinion. The qualitative data also confirmed the presence of disagreement and division among department head respondents in determining the MSEs' perceptions.

The study by Cedefop (2011:23) conducted in Australia revealed the presence of a gap between leaders' and teachers' perceptions of leadership effectiveness. The leadership team's innovation enhancement practice level varied from the moderate level to the highly institutionalised level. The disparity suggests the prevalence of certain challenges that disrupt the implementation effort. The proposed plan of the TT activities could not be executed in such an environment owing to the lack of opinion unity. In the first place,the level of understanding of each other's key stakeholders was unstable. Moreover, further investigation is vital to determine the further impact of that perception difference on innovation and TT enhancement activities.

In the second place, about the construct of “knowledge accumulation,” the study

found that respondents' execution level of “knowledge accumulation” activities was "moderately institutionalised," with a significant presence of perception differences among respondents (PLT, trainers and MSE). The ANOVA ratio confirmed such a difference. A good perception of the activity's accomplishments in relation to the indicators’ “value-adding technology” and “sustainable accumulation” was also found to be moderately institutionalised, which indicates the presence of a good perception. In relation to this, some of the structured interview participants expressed that the perception the MSE has towards their PolyCO support is ‘positive’.

Thirdly, regarding the construct “Effectiveness and Efficiency Improvement," the quantitative data analysis revealed the indicator “introducing new technology to increase productivity,” which was related to awareness creation and implementation, was a “highly institutionalised” practice, while other items like “developing competitiveness skills," “intensifying efficiency" and “giving due consideration to gaining a competitive advantage” were “moderately institutionalised," disclosing the presence of positive perception to MSE, despite the fact that the MSE refuted this as the rating indicated. The MSE believes that there is indeed institutionalised practice in this regard. These suggest the presence of an unfavourable perception towards the rendered support of TT in this regard. Hence, the positive influence that would be gained from the presence of this positive perception indeed cannot be undermined, though unless the PLT continues to exert effort sustainably in an enhanced way to improve the competitive advantage of TT for the MSE, the result will be totally disappointing in the future.

Finally, when evaluating the issue of the construct “cooperation and participation strengthening," the respondents insisted on showing the presence of "positive perception". The qualitative data supports the incremental development of positive perceptions toward PolyCO's TT support. The interview participants raised the practice that includes “incremental improvement of the perception of the MSE," “the knowledge and experience gained in the sector, “and “the registered change of

perception from complete avoidance of PolyCO TT support to attending it. Further, the “development of a mutual relationship between the PolyCO and the MSE” and the “changes brought on the status of the MSE" were also mentioned to support the notion of the presence of positive perception. Respondents with the ID numbers (PD 17:5, PD 17:7, PD 15:7) supported their positive perception of PolyCOs’ service. They also appreciated the four packages provided for MSEs, expressing appreciation for some personal acknowledgment, and expressed it on certain platforms, such as meetings and festivals. In line with that, problems that go beyond the service scope of the PolyCO cause disappointment for the MSEs.

Moreover, the literature in Chapter 2 also showed that “non-technical challenges such as lack of awareness and knowledge on the selection and implementation of technology contribute to 80% of barriers to adoption in SMEs, making the perception of technology complexity as a barrier even more pronounced” (Kristiyanto, Anggraeni, & Sailah, 2025:224).This finding is very pertinent in the context of Ethiopia where, "cultural norms and perceptions are major factors in technology adoption" (Md. Faudzi, Abu Bakar, & Ahmad, 2024:129).
Gachanja et al. (2023) argue that perceptions of leadership support influence employees’ participation in innovation activities in Kenya, highlighting the significance of internal perceptions. But in Ethiopia, the perception problem is mostly vertical between the state apparatus and the enterprise (Gebremariam et al., 2025).

It indicates that much is expected from the leadership team entity to determine the current status of the prevailing perception using rigorous assessment and evaluation mechanisms based on the feedback from the trainers and the MSE participants and bring it to the association level among the stakeholders by correcting the implementation system.

5.6.5. Challenging factors facing the PLT on the TT activities

This section is intended to answer the sub-question, “What are the challenges facing the leading and managing experience of the TT activities in selected polytechnic colleges?” The researcher tried to answer the question, having in mind the objectives of identifying major challenges that can hinder the effective implementation of the TT process and the mitigating solution.

Both internal and external challenges were pervasive for the key stakeholders in the TT activities (sections 2.6.2, 5.4.5.2, and 5.5.8.). The empirical works identified three types of internal barriers to innovation in TVET institutions, namely, a lack of time, resources, or staff scarcity; secondly, internal resistance to changing teaching methods and pedagogical experience and finally, a lack of access to the pedagogy and technology needed, as well as a lack of a shared vision on innovation (Ganter de Otero ,J.P. 2019: 35). In line with this, the present study identified “limited capacity of MSEs," “limited support for TT," “inefficient communication systems,” and “lack of good governance” as the most serious challenging factors in TT activities. Lack of capital to motivate TT, “need mismatch between polytechnics and MSEs," “internal resistance to change outdated experiences” and “lack of access to appropriate technology to copy" were all put in the modest category (section 5.4.5.2). from Tanzania's experience, key obstacles to successful TT, include the inadequacy of human capital; the limited role of private sectors in R&D; the inadequacy of collaboration among stakeholders in a research project; a lack of funds to finance R&D as a TT; the absence of an official bridge between the innovation instrument and the foreign instrument; and the inadequacy of TT readiness ,(Mwabukojo (2020:26–30). These challenges are remarkably similar to those identified in the Ethiopian PolyCO-MSE context.

Surprisingly enough,these capacity-laden gaps challenged the leadership team's operations during the operationalisation of TT. The existing literature depicts such notions excessively. Technological capabilities incorporate information, skills,

technical matters, managerial issues, and institutional capacity, which allow firms to utilise equipment and technology effectively (Zawislak, 2014; Omar et al., 2012). Consequently, it indicated that TT from technology producers to receivers is a complex task requiring careful planning and management.

The literature reviewed in chapter 2 emphasised that a major obstacle to the collaboration process is the difference in understanding the goals of an RD&I project, especially when one partner does not know the expectations or values of the other partner (Rossoni, Gondim de Vasconcel, and Rossoni, R.L., 2024).this relational obstacles also extends to the Ethiopian context for the TT process from PolyCO to the MSEs.

With regard to the most serious challenging factors of TT, the integrated data from the qualitative and quantitative data revealed the following: capability/skill gap-related challenges (limited capabilities of MSEs, lack of capital), limited support for TT, ineffective communication systems, and lack of good governance in descending order. The next five, namely, lack of time to focus on TT, need mismatch between PolyCO and MSE, lack of competent staff to operate TT, lack of accessibility to proper technology, and internal resistance to descending order, as depicted in section sections 5.4.5.2 and 5.5.8.

According to Kristiyanto, Anggraeni, and Sailah (2025), “especially in developing countries, where financial and technical barriers are more significant, government support is frequently the decisive factor in whether SMEs can effectively adopt and implement new technologies.”This was confirmed in the present study, with the most prevalent challenges being limited support for TT and lack of capital.Ackah et al. (2024) point out a structural barrier unique to Ethiopia: weak local supplier linkages hinder technology spillovers from reaching domestic firms. This barrier – the lack of a dense local supplier ecosystem – means that Ethiopia is facing a structural economic constraint that Kenya, Vietnam and Colombia have partly managed to overcome.

Regarding the main task of the leadership team, both the quantitative and qualitative data findings confirmed the coordination and integration problems among the responsible offices in supporting MSE (section 5.4.5.2). The leadership team, especially at the top level, lacks detailed knowledge of the sectors they were assigned to lead, which in turn leads to ineffectiveness on the part of TT execution (section 5.5.8.2.).

‘Lack of time to focus on TT,’ ‘lack of accessibility to proper technology' and ‘internal resistance’ were identified as the least serious hindering factors for TT in the quantitative analysis among the indicators forwarded to respondents for rating. In the quantitative data, the least three hindering factors to the TT challenge, namely, ‘need mismatch between PolyCO and MSE', ‘inefficient communication system’ and ‘internal resistance’ were respectively among the shortlisted ten factors for the challenge for TT. 4.11%, 2.17%, and 0.76% of respondents have rated them as challenges, and the values put 8th, 9th and 10th, which was the far lowest rank among the 10 factors suggested to the questionnaire respondents to rate their rank fall with 1st to 3rd rank of the seriousness of the challenge for TT. Both quantitative and qualitative data analyses indicated the negligence of the leadership entity, followed by TT activities immersed in diverse hindering factors from multiple directions that disrupted the long journey.

In general, in TT activities, the leadership faces various types of challenges. According to the department head respondents’ description, the leadership team, especially at the top level, lacks detailed knowledge of the sectors they are assigned to lead. This was similar to the notion of Girdauskien and Savanevičienė (2012: 23), stating that the influence of leadership on knowledge and TT would be low when the leadership team has no background experience or quality in the sector, which in turn causes multifaceted problems. In the first place, it has become one of the complaints of the PolyCO trainers and consequently greatly influences the functionality and quality of the workout technology. Secondly, the trainers engaged in TT activities.TT for the sake of promotion and participation, which

influenced them to produce inferior-quality technology. Thirdly, it causes waste of resources, which, in turn, aggravates the problem of scarce resources. Finally, it influences the stakeholders, particularly the trainers, to develop a feeling of contempt for TT.

In seeing the rule and regulation inhibiting factor for TT, the respondents appreciated it from two angles. In some cases, the available unfriendly rules and regulations awkwardly affected the TT activities. For instance, the purchasing rule by itself was a shackle in addition to the bureaucratic hurdles. The regulation that prohibited PolyCO from participating in the transaction processes of the worked-out technology inside PolyCO to augment its income was also a part of the regulation that disrupted the activity. Although the importance of people factors dimensions, which govern the relationship between the technology transferor and receiver (Kumar & Uruthirapaty, 2007:1–5), the findings highlighted the absence of certain rules that govern such a relation in sustainable TT activities endeavours. For instance, there was no legal ground for the trainers from the PolyCO to participate in the MSE in TT, and that urged the MSEs to participate in TT too. Moreover, the rules that govern maintenance and sustainable relationships were not established on legal ground.

Further, both quantitative and qualitative data analysis indicated the negligence of the leadership entity, followed by TT activities immersed in diverse hindering factors from multiple directions that twisted the long journey and sought a contribution to the overall development of the nation in the long run. Paying careful attention to the axiom that the difference between successful and unsuccessful TT is a matter of "management support" (Toregas, 2004:16) and the prime goal of the leaders is to help individuals (Gmelch & Buller, 2015:35) find their way in the proper direction within a larger group of people. Therefore, the leadership team entity from the lower to the upper layer and across the sector should orchestrate the issue with devotion and commitment to tackle the problems in coordination.

5.6.6. Interpretation of data in terms of the TT result

One of the selected indicators of the TT result, technology capability (TC) is essential to focus on core issues of development, operation, management and transaction issues. It involves learning and acquiring technical knowledge within the organisation (Archibugi & Coco, 2004 ; Omar et al., 2012). Without proper training, TT cannot be an effective operation. One cannot be sure to obtain the benefit of TT for the TC is found in its infant execution leve where it was moderately institutionalsed according to the study . It is difficult to urge groups and individuals to undergo the learning process because of the organisations' initiation and inspiration to work at such a performance level.

The finding revealed that the respondents agreed on the presence of superior institutionalisation level of improving vital technology while the institutionalisation levels of "technology capability management improvement" and "learning power of TT actors' improvement" fell into the "moderate level" practice category, with significant similarity among the respondents.

The findings regarding absorptive capacity further indicated that All-respondents rated four items, namely, "improved absorptive capacity," "acquisition of essential technology," "improvement of ability to assimilate technology in a local context," and "built competitive advantage due to TT," as "moderately level' of 'practices catagory. As noted in section 2.3.4.2.3,With a learning process in which technological knowledge is continuously accumulated by human resources, it helps to capacitate key personnel engaged in production activities (Wahab et al., 2016:64).It entails the ability to adapt and implement technology as well as the experience gained in developing countries in the context to which one wishes to adapt" (Criscuolo & Narula, 2008)). the present study found that Ethiopian PolyCO and MSE have not developed the necessary technology accumulation power ,very critical forTT.Florêncio et al. (2026) corroborate this, providing solid empirical evidence that absorptive capacity is a fundamental dynamic capability, with positive and significant impact on the efficiency of the technology transfer

processes.

The institutionalisation level of the absorptive capacity was still infant practice. Though the literature underscored the criticality of absorptive capacity both as input and outcomes for TT to flourish, operate, maintain, modify, and improve the technology selected and determine its implementation ability to adapt and, at last, the ability to promote technical learning (Kumar, Kumar & Persaud, 1999: 82; Whangthomkun, 2006:37). This result was found behind such empirical and theoretical fulfillment. Hence, the leadership's focus on such results has been unsatisfactory. Therefore, the leadership teams need to address the problem to liberate the implementation of TT.

In general, the findings indicate a great disparity between the technology donor, the PLT and trainers on the one hand and the technology receiver, the MSE respondents, on the other hand. Even though there was a significant difference between the MSE and the trainees, both of them rested on the lower bottom in comparison to the trainers and the PLT. In other words, PLTs' rating was significantly higher than that of the trainers, and so did the trainees rating than the MSE.

As depicted in the analysis section of 5.4.6., to determine the association between practices of PLT on TT and the result achieved in terms of technology capability built (TCB), technology accumulated (TA), and absorptive capacity (AC) acquired, the researcher used a bivariate Pearson-Moment correlation coefficient.The PLT practice in terms of "planning" significantly correlates with TCB, TA and AC, suggesting that increasing planning practice leads to increased TCB, TA and AC.

5.6.7. Interpretation of the outcomes of PLT on COVID-19 pandemic- related TT activities

The analysis of COVID-19-related TT activities found that only the item "changing organisational form that aggravates contamination" was rated as a satisfactory

practice by All-respondents. Hence, all 11 items except one fell into the “undecided level” practice category, making determining the status of the practice level difficult. The analysis indicated that items such as “vaccination promotion to access it in the community," “facilitating cooperation with MSE," and “utilising e-learning to avoid contact” were closest to the unsatisfactory status of the shortlisted action items, indicating a lack of information that shows that the respondents' key preferences were unclear, which in turn was a hindrance to the implementation of the solution designed.

Though challenging in developing countries like Ethiopia, the use of the Internet is "an educational solution to unexpected challenges such as community unrest, blockades and natural disasters, as seen in the COVID-19 pandemic" (Madimabe & Omodan, 2021:83).

The Ethiopian PLTs, however, did not capitalise on TT as a vehicle for pandemic response, despite the literature indicating that the study also revealed the presence of a discrepancy between COVID-19 pandemic technology recipients and providers in TT activities. This level of performance is deviates from the literature confirmation that states that within instant time of COVID-19 pandemic occurrence, TVET played critical role in mitigating the pandemic by equipping the community, (Levin, Santos, Weber, & Hoftijzer, 2020).

The provider perceived satisfactory practice, while the receiver rated it unsatisfactory, which culminated in being against the findings of Bawa'aneh (2021: 1) that confirmed the presence of a high level of satisfaction and a positive attitude, resulting in a significant reduction of student challenges. It could be difficult to believe that TT is a critical tool to prevent the disease. Furthermore, the results suggest that the PLT's performance level on activities currently needed to use the TT in preventing the COVID-19-related pandemic was minimal. One thing worth mentioning is that a change is an inevitable event after the data collection of this thesis time. Whatever the case may be, not only the COVID pandemic, but the other types of pandemics, will deteriorate the human power, if the preparedness for

the pandemic and its accompanying mitigation measures continue in such manner as it is currently.

One of the prime advantages of TT is that it gives us a competitive advantage in the face of challenging conditions; hence, this opportunity seemed lost in using the currently important action. Regarding the future ideal importance of the suggested items as indicated in Table 5.8B, the study found that all 12 items suggested for rating were considered "highly important" in preventing the COVID-19 pandemic. These included the establishment of self-efficacy in a volatile environment and taking part in the crisis at different stages, from the very beginning to the resolution stage. Advocating for effective communication and enhancing stakeholders' perceptions of COVID-19 pandemic protection, focusing on the students' attitudes is essential. These include changing the structure that can aggravate the disease to replace it with an enabling structure to enhance protection. The operation needs to be led by the platforms that are designed to prevent the pandemic.

Overall, the result indicated that nevertheless the respondents acknowledge it as a solution and an ideal importance, the current practice level was very limited. The findings were consistent with the assertion that the TT process is crucial for both preventing and treating societal illnesses, such as the COVID-19 pandemic. It was an important tool in treating the disorders since it brought about fresh information and effective techniques (Śledzik et al., 2023). Hence, this reminds the leadership team to focus on the implementation of the actions that have received weak results in the current practice of preventing COVID-19 pandemic as far as TT is concerned. Winning the will of the key stakeholders to accept and implement such problem-tackling mechanisms for COVID-19 pandemic prevention with commitment was an undone task. The leadership team should give due consideration to improving the current minimal practice to use this ideally important solution. Furthermore, these parts need further research to widen the scope and enrich the solution.

5.7. DEVELOPMENT OF MODEL

This model was developed based on a comprehensive analysis of both quantitative and qualitative data. Focusing on the statement of the problem, the guiding research questions, related reviewed literature, and viable data were collected using a questionnaire and a structured interview within a mixed research design with a sequential explanatory approach focusing on the underlying philosophy of pragmatism.

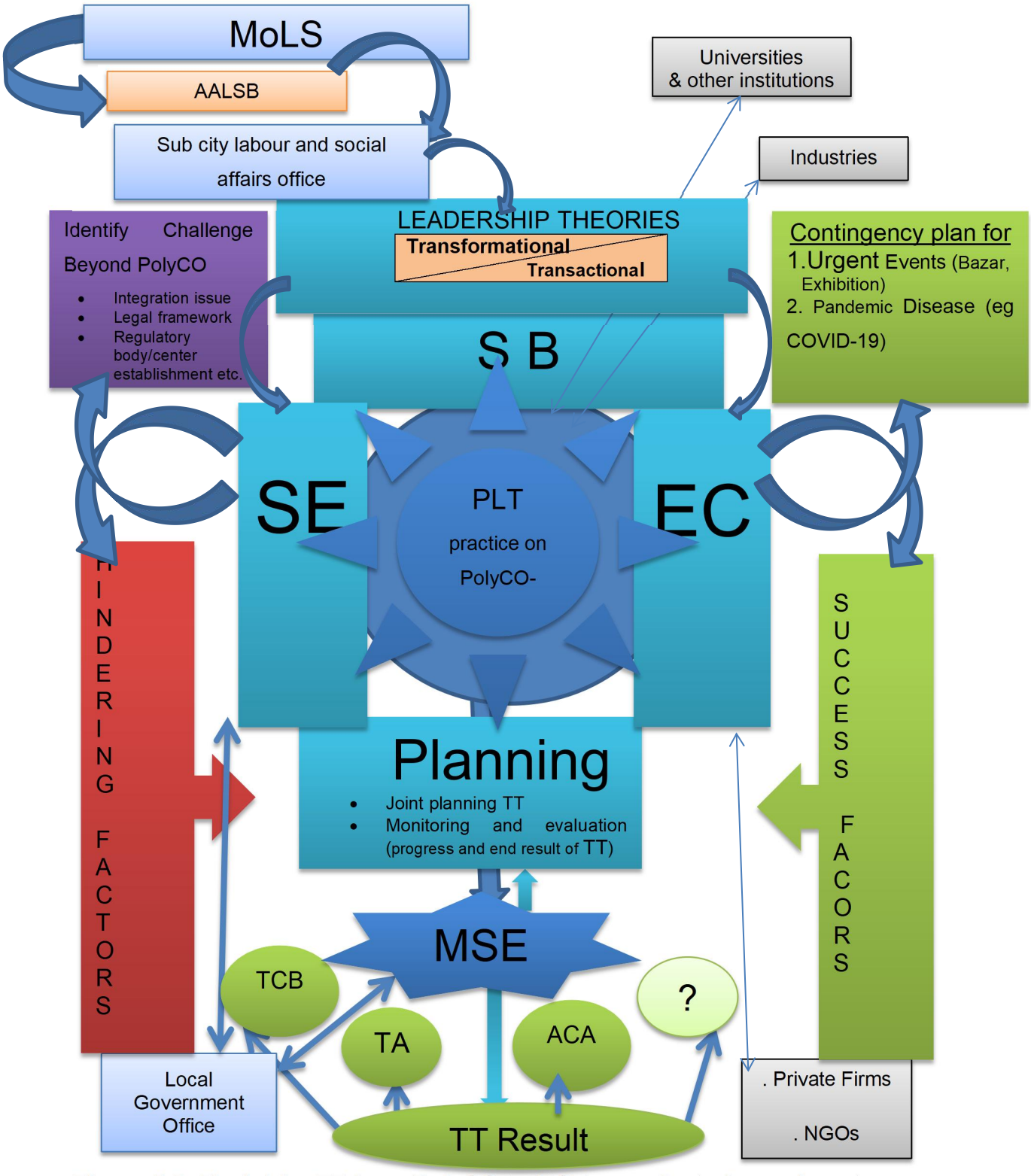


Figure 5.2: Model for TT from PolyCO to MSE manufacturing subsectors

Key: MoLS = Ministry of labour and skill; PolyCO=Polytechnic College; SE= setting environment, EC= Effective communication; TBC =Technology capabilities built; TA=Technology accumulated, ACA= abrasive capacity acquired; MSE=Micro and Small Enterprise; PolyCO-MSE TT- =technology transfer from PolyCO to MSE

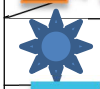
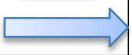
	Benefiting/hindering factors impacting the level of leadership practice
	PolyCO is the centre and the source for TT
	Leadership practice in TT activities /projects
	TT end result
	Star indicates technology receiver MSE
	Indicate active relationship between two entities
	Distant and near potential and active partners
	Direct flow of leadership assignment and activities to the destination
	The possible and available relationship
	Unidentified TT result that could be added beyond the present thesis
	Indicate the available “End result of TT”
	The flow of the leadership assignment keeping the theory/theories set as lenses for operation and also indicate the direct span of control of MoLSE to AALS, and then the PolyCO

Figure 5.3: Description of shapes used in model building for PolyCO- MSE

The former of the federal TVET Agency, the city government of Addis Ababa TVET Agency, and the Technical and Vocational Training Institute where the researcher is working has undergone reforms. The New Ministry of Labor and Skills (MoLS) was established in 2021, following national reforms, reorganising the former federal TVET Agency into a state ministerial-led sector among the three main sectors. The former Ethiopian Technical University, where I have been working since 2019, became "the Federal Democratic Republic of Ethiopia Technical and Vocational Training Institute (FDRE TVTI), accountable to MoLS. The Addis Ababa Technical and Vocational Education and Training Agency (AATVETA) became the Addis Ababa Technical and Vocational Education Training and Technology Development (AATVETTD) Bureau, and recently it became the Addis Ababa Labor and Skills Bureau (AALAB). The Innovation and Technology Development (ITD) Bureau was founded and is currently detached from the previous Bureau at the city government level.

The model outlines the efficient organisation of tasks for the flow of TT activities from PolyCO to MSE manufacturing sub-sectors with the aim of integrating leadership practices at different levels, using leadership style as an umbrella. It uses diagrams like the sun, star, rectangle, curved arrows, thick double-headed arrows, and thin double-headed arrows for a clear understanding of the model. The sun and the star in the model diagram denote the PolyCO and the MSE entities, respectively, because these two entities are the centre of the present research. The rectangle symbolizes the stakeholders, main leadership practices and functions, leadership theories, and various independent entities such as universities, private firms, industries, NGOs, and local government offices. The arrows of various types, namely thick and thin double-headed arrowsindicated the relationship between two entities in the model.

The model diagram integrates four functions: spanning boundaries, setting a favourable environment for TT activities, planning, and making effective communication. The model considers both hindering and beneficial factors to achieve effective TT activity operationalisation at the MSE, and at the bottom, the three suggested TT activity outcomes promote socioeconomic development for the local community.

To describe the diagram of the model as depicted in Figure 6.1 from top to bottom, the government has forwarded its strategic assignment to the TVET sectors currently through the Ministry of Labour and Skills (MoLS). The initials on both the curved right and left arrows indicate the possible source of leadership inputs, assignments and directions, while the destination rectangle or circle also illustrates the recipients of that input and leadership assignments. PolyCO customises it to local needs. The diagram’s main body begins by defining the block of leadership theories, which serve as the practice of the leadership team and the research lens through which it operates. It can remind the leadership to use the proper balance and type of leadership style, as well as to tune the task through that lens.

The function, 'span boundary (SB)', 'setting an environment for TT and innovation (SE)', 'effective communication (EC)', and 'planning make a big rectangle around

the centre. PolyCO serves as the centre and source of TT activities that will be transferred to the MSE manufacturing subsectors. In the spanning boundary practice, leadership is used to gather information and scan the context to bring various partners together for the common good. The leadership team can also make the environment viable for TT and innovation activities by preparing the plan immediately to enter into operationalisation. During the planning phase, the MSE should participate in joint planning, immediately holding the necessary needs assessment.

It is worth mentioning two crucial practices, namely, "creating a contingency plan for pandemic outbreaks and urgent events" and "identifying hindering factors that are beyond the reach of PolyCOs' capacity," which occupy a place in the diagram. The contingency plan rectangle contains both contingency plans for current events and the outbreak of pandemic diseases that disrupt the normal operation of PolyCOs' TT activities. The contingency plan is expected to save an organisation from the adverse outcomes of pandemic diseases such as COVID-19. The model underscores this by turning the TT activities into platforms to address the challenges of pandemic outbreaks and further mitigate the damage incurred. The text focuses on identifying hindering factors beyond PolyCO capacity, aiming to conceptualise and address problems to effectively defend the interest and needs of the PolyCO in front of the upper leadership layer. These two blocks were attached to the upper part of the diagram to receive due attention from the PolyCO leadership practice. Hence, this part of the model, in short, reminds the leadership to lead them by establishing a task force to carry out the TT activities smoothly and as efficiently as possible, lessening time and capital overload.

The diagram illustrates the flow of operations to the MSE, a technology receiver from PolyCO, by highlighting the neglected task of monitoring and evaluation operations. It also highlights active participation from various partners and stakeholders. The model indicated partners, which have active participation in the operationalization of TT, in the model using various thick double-headed arrows. The diagram shows weaker relationships... indicated by thin arrow.

The proposed diagram elucidates the impact of various factors on the TT project's success or failure. A red rectangle denoted risk, while a green rectangle represented success factors. The model diagrams demonstrate PolyCOs' current relationships with partners like universities, industries, NGOs, and private firms, indicating potential future revisions. These stakeholders could provide leading roles to the MSE to support the operationalisation of TT activities, influencing the local environment for a better life. The diagram shows three expected TT outcomes that diverged from the MSE, indicated by three small circles.

The main merit of the model rested on its contribution to the enhancement of the level of practice of leadership in the MSE manufacturing sub-sectors. It supports PolyCOs' leadership in leading and managing TT activities. It could further lend a hand to policy formulators, supervisors, and practitioners. It helps to bring the experience of university-to-industry TT activities to the PolyCO-to-MSE TT activity context, which can use the TVET sector's proximity to the community; hence, later, this helps to enhance the socioeconomic development of the community through MSE, while its demerits were the two issues of its less attractive layout and the limited scope of demonstrating the source of assignment beyond the ministerial and bureau assignments from other adjacent ministries and other national and international entities.

5.8. SUMMARY OF THE CHAPTER

The presentation and analysis of the quantitative data are the first focus of this chapter, followed by the analysis of the qualitative data collected using structured interview. The presentation and analysis of the chapter was based on the research questions as a guide. The presentation and analysis of the demographic data of the respondents, both the survey questionnaire and the structured interviews respondents, were discussed in their respective orders.

Following the demographic data presentation, an analysis of the data was made based on the research questions stated in Chapter 1. As far as quantitative data analysis, both descriptive (frequency percentage, mean, and grand mean) and inferential statistics (t-test, ANOVA, coefficient correlation, and Hochberg's GT2

multiple comparison test were used in SPSS version 26 software. In each section, quantitative and qualitative data presentation and analysis were made separately, and finally an integration and discussion of the findings obtained from both the quantitative and qualitative methods was made. The following chapter provides a summary, conclusion and recommendations.

CHAPTER 6

6. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1. INTRODUCTION

Chapter 5 presented the data, analysis, interpretation and integration of the findings of both quantitative and qualitative research, organized into three main sections. The first section of Chapter 5 analysed quantitative data, starting with biographical data and extending to the analysis and interpretation of the polytechnic leadership team's practices on TT to MSEs. In addition, the analysis and interpretation in the same section also involved the leadership style used, the stakeholders' perceptions towards the rendered TT support, the challenging factors of TT activity, and the current TT performance in the context of the COVID-19 pandemic. The researcher used both descriptive statistics (frequency, mean, and grand mean) and inferential statistics (t-test, ANOVA, Pearson correlation) or analysis, using SPSS version 26 for quantitative data analysis. In Section 2, the analysis and interpretation of the qualitative data were presented with the help of the ATLAS.ti 9 software. Then the integration of results gained from both the quantitative and qualitative data analysis was made, followed by a model formulation in the third section, and finally culminated in delivering the recommendations, which follow .

To begin with, this research was undertaken to determine the practices of the PolyCO leadership team on TT to the MSEs in Addis Ababa, Ethiopia, and finally to recommend solutions that expedite the leadership and management of TT activities. The background of the research, as depicted in Chapter 1, highlighted the domestic and global values of TVET. Moreover, until the TVET sector became

the global agenda item in the Millennium Development Goal (MDG) two decades ago, general education had suppressed its values. Following that, TVET centres became instrumental in generating innovation, transferring technology and promoting technology adoption, thereby enhancing their role as entrepreneurial institutions and colleges (Ganter de Otero ,J.P. 2019: 35).

The leadership team's practice in TT from PolyCO to the MSE manufacturing sub-sector and the hindering factors were not thoroughly studied. The leadership variable was also found to be a muted variable in empirical work on local TT activities. The researcher identified this as an existing research gap and initiated action to address it. The researcher then picked the leadership variables as an existing research gap and entered into action to determine them as described in the research objectives in the same chapter.

Chapter 6 of the thesis provides a summary of the research findings, conclusions, recommendations, avenues for further research, limitations of the study, and concluding remarks. The summary includes a brief summary of the research, including both summaries of the literature and the present empirical findings. Conclusions focus on restating the research question and providing answers to the raised questions. Additionally, recommendations are forwarded to enhance the leadership team's practice regarding the TT operations that are carried out from the PolyCO to the destination MSE, the manufacturing subsectors.

6.2. SUMMARY OF RESEARCH FINDINGS

The research summary comprises a synopsis of the literature and empirical findings . In detail, the literature refers back with cross-referencing to the literature part of the research (chapters 2, 3, and 4). The literature focused on a review of related literature on leadership practice and issues of TT (Chapter 2), the theoretical and conceptual framework of the study (Chapter 3), research design,

and research methods (Chapter 4). The empirical findings of the present research focused on the revealed results in alignment with the problem statement and the basic research questions. The description of the synopsis of the literature and the synopsis of the empirical findings are presented in the following sections:

6.2.1. A synopsis of literature

The reviewed literature for this research comprises three parts; each is presented in a separate chapter.The first part discussed leadership practices and TT in Chapter 2. It focused on describing the conceptualisation, critical impact, and commitment issues of leadership and its practice in the TT and TVET contexts. It also explained the general overview of technology and TT, focusing on TT and change management in the TVET sectors. Finally, it further discussed the success and challenging factors that face the TT leadership process, together with the affairs of governance. The role and function of leadership were also discussed in the TT result (technology capability built, technology accumulated, and absorptive capacity acquired) perspectives. The second part depicted the discussion of theoretical and conceptual frameworks in Chapter 3. The second section is about to discuss the theoretical and conceptual frameworks that depict transformational and transactional leadership styles, absorptive capacity theory, and change model theory in Chapter 3. Finally, the third part described the research design and research methodology, following the foundation of Chapter 3, in Chapter 4.

In detail, Chapter 2 started with an introduction of its own, focusing on a brief review of the literature on the impact of leadership practice and the issues in the TT context. It briefly discussed the impact of leadership, its critical impact in the TVET and TT contexts, the commitment the leadership has to the TT, and the leadership conceptualisation as ‘practice’ in section 2.2.3. The discussion on the concept of technology, the concept of TT, the general overview of TT, TT in the realm of change management, and the necessities of TT in the TVET sectors took place in section 2.2.4 under sections 2.2.4.1 and 2.2.4.5.

The main section, 2.3, contains an extended discussion of the role of leadership in the TT research context. In section 2.3.1, the leadership function and its place in

the research context are treated. In addition, the issues of good governance, which is an important topic, and the main responsibilities of the leadership entity to effectively carry out TT are discussed in a brief (sections 2.3.2) within the same sub-sections. Ethiopian TVET and TT are briefly introduced in section 2.3.3. TT also received brief treatment in section 2.3.4. The leadership role and function of leadership in the TT project received treatment from two perspectives. The leadership functions from the perspectives of planning, effective communication, setting an environment for TT and innovation, and boundary spanning were discussed in detail, considering them as independent variables for the present research (2.3.4.1). In the second part, the outcomes of TT in terms of technological capability built, technology accumulated and absorptive capacity acquired were discussed in sections 2.3.4.2.

In sections 2.4 and 2.5, two main themes—the stakeholders' perceptions of the change obtained through TT and the challenging factors facing the accomplishment of TT activities—were discussed, respectively. The challenging factors that are facing the leadership practice in the undertakings of TT received brief treatment. Finally, in section 2.6, the issue of TT accomplishment in the context of COVID-19 pandemic was also discussed; thereby, the discussion focused on revealing the status of the current TT-related action taken to prevent the contamination of the pandemic and the related viral diseases.

Chapter 3, which started with an introduction, provided a brief discussion of the theoretical and conceptual frameworks of the research. The chapter starts with its own introduction and provides a clear clarification of the study's context, direction, outline of the concepts, and constructs that are used as a road map for the study. Moreover, it discusses three theories, which involve transformational and transactional leadership theories, absorptive capacity theories, and the change model.

Chapter 4 focuses on discussing research design and research methods.with an introduction in Section 4.1, briefly noting the research methodology consists of four pillars: paradigms, methodologies, methods and instruments, citing that the

objectives of the research are to investigate the practice of PolyCO leadership on TT activities in the PolyCO and MSE contexts. In this chapter, section 4.2 is devoted to discussing research design under which, mixed method approaches with its philosophical underpinning, pragmatism, was discussed in section 4.2.1 in detail. The chapter discusses mixed-methods approach in education research, which combines quantitative and qualitative data to address complex issues. The use of MMR is logical for outlining problems and summarizing findings, and it details the integration In section 4.2.3, the chapter went on to describe the research strategy, mentioning the use of explanatory sequential mixed methods, starting with quantitative data treatment, followed by qualitative data analysis and interpretation, and finally integrating both for reporting results as the foundation for recommendation.

Under the main section 4.3, in Chapter 4, the description of the two important issues—the selection of participants/sampling (4.3.1) and instrumentation and data collection techniques (4.3.2)—receives a brief discussion. Section 4.3.1 of the description also highlighted that among the 36 TVET institutions from the city government of Addis Ababa, five PolyCO, namely, General Winget Polytechnic College, Misrak Polytechnic College, Entoto polytechnic College, Nifas Silk Polytechnic College and Tegbare-id polytechnic College, were taken as samples using purposive sampling methods. The sub-section (4.3.1) indicated the inclusion of 35 polytechnic college leadership teams (PLT), 184 trainers, 262 trainees, and 182 MSE personnel using simple random sampling. It also indicated that four top leaders from the AATVTTDB, ten PolyCO deans, 20 department heads, 20 MSE owners, and 5 trainee council leaders were responsible for qualitative data collection.

As described in Section 4.3.2, suitable data collection instruments, document analysis and questionnaires for quantitative data and structured interviews for qualitative data collection were selected based on the problem statements, basic questions and study design, with reasonable briefings for each instrument.

Section 4.3 described data presentation, analysis and interpretation procedures using the SPSS Version 26 . The discussion focused on describing and explaining statistical procedures, variable treatment, and both descriptive and inferential statistics usage. The section has covered the reporting of results for both quantitative and qualitative data in phases 1 and 2 and moved on to investigate and discuss both results in the 3rd phase. The descriptive stage uses frequency percentage and mean value distribution statistics, while inferential statistics use T-tests, ANOVA ,and Pearson product-moment correlation coefficient.

The trustworthiness in section 4.5 highlighted the criticality of ensuring data validity and reliability, which differ from research to research according to the research design used. The part recalled the checking of the validity and reliability of the questionnaire through a pilot test employed in the non-sample PolyCO.

The last section 4.5 also underscored the caution that the research should take from the very beginning to the end, particularly in educational research, which requires ethical and legal considerations from the beginning to the end to protect the subjects elicit trust, promote research integrity, and guard against misconduct.

6.2.2. A synopsis of findings

6.2.2.1. Introduction

As it was recalled in the previous chapters, the study was guided by the following main and sub-questions designed during mixed-method research with its philosophical underpinning pragmatism, specifically with explanatory sequential mixed methods. The main question is,”To what extent do the leadership teams in the polytechnic colleges of Addis Ababa lead the activities of TT to MSEs in the manufacturing sub-sectors?”

The sub-questions of the research were shortlisted as follows:

1. What is the level of polytechnic college practices concerning the TT process in terms of planning, effective communication, environment setting and boundary-spanning?”
2. To what extent do the polytechnic college leadership teams of Addis Ababa use both transformational and transactional leadership styles in the practices of leading TT?
3. What are the perceptions of the polytechnic college leadership team, trainers and technology recipients (MSE) concerning the leadership support rendered currently?
4. What are the challenges facing the leading and managing experience of TT activities in selected polytechnic colleges?
5. How can the TVET leadership and management practices for the TT process be improved in the context of the COVID-19 pandemic at the selected polytechnic college?

Based on the research question and the problem statement intent, key findings of the empirical investigation obtained from both the quantitative and qualitative data are presented in the succeeding sections. Cross-reference to specific sections and sub-sections were made for clarity.

Starting with the biographical data, the leadership team and trainers are predominantly 147 male (79.8%), indicating a male-dominated leadership style, a trend that has been emphasised in various studies for achieving specific goals the sex disparity needs minimising (section 5.4.1.). The majority of leadership team and trainer respondents (54.3%) and (63.8%) of the questionnaire respondents and 83.33% of the structured interview participants were aged 31–45 (sections 5.4.1 and 5.5.2), respectively. This indicates that the majority are more experienced in their respective sectors, which have a good impact on TT activities. In academic qualification wise, most of the leadership team members were 24 (68.57%) and 139 (75.80%) first-degree holders, while the master’s degree holders leadership team and trainers were 10 (28.57%) and 30 (16.12%), and the 61.53% and 35.89% quantitative data participants in the structure interview were master’s

and first degree participants, respectively, indicating gaps in education potentially impacting leadership practice (sub-sections 5.4.1 and 5.5.2).

6.2.2.2. The practice level of PLT on TT from PolyCO to MSEs

6.2.2.2.1. Practice level of PLT in planning

Both quantitative and qualitative analysis and interpretation revealed that the concept of joint planning in collaboration to ensure further implementation was non-existent (sections 5.4.2.1 and 5.5.4.1). In such a context, planning jointly, in collaboration through eliciting participation, to achieve the big objectives of the TVET sector in general and to get a competitive advantage for the MSE in particular, remained behind expectations (section 5.5.4.1). Of course, a good beginning in terms of helping the MSE to develop awareness of the concept of ‘planning’ and preparation in the respective MSE methodologies was a promising beginning in terms of leadership practice on TT activities in the sector.

The transfer of technology was primarily based on the donor polytechnic's interests, without a thorough need assessment and joint planning of technological work issues with the receiver MSEs. In addition, ‘the monitoring and evaluation issue—instrumentation for measuring the progress of the project and checking the result—has only received very minimal attention. Hence the grand mean distribution for the trainers’ and MSE were (M = 2.28 and (M = 2.27), respectively) for this item falling into the category of "poorly done" practice (subsections 5.4.2.1,.5.5.4, 5.6.2., and 5.6.2.1). The core activities of planning, execution, monitoring the process and seeking proper allocation of resources seemed to have received minimal consideration. Hence, this suggested that the core issues of controlling and monitoring were items to which the leadership gave little attention, which can greatly affect the achievement of the goal in that particular instance (section 5.4.2.1).

No strategically responsible entity controls, shapes and shares the respective actions of the TT stakeholders (section 5.6.2.1). The occurrence of a gap in

coordinating the stakeholders, which ranges to the total negligence of the issue of TT, was common, which in turn potentially influenced the activities of TT, causing it to stagger. The bolt that connects actions at different stages and contexts to ensure smooth implementation of a systemic working culture regarding TT activities was not structurally in place (sub-sections 5.6.2.1 and 5.5.6.2.).

6.2.2.2.2. Practice level of PLT in effective communication

Both the quantitative and qualitative results revealed that the leadership team at the PolyCO missed the chance of facilitating and accelerating the overall objectives of TT activities. Moreover, the important function of the leadership practice did not escape criticism for its arbitrariness and inconsistency manner as a leadership function in facilitating the activities (sections 5.5.4.2 and 5.6.2.2). The leadership communication was not able to liberate the process from the uncoordinated and interrupted flow of action for a genuine result. The level of practice in terms of effective leadership communication (M = 3.19) indicated moderately done practice, though the level of practice in making frequent contact with the MSE (M = 2.07) was found to be very low (section 5.4.2.2). Yet, the presence of idea disparity among the respondents was evident, too; the rating mean distribution of the leadership remained the highest, as Hochberg's GT2 test confirmed (sections 5.4.2.2, 5.5.4.2, 5.6.2.2.).

6.2.2.2.3. Practice level of PLT in setting an environment or culture for innovation and TT

The study found that innovation and TT activities in the PolyCO and MSE manufacturing sub-sectors were not effectively implemented, therefore, making the implementation of experience-sharing platforms and addressing barriers to TT activities weak. The status of the setting environment for innovation and technological breakthroughs, operationalisation, was still very weak and did not go beyond starting; it remained far behind expectations (sections 5.4.2.3, 5.5.4.3, and

5.6.2.3). The TT provider and receiver differed in areas such as concern for the accomplishment of "setting up experience-sharing platforms' and "addressing barriers to technology (section 5.4.2.3). The MSE participants' ratings were the lowest, indicating the existing gap between the technology provider, PolyCO, and the service receiver, MSE. The training delivery was also a source of dissatisfaction because the leadership teams, at different levels, have not developed a quality training delivery system but rather continued to be a bottleneck in operationalizing TT.

6.2.2.2.4. Practice level of PLT in spanning boundaries

The qualitative data indicated that the leadership team's role in bringing about diverse partnerships for TT activities success was highly undervalued. It has remained at a very low status. The practice of spanning boundaries was low, with two items, "reaching diverse participants across boundaries" and "pulling people separated by boundaries for a common good," falling into the poorly done category of practices (M = 2.24) and (M = 2.31), respectively. Moreover, the polytechnic college’s support for extending its boundaries beyond its compound, particularly in the past three years, has been weak, indicating a need for strong focus and consideration (section 5.4.2.4). It was found that the intensity of the problems became stronger and stronger as time went on; in contrast to the good experience that was initially available (section 5.5.4.4,). This result of practice witnessed that the leadership team did not use the function of spanning boundaries to bring diverse partners in line with expectations. It was found almost at the non-existent level on one hand, thereby having an adverse impact on gaining a competitive advantage on the part of MSE for sustainable existence (sections 5.5.4.4. to 5.6.2.4)

6.2.2.3. The practice level of PLT on TT in terms of leadership style.

The performance level of PLT in terms of the item "making staff capable of fixing things in unusual ways" under transformational leadership style received a low mean (M = 2.05), falling into the "poorly done" category with a unanimous consensus among the respondents (sections 5.4.3.1, 5.5.5, and 5.6.3). In aggregate, however, it was found that the practice level of PLT in terms of the leadership style used remained (M = 3.63) at a moderate level. The PolyCO leadership team utilised both transformational and transactional leadership styles, depending on the situation, but their operational execution of these styles was found to be low. The leadership team did not institutionalise some prominent characteristics of transformational leadership, such as 'being a role model', motivating', and 'inspiring', and those of transactional leadership, such as "rewarding" or 'disciplining' followers based on performance in achieving institutional objectives in PolyCO.

6.2.2.4. The practice level of PLT on TT in terms of perception

Both the quantitative and qualitative results confirmed the presence of an idea disparity among the respondents' types and within the same respondent. The analysis made to weigh the perception status of the stakeholders toward the PLT support regarding TT and to check if there was a significant difference among the stakeholder groups, focused on four constructs, namely "innovation enhancement," "knowledge accumulation," "efficiency and effectiveness strengthening," and "cooperation and participation strengthening. A significant perception difference was found among the respondents (PLT, trainer, MSE) regarding the leadership effectiveness. The PLTs' execution level has been found to be extended, ranging from the moderately institutionalised to the "highly institutionalised" practice level.

Regarding knowledge accumulation, the execution level was found to be “moderately institutionalised,” with a significant opinion difference among the respondents. The opinion positive perception for the indicators regarding identifying “value-adding technology” and “accumulation of technology sustainably” indicated promising support as verified by the rating mean distribution value. As far as the construct “effectiveness and efficiency improvement” was concerned, the PLTs’ opinion rating indicated that the “highly institutionalised” practice level. However, the trainers and the MSE respondent rated it as if it were the “hardly institutionalised” practice category. Hence, this suggests that the prevailing perception for the practice level of “effectiveness and efficiency improvement remain an unfavourable level for the support endowed by the PLT. Positive perception was found towards the institutionalisation level of “cooperation and participation” strengthening issues, while the practice of KAIZEN training delivery on planning had some technical issues.

Finally, as qualitative data revealed, there were structured interview participants who supported the presence of a negative perception towards the time-to-time reduced TT activities, citing factors such as lack of satisfaction, role confusion, overt ignorance of PolyCO's technology support and expectations of PolyCO to take on all responsibilities, including logistic issues. These sources of dissatisfaction led to MSEs developing negative attitudes toward PolyCO support (Sections 5.4.4, 5.5.6, and 5.6.4).

6.2.2.5. The practice level of PLT on TT in relation to challenging factors

Technology transfer from technology producers to receivers is a complex task requiring careful planning and management. Hence, both internal and external challenges were pervasive for the key stakeholders in the TT activities. The study identified a limited capacity or skill gap (limited capability) on the part of MSE and on the part of the PolyCO trainer to a lesser extent, and limited support of TT by the leadership were the highest challenge factors. Moreover, lack of capital to motivate TT” and “lack of good governance” also fell into the moderate challenge

category , according to the qualitative data respondents also placed them in the moderate category (sections 5.4.5.1 to 5.4.5.3 and 5.5.8).

Regarding the main task of the leadership team, both the quantitative and qualitative data findings confirmed the coordination and integration among the responsible offices in supporting MSE (section 5.4.5), which were found to be challenging factors for TT. It was also confirmed that the leadership team, especially at the top level, lacks detailed knowledge of the sectors they were assigned to lead (section 5.5.7). It was also found that attaching the TT to the promotion procedure of trainers in the PolyCO was considered a hindering factor and greatly affected the functionality and quality of the worked-out technology, being a source of complaints for trainers (sections 5.5.8.1 to 5.5.8.5).

The technology provider believes it delivers satisfactory service, while the MSE believes differently. The mean values fall into the undecided-to-determine and satisfactory practice categories. This affects future activities by ruining human power to get the advantage of TT by focusing on its implementation.

6.2.2.6. Technological capabilities, accumulation, and absorptive capacity

Focusing on development, operations, management, and transactional capabilities requires technology capabilities, and in terms of technology capability (TC), the findings indicate that the institutionalisation level of the key stakeholders in the vital technology inclusion has been improved. The level of perception of the problems is found to be similar among the key actors (PLT, trainers, MSE and trainees). The TT results indicated that the improvement of technology capability management and learning power of TT actors fall within the "moderate level" practice category. Such limited institutionalisation level of the TC affects stakeholders' initiation significantly from carrying out TT in companies and MSE contexts. The study also found that technological accumulation (TA) was moderately institutionalised, too, indicating modest improvement in TT activities. Hence, this continuously affect the

activities of MSE and PolyCO in the in the PolyCO and MSE by weakening the internal initiation to execute the TT activities.

6.2.2.7. Association between practices of PLT on TT and TCB, TA and AC.

The associations of PLT's practice in terms of planning with TCB, TA and AC were positive and medium as coefficients [r = 0.144**, N = 636, P = 0.001]; [r = 0.133**, N = 636, P = 0.001]; and [r = 0.151**, N = 636, P = 0.000] indicated. There was statistically significant similarity between the leadership function "planning" and TCB, TA and AC (Section 5.4.6.4.1.).

The association between PLTs' role in terms of effective communication (EC) with TCB and TA was positive and medium, as observed from [r = 0.097*, N = 635, P = 0.020] and [r = 0.091*, N = 635, P = 0.030], and it does not have a relation with AC, as the [r = -0.025, N = 635, P = 0.552] indicated. This suggests that the factors in communication performance do have an impact on enhancing TCB and TA but not AC (Section 5.4.6.4.2).

The association between the practices of PLTs' role and in terms of environment setting (ES) with TA and AC was positive and medium, as [r = 0.151**, N = 636, P = 0.000] and [r = 0.230**, N = 635, P = 0.000] indicated, respectively, while the PLT's practice in terms of environment setting (ES) was found to have no relationship with the technological capability built (TCB) (section 5.4.6.4.3.).

The association between the practices of PLT and TT in terms of boundary spanning (BS) with TA and AC was positive and medium, as [r = 0.217**, N = 636, P = 0.000] and [r = 0.141**, N = 635, P = 0.000] indicated, respectively. The correlation was significant at 0.01 levels (2 tails), (section 5.4.6.4.4.)

6.3. CONCLUSION

The aim of the study was to examine how PolyCO leadership teams in Addis Ababa transfer technology to MSE in manufacturing subsectors, and to suggest ways to speed up this process. The study discovered that the level of leadership practices was lower.The way in which the leadership team operationalised TT activities—such as planning, setting limits, communicating effectively and creating environments—was inadequate. The study revealed that the PLT disregarded the involvement of important stakeholders, namely, the MSE, in the PolyCO by not using cooperative planning. This inefficiency occurred because the PLT did not give enough thought to carefully crafting a thorough strategy.

Another obstacle the research clearly identified was the absence of a regulatory body to integrate and coordinate the action of TT stakeholders, which influenced the stakeholders to execute the objectives described such as increasing MSE competencies. The leadership approach to creating an environment conducive to innovation and TT, as well as using communication to promote the plan, was arbitrary. Furthermore, the PLTs' effort to incorporate varied partners and stakeholders into TT activities to bring about the common good was largely unsuccessful.

The presence of significant opinion differences among the PLT, trainers and MSE about the status of leadership team performance in undertaking the TT activities and the use of leadership roles inappropriately has intensified the prevailing problems. Moreover, the monitoring and evaluation of both progress and the outcomes of the TT activities were found to be highly neglected leadership team functions. This could negatively impact TT implementation, highlighting the strong need for improvement, whereas it is an issue of necessity rather than preference.

The PLT is demonstrating a lack of commitment and devotion to address issues that drag back effective execution of its leadership role in TT activities from PolyCO to MSE. Hence, the operationalisation of some constructs of transformational and

transactional leadership styles was found to be very low. For instance, items such as ‘being considerate of personal issues', 'inspiring', and 'being role models for employees', were not practised as far as transformational leadership style is concerned. Yet the use of “rewarding” and “penalizing” in the transactional part was also found to be almost non-existent in the PolyCO.

The study revealed that the stakeholders have positive perception towards the institutionalisation level of the construct “enhancing innovation”, “accumulation of knowledge”, “improving efficiency and effectiveness”, and strengthening cooperation and participation”. There was also significant perception difference where the PLTs’ rating value was the highest of all.

The findings also revealed that various kinds of hindering factors that incorporate limited capacity, lack of capital, limited support of TT activities, lack of good governance, and arbitrary communication came together to harshly confront the practice of PLT and prevented the leadership team from leading TT activities successfully. The leadership team is accountable for the inability of coordinating and integrating various competitive core activities and prioritising tasks in order of their importance to tackle problems in the future, all of which were uncoordinated owing to the skill and capacity gap of the leadership team of the TVET sector from top to bottom structure and organisation. It highly needs critical review of the leadership orchestration and capacity-building structure in general to improve the issues from the very deep-rooted cause of the leadership assignment. TT progress is a complex activity that requires critical planning, organisation and evaluation of its operationalisation level since it addresses both internal and external affairs, which involve the technical and administrative skills of the leadership team. Moreover, the study portrayed the presence of loose coordination and integration among the TVET sectors and other MSE supporting offices, which greatly affects the execution of the TT activities. Such loose coordination and integration cause a mess on the effective implementation of TT activities because it levies a high cost on the enhancement of the aforementioned TT activities.

The study revealed that the association between the PLTs' practice in terms of planning and technology capability (TCB), technology accumulated (TA) and the absorptive capacity (AC) was positive and medium. The association also became positive and medium in the same manner in terms of effective communication (EC) with TCB and TA and found no association with AC.

The association of the PLTs' practice in terms of SE and BE with the TT end results, TA and AC, was found positive and medium too, though no relation was found with TCB in both PLTs' roles. The association was significant at the level of 0.01 in the case of planning, setting environment (ES) and boundary spanning (BS) and at 0.05 for effective communication (EC) case (2 tailed).

It was evident that the community has undeniably accumulated best practices from the outbreak of the COVID-19 pandemic and the subsequent fabrication of prevention mechanisms. Various entities, from public institutions, educational institutes, private organisations, and NGOs to religious institutions, have reduced face-to-face contacts to mitigate the contamination of the disease fatal outcomes. The institution as well as the community obtained the best experience from capacity building and the disease prevention campaign, including vaccination transmission and rehabilitating the victims sustainably. The institutionalisation level of stretched-out TT-driven COVID-19 pandemic prevention mechanisms has received unsatisfactory practice despite the experience gained. Surprisingly, only the Item "Change organisational form that aggravates contamination of the disease" has received satisfactory practice as a preventing mechanism. Nevertheless, the rest remained unsatisfactory practice levels. In contrast to the current TT prevention practice, the participants rated all these items as "highly important" as the ideal practices for preventing a pandemic. The study also revealed the presence of opinion discrepancies among the key stakeholders of TT, from PolyCO to the MSE, regarding the status of TT usage to prevent pandemics like COVID-19. The leadership team has not dedicated itself to winning the will of the participants in TT activities to execute the stretched-out TT-derived COVID-19 pandemic prevention mechanism. Therefore, the leadership team should give due

consideration to improving the current minimal performance. Furthermore, these parts need more detailed research to widen the scope and enrich the solution.

In conclusion, regardless of the trainers' and the leadership teams’ efforts, it is difficult to make the TT happen both at the PolyCO and the MSE in the absence of integration of the PolyCO, MSE and other MSE supporting offices. In addition, capital scarcity, limited capability, the attachment of TT activities to the trainer's promotion, and the absence of systemic motivation systems for the best TT achievers are strong barriers to the effective implementation of TT activities. Hence, tackling the problems and designing both short- and long-term plans in accordance with the recommendations rendered in the following section is critical.

6.4. RECOMMENDATIONS

The research results, presented in sections 6.2.2.2 to 6.2.2.7, and the conclusions in Section 6.3 have led to the recommendations for the government and policy formulators, the AALSOB, the PLT, and the MSE owners in the section hereunder.

6.4.1. Recommendation to the Government and Policy Formulators

Recommendation 1.

The research found that the planning process for the PolyCO project was conducted without stakeholders' active participation, which leads to ineffective execution of the TT activities. This deprives the MSE of the right at large and the community to obtain an advantage from successful TT to improve implementation. As a result, MoLS should work to change the tradition of leadership planning. The ministry should foster a strong working culture of comprehensive planning preparation that begins with an appropriate need assessment and includes the full participation of key stakeholders from the beginning phase to the plan approval stage, with a focus on all layers of leadership team involvement avenues at PolyCO, MSE supporting offices, and city government governing bodies. MoLS should form an Audit Adoption Committee from the bottom up to the upper level of leadership layer, to ensure strong and proper planning discipline.

Recommendation 2.

The only incentive scheme tabled to motivate the trainers was found considering the TT accomplishment as a prerequisite for a two-year cyclic PolyCO trainers' promotion participation. The government needs to establish a motivation and incentives scheme for the best implementers to achieve the intended short- and long-term plan the sector is expected to achieve TT support in particular and for other core activities in the PolyCO to back up the socioeconomic development of the nation at large by capacitating MSE. The respondents from the polytechnic

leadership team to the top leaders, recommended the implementation of a system-based motivation and incentive system.

Recommendation 3.

Transformational and transactional leadership styles are extensions of motivation theory, which help leaders to motivate, initiate, influence good role models, and inspire employees within an organisation. However, the PLT did not use a strategic leadership style to influence the stakeholders. As the researcher observed during the interview, the problems were attributed to the presence of an experience and knowledge gap in using suitable types of leadership styles. So, the Ministry of Labor and the city government of Addis Ababa, together with the Labour and Skills Office, should prepare a capacity-building package for the leadership entities of the PolyCO, which will enable them to equip themselves with the required technical and administrative knowledge to lead their institution and support the MSE and other stakeholders, which can help them to meet the demands of the turbulent nature of the 21st century.

Recommendation 4

The study findings revealed that the two years cyclic promotion attachment with TT issues was the source of complaints in PolyCO. The respondents argued the necessities of peculiar motivation and incentive system for better TT accomplishment. According to the respondents' opinions, attaching the TT activities with trainer two cyclic promotion nomination and consequently pushed massive trainers to engage in inferior quality technology to meet the promotion requirement.

Government, through the subsequent executive bodies, should seek to dissociate trainer promotion from TT activities by developing unique reward mechanisms and motivation systems for TT activities with the goal of recruiting talent and creative minds for effective TT enhancement. Therefore, the Ethiopian government, in particular the Ministry of Labor and Skills (MoLSE), in conjunction with the other

Ministry of Science and Innovation, should seek to dissociate trainer promotion from TT activities by developing unique reward mechanisms and motivation systems for TT activities with the goal of recruiting talent and creative minds for effective TT enhancement.

Recommendation 5

The PLTs' TT activities, from PolyCO to the MSE, have faced three hurdles: lengthy government purchasing procedures, a lack of legal framework for sustainable continuation of the TT process (issues of maintenance, damage compensation, transparency, and accountability), agreements with the MSE, and the prohibition of PolyCO from selling the worked-out technology through TT. As good news (learned during the final stage of this research), MoLS has recently entered into action to correct it. Therefore, the Ministry of Labour and Skill, together with the AALSOB, should seek solutions to amend bureaucratic purchasing procedures, solve legal framework gaps and strengthen the institutionalisation of the rule that empowers the PolyCO to transact the produced technology to generate income.

Recommendation 6.

The research has revealed that limited capacity, lack of capital, limited support of TT activities, and lack of good governance harshly confront the practice of PLTs' leading TT activities and tempted them to lead ineffectively. The leadership team is accountable for its inability to coordinate and integrate various competitive core activities and prioritise tasks to tackle problems facing TT activities.

Therefore, to tackle the challenging factors one by one, MoLS and its subsequent lower administration level should do the following:

- Design direction to enable the PolyCO to increase its income generation potential by strengthening the capabilities of various levels of administrative offices, the PolyCO and the MSEs under its supervision.

- Underline the importance of TT activities by emphasising the necessity for financial allocation, as there is currently no budget devoted to TT activities at PolyCO.
- Review and establish an appropriate framework to lead the TT activities in integration with other competitive core activities such as training, administration and other urgent tasks.
- Tackle the issue of good governance by regulating the collaboration level of responsible stakeholders for effective execution of TT and bringing various supporting activities to MSE at one centre.

Recommendation 7.

Although the same stretched-out TT-driven COVID-19 pandemic prevention mechanisms had received highly significant ideal preventive instruments, the current institutionalisation level as preventive activities revealed a very modest level that indicates neither satisfactory nor unsatisfactory. Yet, regarding the degree of evaluation of their institutionalisation, there were significant differences among respondents' opinions, which signify a lack of unity. Therefore, MoLS and its lower-level administrative institutions, as well as partners such as the Ministry of Education and the Ministry of Science and Innovation, should develop strategic directions to urge the preparation of a contingency plan for the COVID-19 pandemic in particular, and other outbreaks of pandemic and urgent tasks as a whole.

6.4.2. Recommendation to the AA Labour and Skill Bureau

Recommendation 1.

The research revealed that the PLTs' planning process lacks the involvement of key stakeholders. There was no joint planning among stakeholders, including MSE. This caused poor implementation of TT activities. To ensure effective implementation, the PLT must change the conventions of the current planning

culture. AALSB ought to endeavour to establish planning conventions that prioritise stakeholder participation after conducting a thorough needs assessment. The Bureau should lead these phases with strict monitoring and follow-up via various mechanisms, including direct supervision, inspection, and reporting mechanisms from all PolyCOs at the city government level. To guarantee strong and appropriate planning discipline, AALSB should establish an audit adoption committee at the city government level to ensure strong and proper planning discipline.

Recommendation 2.

The only incentive scheme that the PLT in the PolyCO used to motivate the TT activity participant trainers was taking the TT accomplishment as an incentive for participating in the recurring trainer promotion. The research revealed that the attachment of trainers' promotions to the TT accomplishment caused the production of inferior-quality technology. To help expedite the implementation of the anticipated short- and long-term, stretched-out plan the sector intends to meet at the city government level, the AALSB should set up a motivation and incentives scheme for the top achievers in TT activities. It should develop a systemic motivation and incentive scheme at the city government level.

Recommendation 3.

PolyCO was responsible for delivering training, serving as TT centres and increasing MSEs' productivity. However, the finding indicated that the MSE did not fully understand the importance of policies and strategic support. The issues stemmed from PolyCOs' ineffective delivery of poor quality training, which was ill-suited to address the problems that the key stakeholders in the TT activity were facing and produced poor outcomes. The issues have been long-standing and widespread, with low-quality training offered without regard for its effectiveness. To make matters worse, the TVET sector's leadership team has complained about a lack of quality training. To address the demands of PLTs and trainers, the AALSB should provide a workable framework and evaluation timetable for the respective

delivery of both short- and long-term training. In addition to seeking audit reports as well as evaluations that follow through with rewards and penalties.

Recommendation 4.

The PLTs' TT activities were found to be challenged by three hurdles: lengthy government purchasing procedures, a lack of a legal framework for the long-term continuation of the TT process in compensation, agreement, damage compensation, etc., and a lack of permission to sell the technology gained through TT.

AALSB should do the following tasks one by one.

- Underscore the unfavourable effects of the existing purchasing procedure on the TT activities, in particular, and on the training activities in general for the above government bodies, the city government, and Mols.
- Enforce the city government of Addis Ababa and further MOLS for the bearing of rules and regulations that can treat the sustainable continuation of the TT activities.
- Enforce the implementation of the newly corrected rule to ensure the participation of PolyCO in the transaction of technology obtained from TT to generate income.

Recommendation 5.

The study revealed that the respondents, i.e., key stakeholders, perceptions of the prevailing TT activity implementation status and the available PLT support for TT differ, suggesting a likelihood of misunderstanding among TT implementers concerning the reality of the execution status. To address this challenge, the AALSB should establish centres that regulate such issues, check stakeholder integration status and analyse data for further decision-making.

Recommendation 6.

The research has revealed that limited capacity, lack of capital, limited support of TT activities, and lack of good governance harshly confront the practice of PLTs' leading TT activities and tempted them to lead ineffectively. The leadership team is accountable for its inability to coordinate and integrate various competitive core activities and prioritise tasks to tackle problems facing TT activities. Therefore, to tackle the challenging factors one by one, the AALSB should do the following:

- To increase PolyCO's potential for income generation, AALSB should persuade MoLS to adopt guidelines that would reinforce utilisation of the available resources, strengthen supervision and inspection of the offices in the context of the city government, and provide both direct and indirect support for the MSE.
- Currently, the budget allocation is not available to TT, therefore underscoring the criticality of the TT agenda is mandatory.
- Establishing after revising framework that can be used to lead TT activities in integration with other competitive core activities such as administration and other urgent tasks.
- Tackle the issue of good governance by regulating the collaboration level of responsible stakeholders for effective execution of TT and bringing various supporting activities to MSE at one centre.

Recommendation 7.

The study revealed that the PLTs' current condition of TT-driven COVID-19 pandemic preventative measure execution was modest, though the same items forwarded for rating have received "highly important" ratings as an ideal prevention mechanism. Moreover, the level of current execution satisfaction can drift back to an "unsatisfactory level" at any time. Therefore, to improve the implementation level of the stretched-out measures and the level of preparedness for emergencies and outbreaks of pandemic, AALSB should provide guidance for the development of strategic directions to encourage the creation of a contingency plan for the

COVID-19 pandemic in particular as well as other outbreaks of pandemic and urgent tasks as a whole in the PolyCO and even at the MSE level.

6.4.3. Recommendation to the PLT

Recommendation 1.

The research revealed that the PLTs' planning process lacks the involvement of key stakeholders. There was no joint planning among stakeholders, including MSE. This caused poor implementation of TT activities. To ensure effective implementation, the PLT must change the conventions of the current planning culture by giving due consideration to stakeholder participation and a thorough needs assessment. The PLT should establish strict monitoring and follow-up via various mechanisms during the progress of TT activities and during the conclusion of the specific TT project.

Recommendation 2.

Transformational and transactional leadership can help organisational leaders motivate, initiate, influence role models, and inspire employees within an organisation. However, the research portrayed that the PLT did not use some strategic indicators of both transformational and transactional leadership styles to influence the stakeholders' best TT accomplishments. Therefore, the PLTs should update their conceptual knowledge for appropriate application by widening their horizons of experience sharing and use of leadership styles. The PLTs need to use various platforms, ranging from self-help preparation to using the training platforms the upper leadership layer delivers properly, to act accordingly to what the situation demands.

Recommendation 3.

PolyCO was responsible for delivering training, serving as TT centres and increasing MSEs' productivity. However, the finding indicated that the MSE did not fully understand the importance of policies and strategic support. They simply need

ready-made technology that could be sold urgently instead of transferring technology following the necessary steps. Therefore, to tackle this long-standing problem, the PLT should deliver both awareness creation training and further advanced training that update the MSE for participation in technological and innovation activities.

Recommendation 4.

The study revealed a significant disparity in perceptions among key stakeholders (PLT, trainers, and MSE) about the status of TT activities and the current support leadership, at various levels, has been providing so far. As a result, it may be difficult to accept that the MSE, trainers and leadership all contribute to improving such perceptions of disparity. To address the issue, PLTs in their custody should be aware of the perceptions of trainers and MSE against the criteria outlined in the TT plan and their expectations. The PLT should also take appropriate action to improve the staff's understanding of the status of TT operations and bring about consensus for successful implementation.

Recommendation 5.

The research has revealed that limited capacity, lack of capital, limited support of TT activities, and lack of good governance harshly confront the practice of PLTs' leading TT activities and tempted them to lead ineffectively. The leadership team is accountable for its inability to coordinate and integrate various competitive core activities and prioritise tasks to tackle problems facing TT activities. Therefore, to tackle the challenging factors one by one, the PLT at various levels should do the following one by one:

- Identify, ensure the participation of the stakeholders such as the near government office and utilise the available resources effectively.
- Underscore the importance of TT activities to the MSE, the nearby government offices and for the community and allocate budget for TT activities in their custody.

- Review and establish an appropriate framework to lead the TT activities in integration with other competitive core activities such as training, administration and other urgent tasks in their custody.
- Tackle the issue of good governance by regulating the collaboration level of responsible stakeholders for effective execution of TT and designing the service delivery system for MSE at ease.
- Soon put the newly corrected rule into effect and practice to ensure their participation in the transaction of technology obtained from TT to generate income.
- Clearly identify the influence imposed by the unfavourable effects of the existing purchasing procedure on the TT activities in particular and on the training activities in general for the upper leadership team bodies, the AALSB and city government

Recommendation 6.

The study revealed that the PLTs' current condition of TT-driven COVID-19 pandemic preventative measure execution was deemed "unsatisfactory," except for one item that states the issue of changing the forms that can aggravate pandemic contamination. This is despite the experience the institutions gained during the pandemic prevention period. Nevertheless, all the same items have received "highly important" ratings as an ideal prevention mechanism. The PLT should seek a contingency plan for the COVID-19 pandemic and other outbreaks of pandemic to act proactively and for urgent tasks that could disrupt the operation of the regular plan.

6.4.4. Recommendation to the MSE owners

Recommendation 1.

The research revealed that the PLTs' planning process lacks the involvement of key stakeholders, including MSE. This caused poor implementation of TT activities.

To ensure effective implementation for obtaining competitive advantage, the MSE owner should actively participate in joint planning that the PolyCO initiates.

Recommendation 2.

PolyCO was responsible for delivering training, serving as TT centres and increasing MSEs' productivity. However, the findings indicated that the MSE did not fully understand the importance of policies and strategic support rather wants to obtain technology in shortcut mechanism than participating in TT activity following the normal process. To tackle this long-standing problem for common good, the MSE owner needs to request the training they need and participate in the training platform the PolyCO and the upper leadership layer initiate.

Recommendation 3.

The research has revealed that limited capabilities of both the trainer (in lesser extent) and the MSE, lack of capital, limited support of TT activities and lack of good governance harshly confront the practice of PLTs' leading TT activities and tempted them to lead ineffectively.

Hence to add one's contribution to address the problems, the MSE should do the following tasks one by one:

- Cooperate and strengthen their integration with the nearby PolyCO and other local government office to build their capabilities.
- Seek the opportunities stretched out by the PolyCO to use tools and incubation centres in the PolyCO to produce what they need under the support of the trainers.
- Actively participate in building good governance issues through requesting one's need and further defending while violated.
- Seek a contingency plan for the urgent outbreaks of pandemic like COVID-19 pandemic and other urgent tasks disturbing the normal progress of tasks and fully participate in preventing through the platforms initiated.

6.5. AVENUE FOR FURTHER INVESTIGATION

The MDGs goal sees TVET as a critical agenda item in the international arena as a solution to reduce youth unemployment and socioeconomic development remedies. Therefore, giving focus to the TVET sector becomes mandatory rather than a preference. The research world has not focused on the nature of the TT process from the Polytechnic College to the micro- and small enterprises since traditionally, TT issues were the domain of universities. Furthermore, previous research hardly examined the leadership variable in TT activity practices.

The TT activities from the PolyCO to the subsequent MSEs, especially the manufacturing sector, were found at their early stages. Though the Ethiopian government has delivered the assignment to the PolyCO and other subsequent TVET institutions as being a centre for technology capability building, technology accumulation, and TT for the economics and social development of the community, the implementation status remained at a limited level. Therefore, a significant

amount of further study is critical to enhancing the body of knowledge and attitudes in the area. Future studies should focus on the following themes:

1) Study on the leadership team in managing cross-cultural issues.
2) Analysis of success factors and risk factors for TT.
3) Examine the technique of spanning boundaries to bring about unity stakeholders from proximity to the remote partners for the common good.
4) Investigating key indicators to measure the TT outcomes, which take place from PolyCO to the MSE
5) Research into the impact of leaders on dynamic team orchestration for TT effectiveness.
6) Rigorous study on the improvement of the practice of the PolyCO in utilising the local potential.
7) Intensive study on the practice of TT leadership team time management
8) Study on the scope and importance of regulatory centres for TT effectiveness.
9) A study on the role of PolyCO in building technology capability, accumulation and TT.
10) Investigation to single out the role of PolyCO in sustainable development.
11) A study on the tendency to accept entrepreneurial perspectives as the third pillar of PolyCO's 21st century.
12) A comparative study to examine the importance of polytechnic colleges in influencing TT in Ethiopia and Africa.
13) Investigations on responsible change management technology and its mediating role in TT.

6.6. LIMITATIONS OF THE STUDY

Limitations are possible weakness or constraints that may affect the findings of the study, but are out of the researcher's control. Limitations include:

Contextual Constraint

This study examined the TT from polytechnic colleges to micro and small enterprises (MSEs) which is still at the incipient stage of development in Ethiopia. The leadership variable has been largely ignored in existing local researches. TT from PolyCO to MSE has been hardly researched by researchers. This fact, in addition to the lack of previously published local studies of leadership practices in this particular setting, meant that there was little comparative literature and it was hard to compare the findings with known local empirical work.

Generalizability Limitations

The study was limited to five polytechnic colleges in Addis Ababa which were selected by purposive sampling.

The findings may therefore not be fully generalisable to other regional settings of Ethiopia where polytechnic colleges operate, or to TVET institutions that do not operate as cluster centres. The scope of Addis Ababa city government alone is not enough to capture the overall nature of TT from PolyCO to MSEs at national level.

Respondent related limitation

Although respondents were assured of confidentiality some might have been unwilling to express their candid opinions on the leadership practices of their respective polytechnic colleges. This may have led to social desirability bias where respondents tend to give socially acceptable responses rather than their true opinions.

Scope Limitations

The study only focused on leadership practices associated with TT and did not take into consideration wider institutional, political or macroeconomic factors which

could be of significant impact on TT performance. These factors remain opportunities for future research.

Despite these limitations, the researcher tried to minimize the potential constrains from the beginning till the end of the study.

6.7. CONCLUDING REMARK

To have a significant impact on the operationalisation of the objectives the organisation sets, the leadership entity must exert significant influence on both professional and support staff. Hence, since it acts as a coordinator and resource cluster for other TVET institutions, choosing PolyCO issues as the subject of the research is timely. This research has focused on the role of left-out leadership practices in singling out TT activities from the respective leadership team functions. The practice level of the PLT did not reach the expectation level of the TT recipients, and the government coordinators were responsible for assigning assignments. The leadership entities seemed in failure to perfectly discharge their core business coordinating role in bringing the expected TT activities result. The core role of leadership in the activities of TT has been staggering and has lost its prime target of meeting the assignment the nation seeks for its development, both economically and socially.

Despite facing challenges, missing targets and eventually achieving lower-than-expected results, the leadership team has made modest progress in technology knowledge improvement, technology identification, and capability gaining through the exprience. The lived experience has led to the emergence of a few enterprises at the organisational level, which was obtained from the good beginning of stakeholder collaboration, though it is very few. Consequently, to reach the expected level of implementation performance, key stakeholders and the supporting leadership entities ought to team up to bring the missed objective into

their hands so that they can work together to navigate the demarcated planned route. Nevertheless, it was a worthwhile endeavour.

6.8. PERSONAL REFLECTION

This period of my academic journey, during which I underwent the academic journey to obtain my PhD, was a crucial turning point and a significant period of my career within the umbrella of my life because I lost my beloved wife at the early stage of the journey. It caused me to find myself inside a bottomless sea, which was unlikely to swim. I have faced the hardest period of my life. The loss of my "lovely wife," who was undoubtedly fulfilling the role of a ‘good’ mother, though impossible to level mothers as ‘good’ and so on, and most importantly, as best friend, hurt me much. Almighty God provided a soothing miracle in due time. Here, I want to mention the God-given man, Prof. VJ Pitsoe, my supervisor, and even his friend. He has a peculiar place and position in bringing me back to the present status from that nightmare since that tragic event. He collected for me his soothing letter of condolence and advice beyond him being a thesis advisor. He pulled each of my moral threads buried in the soil and collected them to my present position despite the difficulties of relieving oneself from such an immense loss.

Beyond this personal chaos, if I happen to mention other challenges I have experienced, I am going to put the hurdles that I have encountered in the process of data collection. The data collection task was the toughest process. Scheduling time with the interviewees was challenging since they were divided on various priorities and overloads at the time. In addition, respondents really seemed exhausted filling out questionnaires and being interviewed by researchers. Such a challenge made the data collection process time-consuming beyond the researcher's expectations. But, through all these challenges, the consideration and cooperation I have received from the Addis Ababa Technical and Vocational Training and Technology Development Bureau's higher officials, PolyCO dean, vice dean, department heads, and MSE owner deserve appreciation.

Finally, the work overload as a challenge, since I have been learning side by side with delivering service as continuing education programme coordinators, significantly imposed a heavy burden upon my endeavours. Despite all the mentioned ups and downs as a challenge, I have tried all my best, together with my supervisor, to step up the necessary steps to reach today.

My PhD journey served me as a sanctuary, providing me with a relief from the day-to-day agony of grief due to my deceased wife. It has been my curtain to shield me and sole source of solace since 2022. It was a blessing from my Almighty God and reward that soothes me from my deep personal mourning and hassle, and at the same time, a lovely journey that quenches my career upgrading thirst and obtaining the best academic experience from the industrious and highly competent professors and staff as well found in the known African university, UNISA.

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8. APPENDIX

APPENDIX A: OFFICIAL LETTER OF REGISTRATION CONFIRMATION FOR 2025

UNISA university of south africa

1735 MDRES

ASSAMINEW W D MR
ADDIS ABABA
YEKA SUBCITY
P.O.BOX 190310
ETHIOPIA

STUDENT NUMBER : 6987-133-7

ENQUIRIES NAME : MR P FOLKARD
ENQUIRIES TEL : 0861670411

DATE : 2025-03-18

Dear Student

I wish to inform you that your registration has been accepted for the current academic year. No printed material is available for the compulsory module in Research Methodology. Kindly activate your Unisa mylife account for future communication purposes and access to study material (https://myunisa.ac.za/portal).

DEGREE : PHD (EDUCATION) (90019)

TITLE : Technical and vocational education and training leadership practice on technology capability accumulation and transfer to micro and small enterprise manufacturing sub-sectors in Addis Ababa city

SUPERVISOR : Prof VJ PITSOE (pitsovj@unisa.ac.za)

ACADEMIC YEAR : 2025

TYPE: THESIS

SUBJECTS REGISTERED: TFPEM01 PhD - Education (Education Management)

The outcome of the compulsory research proposal module (course work master's degree) is the submission of an acceptable research proposal (a final research title will be approved and supervisor(s) will be appointed). On official approval of the result, you will be allowed to register for the mini-dissertation within the prescribed registration period. Please access the information with regard to your personal librarian on the following link: http://www.unisa.ac.za/libinfomd\.

Yours faithfully,

UNIVERSITEIT VAN SUID-AFRIKA PRETORIA UNIVERSITY OF SOUTH AFRICA

Prof MM Sepota
Acting
Registrar

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

APPENDIX B: ETHICAL CLEARANCE CERTFICATE

UNISA university of south africa

UNISA COLLEGE OF EDUCATION ETHICS REVIEW COMMITTEE

Date: 2022/10/12

Ref: **2022/10/12/69871337/28/AM**
Name: Mr WD Assaminew
Student No.:69871337

Dear Mr WD Assaminew

Decision: Ethics Approval from 2022/10/12 to 2027/10/12

Researcher(s): Name: Mr WD Assaminew
E-mail address: 69871337@mylife.unisa.ac.za
Telephone: 0913125577

Supervisor(s): Name: Prof VJ Pitsoe
E-mail address: pitsovj@unisa.ac.za
Telephone: 0124294436

Title of research:

Practices of Polytechnic Leadership on Technology Transfer to Micro and Small Enterprises In Addis Ababa, Ethiopia

Qualification: PhD Education Management

Thank you for the application for research ethics clearance by the UNISA College of Education Ethics Review Committee for the above mentioned research. Ethics approval is granted for the period 2022/10/12 to 2027/10/12.

*The **medium risk** application was reviewed by the Ethics Review Committee on 2022/10/12 in compliance with the UNISA Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa Covid-19 position statement on research ethics attached.
2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

3. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the UNISA College of Education Ethics Review Committee.
4. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
5. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing.
6. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
7. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
8. No field work activities may continue after the expiry date **2027/10/12**. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number **2022/10/12/69871337/28/AM** *should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Kind regards,

Prof AT Motlhabane
CHAIRPERSON: CEDU RERC
motlhat@unisa.ac.za

Prof Mpine Makoe
ACTING EXECUTIVE DEAN
qakisme@unisa.ac.za

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

APPENDIX C: REFUND/CLAIM FORM-INTERNATIONAL STUDENT'S UNISA REFUND FORM

UNISA university of south africa

ADDENDUM B

REFUND/CLAIM FORM – INTERNATIONAL STUDENTS UNISA REFUND/CLAIM FORM - TO BE COMPLETED BY STUDENT

E-MAIL TO: dsf-postgrd@unisa.ac.za

NB: *Refund/Claim will be processed within 25-30 working days from date of receipt of all supporting documents, including a complete refund/claim form.*

STUDENT NUMBER:	6	9	8	7	1	3	3	7	NAMES: WORKISHET DEBEBE SURNAME: ASSAMINEW

HOME ADDRESS:	REFUND AMOUNT REQUESTED:
ADDIS ABABA,ARADA SUB-CITY,WEREDA 02 ,A DMINSTRATION ,HOUSE NO 549	R 20,000.00

REFUND INFORMATION

NAME OF BANK	AWASH BANK(AB)		
BRANCH CODE	1070	BRANCH NAME	KARA ROAD
SWIFT CODE	AWINETAA		
IBAN NUMBER	----------		
ACCOUNT NUMBER	01320460097900		
ACCOUNT HOLDER	WORKISHET DEBEBE ASSAMINEW		

BANK`S PHYSICAL ADDRESS	
	ADDIS ABABA YEKA WOREDA 09
	INFRONT OF MINE MINISTER
	B.O.BOX. 12638, ADDIS ABABA ETHIOPIA

COMPULSORY DOCUMENTS REQUIRED: (no refunds will be processed if refund form incomplete or the below not attached):

- ▫ COMPLETED REFUND/CLAIM FORM (and signed)
- ▫ PROOF OF PAYMENT/INVOICE/RECEIPT (if claiming for own money), OR
- ▫ QUOTATIONS (if claiming for approved expenses)
- ▫ CERTIFIED ID/PASSPORT COPY OF THE STUDENT (Certified within 6 Months)
- ▫ CERTIFIED ID/PASSPORT COPY OF ACCOUNT HOLDER (if different from student)
- ▫ CONSENT LETTER (If we are paying third party)

CONSENT IN TERMS OF THE PROTECTION OF PERSONAL INFORMATION ACT NO 4 OF 2013

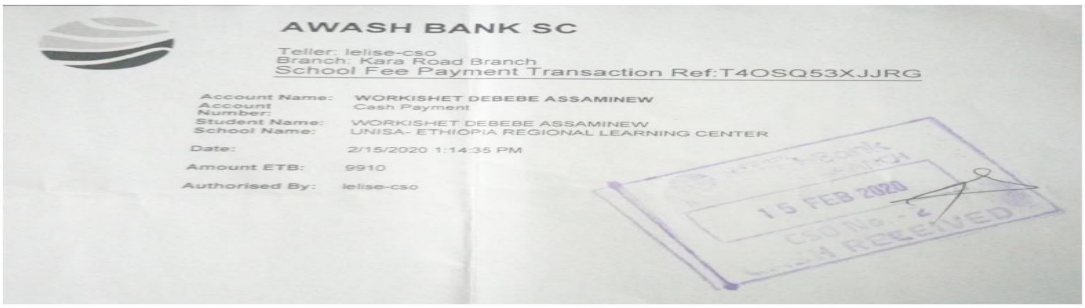
1. I declare that all the personal information furnished by me on this form are true and correct, and I undertake to inform Unisa of any changes in my personal information.
2. I undertake to comply with all the rules, regulations and decisions of the university and any amendments thereto and I have taken note of advice which may be applicable to students in general.
3. I, as a student registered at Unisa or an applicant intending to study with Unisa, hereby consent that Unisa may collect, use, distribute, process my personal information for all required academic processes pertaining to my application or registration to study with Unisa, which may include, but is not limited to:
   - 3.1 internal administrative processing;
   - 3.2 institutional and scholarly research; and
   - 3.3 funding submissions.
4. I also consent that Unisa may share my personal information with the Matriculation Board and Admissions Committees, Higher Education South Africa, the Department of Higher Education and Training, the Council on Higher Education, the South African Qualifications Authority, other public higher education institutions, Qualification Verification Agencies, professional bodies, third parties rendering various services to the university and legal entities which may lawfully require such information for legal obligations and/or investigations.
5. I understand that in terms of the Protection of Personal Information Act (POPIA) and other laws of the country, there are instances where my express consent is not necessary in order to permit the processing of personal information, which may be related to investigations, litigation or when personal information is publicly available.

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsmile: +27 429 12 429 4150
www.unisa.ac.za

6. I will not hold the university responsible for any improper or unauthorised use of personal information that is beyond its reasonable control. 7. I confirm that I have read the notice and understand the contents. **Note:** The nature of personal information collected can be viewed in the Personal Information Inventory Lists published on the Unisa webpage at www.unisa.ac.za	
STUDENT SIGNATURE:	**DATE: July 08,2023**
FOR OFFICE USE ONLY	
CAPTURED BY: _____	**DATE:** _____
REVIEWED BY: _____	**DATE:** _____

PROOF OF PAYMENT/INVOICE/RECEIPT

INVOICE/RECEIPT-One :.proposal phase registration fee



AWASH BANK SC

Teller: lelise-cso
Branch: Kara Road Branch
School Fee Payment Transaction Ref:T4OSQ53XJJRG

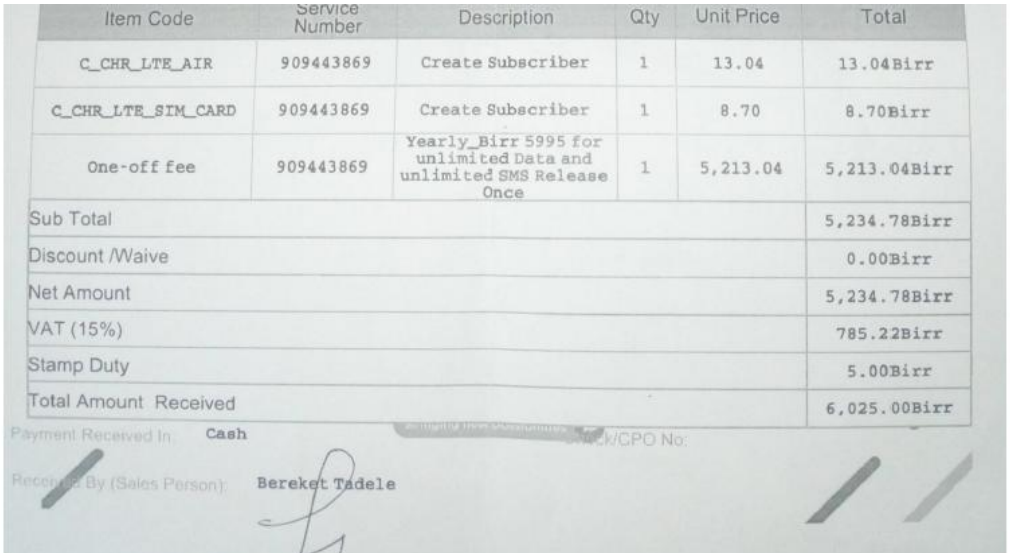
Account Name:	WORKISHET DEBEBE ASSAMINEW
Account Number:	Cash Payment
Student Name:	WORKISHET DEBEBE ASSAMINEW
School Name:	UNISA- ETHIOPIA REGIONAL LEARNING CENTER
Date:	2/15/2020 1:14:35 PM
Amount ETB:	9910
Authorised By:	lelise-cso

15 FEB 2020

UNISA Initial

Student Initial

[Pick the date]



Item Code	Service Number	Description	Qty	Unit Price	Total
C_CHR_LTE_AIR	909443869	Create Subscriber	1	13.04	13.04Birr
C_CHR_LTE_SIM_CARD	909443869	Create Subscriber	1	8.70	8.70Birr
One-off fee	909443869	Yearly_Birr 5995 for unlimited Data and unlimited SMS Release Once	1	5,213.04	5,213.04Birr
Sub Total					5,234.78Birr
Discount /Waive					0.00Birr
Net Amount					5,234.78Birr
VAT (15%)					785.22Birr
Stamp Duty					5.00Birr
Total Amount Received					6,025.00Birr

Payment Received In: Cash

Cheque/CPO No:

Receipt By (Sales Person): Bereket Tadele

[Pick the date]

APPENDIX D: INTERVIEW GUIDE FOR POLYTECHNIC DEANS AND DEPARTMENT HEADS



DEPARTMENT OF EDUCATIONAL LEADERSHIP AND MANAGEMENT

Interview Guide for Polytechnic Deans and Department Heads

1) Briefly introduce yourself.
2) How did you evaluate the status of the Technology transfer, especially from the TVET sectors to the micro and small (MSE) manufacturing sub-sectors?
3) What tasks/issues have the leadership team left? Explain the tasks that receive blind eyes from the leadership team
4) What leadership style does polytechnic leadership follow? Is it transformational leadership or transactional leadership style or both? Briefly explain your answer. (optional for Top leaders)
5) How do you explain the perception of various key stakeholders about the endeavors of polytechnic leadership on the execution of TT activities, focusing on the support of micro and small enterprises?
6) Polytechnic leadership spends a large proportion of its time on administrative activities, leaving TT activities aside. Do you agree with this suggestion? Explain it briefly. Can you suggest the proportion of the time that the leadership spent weekly on other tasks, such as administrative activities, leading the teaching-learning process, and participation in different meetings and workshops representing the organization?
7) How much was effectively done on the part of the leadership team to use certain leadership functions as tools to ignite the success of technology accumulation, building capabilities, and transferring the technology to the MSE manufacturing sub-sectors?Briefly explain it.
8) What are the problems/barriers that hinder the progress of TT activities from polytechnic colleges to the MSE manufacturing sub-sectors? Could you mention the first three more serious barriers to TT transfer activities in the institution you are representing?
9) What are the success factors that enhance the TT activities?
10) How could the leadership team at each respective level improve its focus to support and assist TT activities?
11) What strategic ways do you think can better improve the TT activities from polytechnic to MSE and vice-versa?

APPENDIX E: INTERVIEW GUIDE FOR TOP LEADERS



DEPARTMENT OF EDUCATIONAL LEADERSHIP AND MANAGEMENT

Interview Guide for Top Leaders in Addis Ababa Technical and Vocational Training and Technology Development Bureau (AATVTTDB)

1) Briefly introduce yourself.
2) How do you evaluate the status of the TT especially from the TVET sectors to the micro and small (MSE) manufacturing sub sectors from planning, effective communication, setting enabling environment and spinning the boundaries point of view?
3) What tasks/issues have leadership team given emphasis and left on the other hand? Explain the tasks that receive consideration and blind eyes from the part of leadership team?
4) In which area/s do TVET/polytechnic College and MSE have better cooperation in Addis Ababa city? To what extent it is strong?
5) What advantages/benefits are gained from the TT cooperation among the polytechnic college and MSE?
6) What are the problems/barriers that combating the progress of TT activities from polytechnic college to the MSE manufacturing sub-sectors?
7) What opportunities are there to enhance the technology transfer from the polytechnic colleges to the MSE in the current situation? Can you briefly explain from the government, TVET /polytechnic colleges and MSE manufacturing sub-sectors?
8) How do you evaluate the support rendered to strengthen the TT activities from polytechnic college to the MSE manufacturing sub-sectors of your Agency in the city government Addis Ababa?
9) What strategic ways do you think that can better improve the TT activities from polytechnic to MSE and vise-versa?

APPENDIX F: INTERVIEW GUIDE FOR STUDENTS' COUNCIL LEADERS IN POLYTECHNIC COLLEGE

UNISA | college of education

DEPARTMENT OF EDUCATIONAL LEADERSHIP AND MANAGEMENT

Interview Guide for students and Students' Council Leaders in Polytechnic College

1) Briefly introduce yourself.
2) Are you acquainted with the theme of Technology transfer in your polytechnic college? If your answer is yes, how do you evaluate the status of the TT, especially from the TVET sectors /polytechnic colleges to the micro and small (MSE) manufacturing sub-sectors?
3) What activities did the leadership team emphasize and what did they neglect? Explain the focus of the leadership team and the activities that have been neglected.
4) Polytechnic leadership spends a large proportion of their time on administrative activities leaving TT activities aside. What do you say about this proposition? Do you agree in favor of it or against it? Explain briefly.
5) What are the challenges/obstacles in accelerating technology transfer from polytechnic colleges to micro and small manufacturing sub-sector enterprises? If they tell us about the challenges/obstacles that they say exist. Could you mind mentioning challenges and explaining briefly?
6) What should be done to strengthen the support of the TT activities?

APPENDIX G: INTERVIEW GUIDE FOR MSE LEADERS



DEPARTMENT OF EDUCATIONAL LEADERSHIP AND MANAGEMENT

Interview Guide for MSE Leaders

1) Briefly introduce yourself.
2) How do you evaluate the status of the TT especially from the TVET sectors to the micro and small (MSE) manufacturing sub sectors?
3) How do you evaluate the cooperation of your enterprise with the government TVET/polytechnic colleges in the Addis Ababa city government? Could you mind explaining these relationship statuses in terms of planning, effective communication, setting environment enabling, and making accessibility by passing boundaries?
4) In which areas do you have better links with the polytechnic/TVET colleges?
5) What advantages/benefits are gained from the TT cooperation from your enterprise and from the polytechnic point of view? Kindly explain it.
6) What are the problems/barriers that combating the progress of TT activities from polytechnic college to the MSE manufacturing sub-sectors?
7) What ways do you think that can better improve the TT activities from polytechnic to MSE and vise-versa?

APPENDIX H: THE PLT AND TRAINERS' QUESTIONNAIRES



DEPARTMENT OF EDUCATIONAL LEADERSHIP AND MANAGEMENT
The Polytechnic College Leadership Team (PLT) and trainers' Questionnaires

Dear Respondent

I would like to express my heartfelt thanks for your sincere cooperation in advance to fill out this questionnaire. I am a doctoral degree (Ph.D.) student at the University of South Africa (UNISA) in the Department of Educational Leadership and Management in the College of Education. The questionnaire is designed to collect data for PhD thesis, entitled '*Practices of polytechnic leadership on technology transfer to micro and small enterprises in Addis Ababa, Ethiopia'*.

The purpose of this questionnaire is to collect data that enables to determine the Polytechnic Leadership Team (PLT) practice on technology transfer (TT) from polytechnic college to Micro and Small Enterprise (MSE) manufacturing sub-sectors. Though the Ethiopian Government emphasizes making TVET colleges place for technology capability, accumulation, and transfer, its implementation is minimal in the sector. I have proposed this study under the guidance of Prof VJ Pitsoe Department of Educational leadership and management in UNISA. The study primarily aims to determine the lived practice of PLT leadership in polytechnic college-SME manufacturing sub-sector technology transfer activities to pursue a solution and then focuses on introducing a framework for practitioners and supervisors to improve the monitoring and assessment credo in the area.

Your institution has been included as a key respondent for the questionnaires. Therefore, your genuine response streamed from experience will determine the quality of the study. I highly value and respect your opinion on each section. The information will be used only for academic purposes and will remain confidential**.**

Thank you very much for your time and support.

PART ONE: PERSONAL AND GENERAL INFORMATION

Kindly answer the question given hereunder by placing (x) in the relevant block or box that corresponds to your choice or by writing down your answer in the space provided.

The name of your polytechnic college----------

What is your department? ----------

1.3. Sex ☐ Male ☐ Female

1.4. Age ☐ 20 years and below ☐ 21-30 years ☐ 31-45 years

☐ 46-55 years ☐ 56 years and above

1.5. At which level of educational qualification are you?

☐ Certificate ☐ Diploma ☐ Bachelor's degree

☐ Master's Degree ☐ Doctorate

Others specify _____

1.6. What job are you currently working on?

☐ Dean ☐ Vice dean ☐ Head of Department

☐ Trainer ☐ Technical Assistance ☐ Others(specify)

Others specify _____

1.7. How many years of experience do you have in TVET/polytechnic college?

☐ 1 Year and below ☐ 2-5 years ☐ 6-10 years

☐ 11-15 years ☐ 16 years and above

1.8 How many years of experience do you have in Technology transfer?

☐ 1 Year and below ☐ 2-5 years ☐ 6-10 years

☐ 11-15 years ☐ 16 years and above

PART TWO: The Practice of Polytechnic College Leadership Team (PLT) Concerning Technology Transfer Activities in Polytechnic College (PolyCO) and Micro and Small Enterprise (MSE)

General Directions:

Part two consists of 6 sections that extend from section 2.1 to 2.6. Kindly respond the question by marking (X) on the number that clearly reflects your opinion among the alternative given. Only one answer is required for each question except section 2.5.

Use the following example to answer questions

No	Items	Alternatives				
	For example, if the description says, "the PLT has prepared a comprehensive enough technology transfer plan for Polytechnic College" and if you do not agree with this description then as it is indicated in the next column respond by marking the sign (X) on the number that best express your disagreement	Strongly Disagree	Disagree	Undecided	Agree	Strongly agree
	The Polytechnic Leadership Team has prepared a comprehensive enough technology transfer plan	1	2 X	3	4	5

SECTION 2.1. Performance Level of Polytechnic College Leadership Team/Leader concerning Technology Transfer.

To what extent do you agree that the following leader's practices are prevailing in your polytechnic college (PolyCO) and the partner MSE context as technology transfer core process/activities are concerned?

Kindly use the following to respond

1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree

No	Items	Alternatives				
	The polytechnic college leadership team (PLT) or leaders have ---					
IV-P1	…held critical assessments before preparing the technology transfer plan.	1	2	3	4	5
IV-P2	…elicited the participation of key actors.	1	2	3	4	5
IV-P3	…focused on the inclusion of value-adding technology	1	2	3	4	5
IV-P4	…set deliverable with defined quality and quantity	1	2	3	4	5

No	Items	Alternatives				
	The polytechnic college leadership team (PLT) or leaders have ---					
IV-P5	…set monitoring and controlling mechanism	1	2	3	4	5
IV-P6	…given due consideration for technology transfer plan as critical function	1	2	3	4	5
IV-P7	…considered the criticalness of resource for Technology transfer plan	1	2	3	4	5
IV-Co8	…set effective communication to organize technology transfer.	1	2	3	4	5
IV-Co9	…often made frequent contact with partners Micro and Small Enterprise.	1	2	3	4	5
IV-Co10	…applied good communication skills to manage the technology transfer.	1	2	3	4	5
IV-Co11	…developed communication strategy to alleviate barriers.	1	2	3	4	5
IV-Co12	…set effective means of communication	1	2	3	4	5
IV-SE13	…set an experience sharing platforms on technology transfer	1	2	3	4	5
IV-SE14	…created motivating environment for technology transfer actors.	1	2	3	4	5
IV-SE15	…focused on the presence of infrastructure for technology transfer.	1	2	3	4	5
IV-SE16	…shown a good example for the staff to follow.	1	2	3	4	5
IV-SE17	…set an enabling environment to fix the barriers of technology transfer.	1	2	3	4	5
IV-BS18	…reached diverse participants across boundaries.	1	2	3	4	5
IV-BS19	…set an adaptive position to meet diverse needs.	1	2	3	4	5
IV-BS20	.. pulled people separated bay boundaries for a common good	1	2	3	4	5
IV-BS21	…made communications between internal and external stakeholders	1	2	3	4	5
	Specify other (if any)					

SECTION 2.2. Polytechnic Leadership Team/Leaders' Leading/Managing Technology Transfer practices from the Transformational and Transactional Leadership Style Perspective.

To what extent are the following leadership practices of the polytechnic college leadership team done during technology transfer?

Kindly use the following respond.

1. Never Done 2. Done minimally 3. Done moderately 4. Done largely 5. Done Very Largely

No	Items	Alternatives				
	The polytechnic college leadership team (PLT) or leaders/managers do ---					
IL1	...improve the attitudes of the staffs by inspiring them.	1	2	3	4	5
IL2	…lead staffs by providing them a vision	1	2	3	4	5
IL3	…motivate their staff to exceed the set expected performance level	1	2	3	4	5
IC4	…give special attention for staff member for personal needs.	1	2	3	4	5
IC5	…help staff develop themselves.	1	2	3	4	5
IC6	…bring out the best in their staffs.	1	2	3	4	5
IM7	…provide appealing images about what staff can do.	1	2	3	4	5
IM8	…set high standards for staffs.	1	2	3	4	5

No	Items	Alternatives				
	The polytechnic college leadership team (PLT) or leaders/managers do ---					
IM9	…act as a role model to their staffs.	1	2	3	4	5
IS10	…provide staff with new ways of looking at puzzling things.	1	2	3	4	5
IS11	…get staff to rethink ideas that they had never questioned before.	1	2	3	4	5
IS12	…make staffs capable of fix things in unusual ways	1	2	3	4	5
CR13	…tell staff what to do if they want to be rewarded for their work.	1	2	3	4	5
CR14	…call attention to what staff can get for what they accomplish.	1	2	3	4	5
CR15	…use promotion/reward to get the desired results	1	2	3	4	5
MBE16	…do not try to change anything as long as things are working,	1	2	3	4	5
MBE17	…ask no more of staff than what is absolutely essential.	1	2	3	4	5
MBE18	…try to fix problems proactively before occurring	1	2	3	4	5
	Specify other (if any)					

SECTION 2.3. Perceptions of Polytechnic Leaderships, Instructors and Entities Engaged in Micro and Small Enterprise (MSE) Concerning Leadership Practice, Experienced Currently as Far as Technology Transfer (TT) Is Concerned.

To what extent do you agree that the following polytechnic college leadership team practices are rendered as the support to enhance technology transfer implementation?

Kindly use the following to respond
1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree

No	Items	Alternatives				
	The polytechnic leadership team/leaders have-------	1	2	3	4	5
	Innovation Enhancement					
1	…focused on fostering innovation,	1	2	3	4	5
2	…shown devotion to develop innovative environment	1	2	3	4	5
3	…Focused on contemporary practice and innovation	1	2	3	4	5
	Knowledge Accumulation					
4	…given due consideration for value-adding Technology	1	2	3	4	5
5	…focused on strengthening linkage with partners	1	2	3	4	5
6	…exerted effort for the accumulation of essential knowledge	1	2	3	4	5

	Effectiveness and Efficiency Improvement					
7	…Intensified efficiency and effectiveness of the institution	1	2	3	4	5
8	…developed skill that enable competitive in dynamic world	1	2	3	4	5
9	…introduced new technology to increase productivity	1	2	3	4	5
10	…given due consideration for gaining competitive advantage	1	2	3	4	5
	Cooperation and Participation Strengthening					
11	…accrued participation from multiple partners	1	2	3	4	5
12	…built synergy with micro and small enterprise	1	2	3	4	5
13	…created highly influential atmosphere across boundary					
	Specify other (if any)					

SECTION 2.4. Level of Technology Transfer Success and Challenge Factors

2.4.1 Success Factors:

To what extent are the following success factors important in enhancing technology transfer activities in the Polytechnic College and the Micro and Small Enterprise?

Kindly rate using the following:

1. Not important 2. A little important 3. Modestly important

4. Important 5. Very important

No	Items	Alternatives				
1	The suitability of the technology in technology transfer queues	1	2	3	4	5
2	The cooperation between technology donor and receiver	1	2	3	4	5
3	The positive influence of technology transfer on innovation	1	2	3	4	5
4	The current incentive for technology transfer	1	2	3	4	5
5	The functionality of the technology in a queue for transfer	1	2	3	4	5
6	Orchestrated relationship among technology transfer key actors	1	2	3	4	5
7	The timelines of the technology in line queues for transferring	1	2	3	4	5
8	The reliability of the technology in line queues for transferring	1	2	3	4	5
9	The unity of purpose among key technology transfer stakeholders	1	2	3	4	5
10	Continued relationship among technology transfer key stakeholders'	1	2	3	4	5
	Others (please specify)					

2.4.2 Technology challenging factors

To what extent are the following hindering factors prevailing in polytechnic college and Micro and Small Enterprise?

Kindly use the following to respond

1/ to no extent 2/ to a minimal extent 3/ to a moderate extent

4/ to a large extent 5/ to a very large extent

No	Items	Alternatives				
1	limited capacity of the Micro and Small Enterprise	1	2	3	4	5
2	Lack of capital to motivate technology transfer	1	2	3	4	5
3	internal resistance to change outdated experience	1	2	3	4	5
4	Lack of competent staff to operationalize technology transfer project	1	2	3	4	5
5	Lack of access to appropriate Technology to copy	1	2	3	4	5
6	Lack of good governance	1	2	3	4	5
7	inefficient communication system(new)	1	2	3	4	5
8	Lack of time to focus on technology transfer	1	2	3	4	5
9	Limited support for technology transfer	1	2	3	4	5
10	Need mismatch between the polytechnic and Micro and Small Enterprise	1	2	3	4	5
	Others (please specify)					

Among the shortlisted challenges of technology transfer listed above from 1 to 7, respond by writing the serial number of the first five most serious challenging factors of technology transfer as of your opinion in the space provided hereunder.

Most serious technology transfer challenge	Second most serious technology transfer challenge	Third most serious technology transfer challenge

SECTION 2.5. Technological Capabilities, Accumulation, and Absorptive Capacity

In your opinion, to what extent are the technology capabilities, technology accumulation, and technology absorption capabilities listed hereunder institutionalized in your polytechnic college following the technology transfer operationalization?

Kindly use the following to respond

1. Never institutionalized 2. Minimally institutionalized. 3. Moderately institutionalized 4. Largely institutionalized 5. Very largely institutionalized

No	Items	Alternatives

	Following the introduction of technology transfer,					
	Technological Capabilities (TCs) Built					
TCs 1	identification skill of Essential technology is improved	1	2	3	4	5
TCs 2	technological capabilities management have been improved	1	2	3	4	5
TCs 3	the learning power of Technology transfer actors have been improved	1	2	3	4	5
TCs 4	level of experience for technology transfer has been improved	1	2	3	4	5
	Accumulation of Technology					
AT5	technology transfer effectiveness is improved due to technology accumulation	1	2	3	4	5
AT6	The knowledge accumulation is embodied in the human resource	1	2	3	4	5
AT7	The accumulation process of technology is continual	1	2	3	4	5
	Absorptive Capacity (AC)	1	2	3	4	5
AC8	absorptive capacity is improved in polytechnic college	1	2	3	4	5
AC9	acquiring essential technology is improved in polytechnic college	1	2	3	4	5
AC10	ability to assimilate the technology in local context is improved	1	2	3	4	5
AC11	competitive advantage is gained due to technology transfer					
	Others (please specify)					

SECTION 2. 6. The Current Technology Transfer Performance and Way out to Improve in the Context of COVID-19 pandemic

Respond the 16 questions listed hereunder using the given alternative in the left column as far as the current performance of technology transfer in the COVID-19 pandemic context is concerned, and in the right column concerning the way out for improvement in the future.

Kindly use the following to respond

1. Very unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very Satisfied in the right column and **1. Not important 2. Little important 3. Fairly important 4. Important 5. Very important** in the let column.

Current situation	**Items**	**Ideal importance**
alternatives		**alternative**

													s
For example, if the given item is '… arousing Micro and small Enterprise curiosity via planning. ', then if you are not satisfied with the operationalization of it currently, you shall put sign (X) on number 1 (very unsatisfied); and then if you believe this is ideally crucial for improvement as way out, respond by putting sign (X) on number 5 (very important) in the right column.													
Focusing on….													
1	2	3	4	5		**'…arousing MSE'S curiosity via planning.**	1	2	3	4	5		
1	2	3	4	5	1	…improving the students' attitudes to COVID-19 pandemic protection	1	2	3	4	5		
1	2	3	4	5	2	…changing organizational form that aggravating contamination	1	2	3	4	5		
1	2	3	4	5	3	…utilization of e-learning to avoid contact.	1	2	3	4	5		
1	2	3	4	5	4	…local production capability building to protect COVID-19.	1	2	3	4	5		
1	2	3	4	5	5	…protecting intellectual property rights for TT	1	2	3	4	5		
1	2	3	4	5	6	…disseminating the acquired technology to MSE	1	2	3	4	5		
1	2	3	4	5	7	…facilitating the cooperation with MSE	1	2	3	4	5		
1	2	3	4	5	8	…setting self-efficacy in volatile environment due to COVID	1	2	3	4	5		
1	2	3	4	5	9	…applying COVID-19 pandemic context in TT framework model	1	2	3	4	5		
1	2	3	4	5	10	…participating in the various stages of the COVID-19 pandemic crisis	1	2	3	4	5		
1	2	3	4	5	11	… rebuilding the breaks down in post-pandemic	1	2	3	4	5		
1	2	3	4	5	12	…vaccination promotion to access it to the community.	1	2	3	4	5		
						Specify other (if any)							

APPENDIX I: THE POLYTECHNIC COLLEGE TRAINEES' QUESTIONNAIRES



DEPARTMENT OF EDUCATIONAL LEADERSHIP AND MANAGEMENT

The Polytechnic College Trainees' Questionnaires

Dear Respondent

I would like to express my heartfelt thanks for your sincere cooperation in advance to fill out this questionnaire. I am a doctoral degree (Ph.D.) student at the University of South Africa (UNISA) in the Department of Educational Leadership and Management in the College of Education. The questionnaire is designed to collect data for PhD thesis, entitled '*Practices of polytechnic leadership on technology transfer to micro and small enterprises in Addis Ababa, Ethiopia'*.

The purpose of this questionnaire is to collect data that enables to determine the Polytechnic Leadership Team (PLT) practice on technology transfer (TT) from polytechnic college to Micro and Small Enterprise (MSE) manufacturing sub-sectors. Though the Ethiopian Government emphasizes making TVET colleges place for technology capability, accumulation, and transfer, its implementation is minimal in the sector.

I have proposed this study under the guidance of Prof VJ Pitsoe Department of Educational leadership and management in UNISA. The study primarily aims to determine the lived practice of PLT leadership in polytechnic college-SME manufacturing sub-sector technology transfer activities to pursue a solution and then focuses on introducing a framework for practitioners and supervisors to improve the monitoring and assessment credo in the area. Your institution has been included as a key respondent for the questionnaires. Therefore, your genuine response streamed from experience will determine the quality of the study. I highly value and respect your opinion on each section. The information will be used only for academic purposes and will remain confidential.

Thank you very much for your time and support.

PART ONE: PERSONAL AND GENERAL INFORMATION

Kindly answer the question given hereunder by placing (x) in the relevant block or box that corresponds to your choice or by writing down your answer in the space provided.

The name of your polytechnic college----------

What is your department? ----------

1.3. Sex

☐ Male ☐ Female

1.4. Age

☐ Below 15 years ☐ 15-20 years ☐ 21-25 years

☐ 26-30 years ☐ 31 years and above

1.5. At which level of education status are you?

☐ Level I ☐ Level II ☐ Level III

☐ Level IV ☐ Other

Others specify _____

1.6. In which year/batch are you enrolled currently?

☐ 1st year ☐ 2nd year ☐ 3rd year

☐ 4th year ☐ Other

Others specify _____

PART TWO: The Practice of Polytechnic College Leadership Team (PLT) Concerning Technology Transfer Activities in Polytechnic College (PolyCO) and Micro and Small Enterprise (MSE)

Part two consists of seven sections that extend from section 2.1 to 2.7

2.1. Does your polytechnic College have relation with the Micro and Small

☐	yes	☐	No	I do not know	☐

enterprise (MSE)?

2.2. If the response for the above question is “yes”, use the following direction to answer the subsequent questions.

General Directions:

Kindly respond the question by marking (X) on the number that clearly reflects your opinion among the alternative given. Only one answer is required for each question except section 2.7

Use the following example to answer questions

No	Items	Alternatives				
	For example, if the description says, “the PLT has prepared a comprehensive enough technology transfer plan for Polytechnic College” and if you do not agree with this description then as it is indicated in the next column respond by marking the sign (X) on the number that best express your disagreement	Strongly Disagree	Disagree	Undecided	Agree	Strongly agree
	The Polytechnic Leadership Team has prepared a comprehensive enough technology transfer plan	1	2 X	3	4	5

SECTION 2.3. Performance Level of Polytechnic College Leadership Team/Leader concerning Technology Transfer.

To what extent do you agree that the following leader's practices are prevailing in your polytechnic college (PolyCO) and the partner MSE context as technology transfer core process/activities are concerned?

Kindly use the following to respond **1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree**

No	Items	Alternatives				
	The polytechnic college leadership team (PLT) or leaders have ---					
IV-P1	…held critical assessments before preparing the technology transfer plan.	1	2	3	4	5
IV-P2	…elicited the participation of key actors for technology transfer plan including students	1	2	3	4	5
IV-P3	…focused on the inclusion of value-adding technology	1	2	3	4	5
IV-P4	…set monitoring and controlling mechanism	1	2	3	4	5
IV-P5	…given due consideration for technology transfer plan	1	2	3	4	5
IV-P6	…considered the criticalness of resource for Technology transfer plan	1	2	3	4	5
IV- Co7	…set effective communication to organize technology transfer.	1	2	3	4	5
IV-Co8	…set effective means of communication	1	2	3	4	5
IV-SE9	…set an experience sharing platforms on technology transfer	1	2	3	4	5
IV-SE10	…created motivating environment for technology transfer actors.	1	2	3	4	5
IV-SE10	…shown a good example for the staff to follow.	1	2	3	4	5
IV-SE12	…set an enabling environment to fix the barriers of technology transfer.	1	2	3	4	5
IV-BS13	.. pulled people separated by boundaries for a common good	1	2	3	4	5
IV-BS14	…made communications between internal and external stakeholders	1	2	3	4	5
	Specify other (if any)					

SECTION 2.4. Perceptions of Polytechnic Leaderships, Instructors and Entities Engaged in Micro and Small Enterprise (MSE) Concerning Leadership Practice, Experienced Currently as Far as Technology Transfer (TT) Is Concerned.

To what extent do you agree that the following polytechnic college leadership team practices are rendered as the support to enhance technology transfer implementation? Kindly use the following to respond

1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree

No	Items	Alternatives

	The polytechnic leadership team/leaders have-------	1	2	3	4	5
	Innovation Enhancement					
1	…focused on fostering innovation,	1	2	3	4	5
2	…shown devotion to develop innovative environment	1	2	3	4	5
3	…Focused on contemporary practice and innovation	1	2	3	4	5
	Knowledge Accumulation					
4	…given due consideration for value-adding Technology	1	2	3	4	5
5	…focused on strengthening linkage with partners	1	2	3	4	5
6	…exerted effort for the accumulation of essential knowledge	1	2	3	4	5
	Effectiveness and Efficiency Improvement					
7	…Intensified efficiency and effectiveness of the institution	1	2	3	4	5
8	…developed skill that enable competitive in dynamic world	1	2	3	4	5
9	…introduced new technology to increase productivity	1	2	3	4	5
10	…given due consideration for gaining competitive advantage	1	2	3	4	5
	Cooperation and Participation Strengthening					
11	…accrued participation from multiple partners	1	2	3	4	5
12	…built synergy with micro and small enterprise	1	2	3	4	5
13	…created highly influential atmosphere across boundary	1	2	3	4	5
	Specify other (if any)					

SECTION 2.5. Technology Transfer challenging factors

To what extent are the following hindering factors prevailing in polytechnic college and Micro and Small Enterprise?

Kindly use the following to respond

1/ to no extent 2/ to a minimal extent 3/ to a moderate extent
4/ to a large extent 5/ to a very large extent

No	**Items**	**Alternatives**				
1	limited capacity of the Micro and Small Enterprise	1	2	3	4	5
2	Lack of capital to motivate technology transfer	1	2	3	4	5

No	Items	Alternatives				
3	internal resistance to change outdated experience	1	2	3	4	5
4	Lack of competent staff to operationalize technology transfer project	1	2	3	4	5
5	Lack of access to appropriate technology to copy	1	2	3	4	5
6	Lack of good governance	1	2	3	4	5
7	inefficient communication system(new)	1	2	3	4	5
8	Lack of time to focus on technology transfer	1	2	3	4	5
9	Limited support for technology transfer	1	2	3	4	5
-10	Need mismatch between the polytechnic and Micro and Small Enterprise	1	2	3	4	5
	Others (please specify)					

SECTION 2.6. Technological Capabilities, Accumulation, and Absorptive Capacity

In your opinion, to what extent are the technology capabilities, technology accumulation, and technology absorption capabilities listed hereunder institutionalized in your polytechnic college following the technology transfer operationalization?

Kindly use the following to respond

1. Never institutionalized 2. Minimally institutionalized. 3. Moderately institutionalized 4. Largely institutionalized 5. Very largely institutionalized

No	Items	Alternatives				
	Following the introduction of technology transfer,					
	Technological Capabilities (TCs) Built					
TCs 1	identification skill of Essential technology is improved	1	2	3	4	5

TCs 2	technological capabilities management have been improved	1	2	3	4	5
TCs 3	the learning power of Technology transfer actors have been improved	1	2	3	4	5
TCs 4	level of experience for technology transfer has been improved	1	2	3	4	5
	Accumulation of Technology					
AT5	technology transfer effectiveness is improved due to technology accumulation	1	2	3	4	5
AT6	The knowledge accumulation is embodied in the human resource	1	2	3	4	5
AT7	The accumulation process of technology is continual	1	2	3	4	5
	Absorptive Capacity (AC)	1	2	3	4	5
AC8	absorptive capacity is improved in polytechnic college	1	2	3	4	5
AC9	acquiring essential technology is improved in polytechnic college	1	2	3	4	5
AC10	ability to assimilate the technology in local context is improved	1	2	3	4	5
AC11	competitive advantage is gained due to technology transfer	1	2	3	4	5
	Others (please specify)					

SECTION 2. 7. The Current Technology Transfer Performance and Way out to Improve in the Context of COVID-19 PANDEMIC

Respond the 12 questions listed hereunder using the given alternative in the left column as far as the current performance of technology transfer in the COVID-19 PANDEMICcontext is concerned, and in the right column concerning the way out for improvement in the future.

Kindly use the following to respond

1. Very unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very Satisfied in the right column and **1. Not important 2. Little important 3. Fairly important 4. Important 5. Very important** in the let column.

Current situation						Items					Ideal importance
alternatives											alternatives
For example, if the given item is '… arousing Micro and small Enterprise curiosity via planning. ', then if you are not satisfied with the operationalization of it currently, you shall put sign (X) on number 1 (very unsatisfied); and then if you believe this is ideally crucial for improvement as way out, respond by putting sign (X) on number 5 (very important) in the right column.											
						Focusing on….					
1	2	3	4	5		'…arousing MSE'S curiosity via planning.	1	2	3	4	5
1	2	3	4	5	1	…improving the students' attitudes to COVID-19 protection	1	2	3	4	5
1	2	3	4	5	2	…changing organizational form that aggravating contamination	1	2	3	4	5
1	2	3	4	5	3	…utilization of e-learning to avoid contact.	1	2	3	4	5
1	2	3	4	5	4	…local production capability building to protect COVID-19.	1	2	3	4	5
1	2	3	4	5	5	…protecting intellectual property rights for TT	1	2	3	4	5
1	2	3	4	5	6	…disseminating the acquired technology to MSE	1	2	3	4	5
1	2	3	4	5	7	…facilitating the cooperation with MSE	1	2	3	4	5
1	2	3	4	5	8	…setting self-efficacy in volatile environment due to COVID	1	2	3	4	5
1	2	3	4	5	9	…applying COVID-19 PANDEMICcontext in TT framework model	1	2	3	4	5
1	2	3	4	5	10	…participating in the various stages of the COVID-19 crisis	1	2	3	4	5
1	2	3	4	5	11	… rebuilding the breaks down in post-pandemic	1	2	3	4	5
1	2	3	4	5	12	…vaccination promotion to access it to the community.	1	2	3	4	5
						Specify other (if any)					

Thank you very much

APPENDIX J: THE MSE OWNER QUESTIONNAIRES



Department of Educational Leadership and Management

The micro and Small Enterprise leadership and Personnel's' Questionnaires

Dear Respondent

I would like to express my heartfelt thanks for your sincere cooperation in advance to fill out this questionnaire. I am a doctoral degree (Ph.D.) student at the University of South Africa (UNISA) in the Department of Educational Leadership and Management in the College of Education. The questionnaire is designed to collect data for PhD thesis, entitled '*'Practices of polytechnic leadership on technology transfer to micro and small enterprises in Addis Ababa, Ethiopia'.*

The purpose of this questionnaire is to collect data that enables to determine the Polytechnic Leadership Team (**PLT)** practice on technology transfer (**TT**) from polytechnic college to Micro and Small Enterprise (**MSE**) manufacturing sub-sectors. Though the Ethiopian Government emphasizes making TVET colleges place for technology capability, accumulation, and transfer, its implementation is minimal in the sector.

Your institution has been included as a key respondent for the questionnaires. Therefore, your genuine response streamed from experience will determine the quality of the study. I highly value and respect your opinion on each section. The information will be used only for academic purposes and will remain confidential.

Thank you very much for your time and support.

PART ONE: PERSONAL AND GENERAL INFORMATION

Kindly answer the question given hereunder by placing (x) in the relevant block or box that corresponds to your choice or by writing down your answer in the space provided.

1.1. The name of your enterprise----------

1.2. What is your sub- sector? ----------

1.3. Sex ☐ Male ☐ Female ☐

1.4. Age ☐ Below 20 years ☐ 20-25 years ☐ 26-30years

☐ 31-35 years ☐ 36 years and above

1.5. At which level of education qualification are you?

☐ High school completer ☐ Level Diploma ☐ Bachelor's degree

☐ Master's Degree ☐ Other

Others specify _____

1**.6. How many years of experience do you have in your current sector?**

☐ 1 Year and below ☐ 2-5 years ☐ 6-10 years

☐ 11-15 years ☐ 16 years and above

1.7 How many years of experience do you have in making partnership relation with government organization r?

☐ 1 Year and below ☐ 2-5 years ☐ 6-10 years

☐ 11-15 years ☐ 16 years and above

PART TWO: The Practice of Polytechnic College Leadership Team (PLT) Concerning Technology Transfer Activities in Polytechnic College (PolyCO) and Micro and Small Enterprise (MSE)

Part two consists of seven sections that extend from section 2.1 to 2.7

2.1. Does your enterprise have relation with the polytechnic college?

☐	yes	☐	No	☐	I do not know

1.8. If the response for the above question is “yes”, use the following direction to answer the subsequent questions.

General Directions:

Kindly respond the question by marking (X) on the number that clearly reflects your opinion among the alternative given. Only one answer is required for each question except section 2.5.

Use the following example to answer questions

No	Items	Alternatives				
		Strongly Disagree	Disagree	Undecided	Agree	Strongly agree
	For example, if the description says, “the PLT has prepared a comprehensive enough technology transfer plan for Polytechnic College” and if you do not agree with this description then as it is indicated in the next column respond by marking the sign (X) on the number that best express your disagreement					
	The Polytechnic Leadership Team has prepared a comprehensive enough technology transfer plan	1	X 2	3	4	5

SECTION 2.3. Performance Level of Polytechnic College Leadership Team/Leader concerning Technology Transfer.

To what extent do you agree that the following leader’s practices are prevailing in your polytechnic college (PolyCO) and the partner MSE context as technology transfer core process/activities are concerned?

Kindly use the following to respond **1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree**

No	Items	Alternatives				
	The polytechnic college leadership team (PLT) or leaders have ---					
IV-P1	…elicited the participation of key actors for technology transfer plan including micro and small enterprise	1	2	3	4	5
IV-P2	…focused on the inclusion of value-adding technology	1	2	3	4	5
IV-P3	…set deliverable with defined quality and quantity	1	2	3	4	5
IV-P4	…set monitoring and controlling mechanism	1	2	3	4	5
IV-P5	…considered the criticalness of resource for Technology transfer plan	1	2	3	4	5
IV-Co6	…set effective communication to organize technology transfer.	1	2	3	4	5
IV-Co7	…often made frequent contact with partners Micro and Small Enterprise.	1	2	3	4	5
IV-Co8	…set effective means of communication	1	2	3	4	5
IV-SE9	…set an experience sharing platforms on technology transfer	1	2	3	4	5
IV-SE10	…created motivating environment for technology transfer actors.	1	2	3	4	5
IV-SE11	…focused on the presence of infrastructure for technology transfer.	1	2	3	4	5
IV-SE12	…set an enabling environment to fix the barriers of technology transfer.	1	2	3	4	5
IV-BS13	…reached diverse participants across boundaries.	1	2	3	4	5
IV-BS14	.. pulled people separated by boundaries for a common good	1	2	3	4	5
IV-BS15	…made communications between internal and external stakeholders	1	2	3	4	5
	Specify other (if any)					

SECTION 2.4. Perceptions of Polytechnic Leaderships, Instructors and Entities Engaged in Micro and Small Enterprise (MSE) Concerning Leadership Practice, Experienced Currently as Far as Technology Transfer (TT) Is Concerned.

To what extent do you agree that the following polytechnic college leadership team practices are rendered as the support to enhance technology transfer implementation?
Kindly use the following to respond.
1. **Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree**

No	Items	Alternatives

	The polytechnic leadership team/leaders have-------	1	2	3	4	5
	Innovation Enhancement					
1	…focused on fostering innovation,	1	2	3	4	5
2	…shown devotion to develop innovative environment	1	2	3	4	5
3	…Focused on contemporary practice and innovation	1	2	3	4	5
	Knowledge Accumulation					
4	…given due consideration for value-adding Technology	1	2	3	4	5
5	…focused on strengthening linkage with partners	1	2	3	4	5
6	…exerted effort for the accumulation of essential knowledge	1	2	3	4	5
	Effectiveness and Efficiency Improvement					
7	…Intensified efficiency and effectiveness of the institution	1	2	3	4	5
8	…developed skill that enable competitive in dynamic world	1	2	3	4	5
9	…introduced new technology to increase productivity	1	2	3	4	5
10	…given due consideration for gaining competitive advantage	1	2	3	4	5
	Cooperation and Participation Strengthening					
11	…accrued participation from multiple partners	1	2	3	4	5
12	…built synergy with micro and small enterprise	1	2	3	4	5
13	…created highly influential atmosphere across boundary					
	Specify other (if any)					

SECTION 2.5. Technology Transfer challenging factors

To what extent are the following hindering factors prevailing in polytechnic college and Micro and Small Enterprise?

Kindly use the following to respond

1/ to no extent 2/ to a minimal extent 3/ to a moderate extent
4/ to a large extent 5/ to a very large extent

No	Items	Alternatives				
1	limited capacity of the Micro and Small Enterprise	1	2	3	4	5
2	Lack of capital to motivate technology transfer	1	2	3	4	5
3	internal resistance to change outdated experience	1	2	3	4	5
4	Lack of competent staff to operationalize technology transfer project	1	2	3	4	5
5	Lack of access to appropriate technology to copy	1	2	3	4	5
6	Lack of good governance	1	2	3	4	5
7	inefficient communication system(new)	1	2	3	4	5
8	Lack of time to focus on technology transfer	1	2	3	4	5
9	Limited support for technology transfer	1	2	3	4	5
-10	Need mismatch between the polytechnic and Micro and Small Enterprise	1	2	3	4	5
	Others (please specify)					

SECTION 2.5. Technological Capabilities, Accumulation, and Absorptive Capacity

In your opinion, to what extent are the technology capabilities, technology accumulation, and technology absorption capabilities listed hereunder institutionalized in enterprise following the technology transfer operationalization?

Kindly use the following to respond

1. **Never institutionalized 2. Minimally institutionalized. 3. Moderately institutionalized 4. Largely institutionalized 5. Very largely institutionalized**

No	Items	Alternatives				
	Following the introduction of technology transfer,					
	Technological Capabilities (TCs) Built					
TCs 1	identification skill of Essential technology is improved	1	2	3	4	5
TCs 2	technological capabilities management have been improved	1	2	3	4	5
TCs 3	the learning power of Technology transfer actors have been improved	1	2	3		
TCs 4	level of experience for technology transfer has been improved	1	2	3	4	5
	Accumulation of Technology					
AT5	technology transfer effectiveness is improved due to technology accumulation	1	2	3	4	5
AT6	The knowledge accumulation is embodied in the human resource	1	2	3	4	5
AT7	The accumulation process of technology is continual	1	2	3	4	5
	Absorptive Capacity (AC)	1	2	3	4	5
AC8	absorptive capacity is improved in micro and small enterprise	1	2	3	4	5
AC9	ability to assimilate the technology in local context is improved	1	2	3	4	5
AC10	competitive advantage is gained due to technology transfer	1	2	3	4	5
	Others (please specify)					

SECTION 2. 6. The Current Technology Transfer Performance and Way out to Improve in the Context of COVID-19 PANDEMIC

Respond the 12 questions listed hereunder using the given alternative in the left column as far as the current performance of technology transfer in the COVID-19 pandemic context is concerned, and in the right column concerning the way out for improvement in the future.

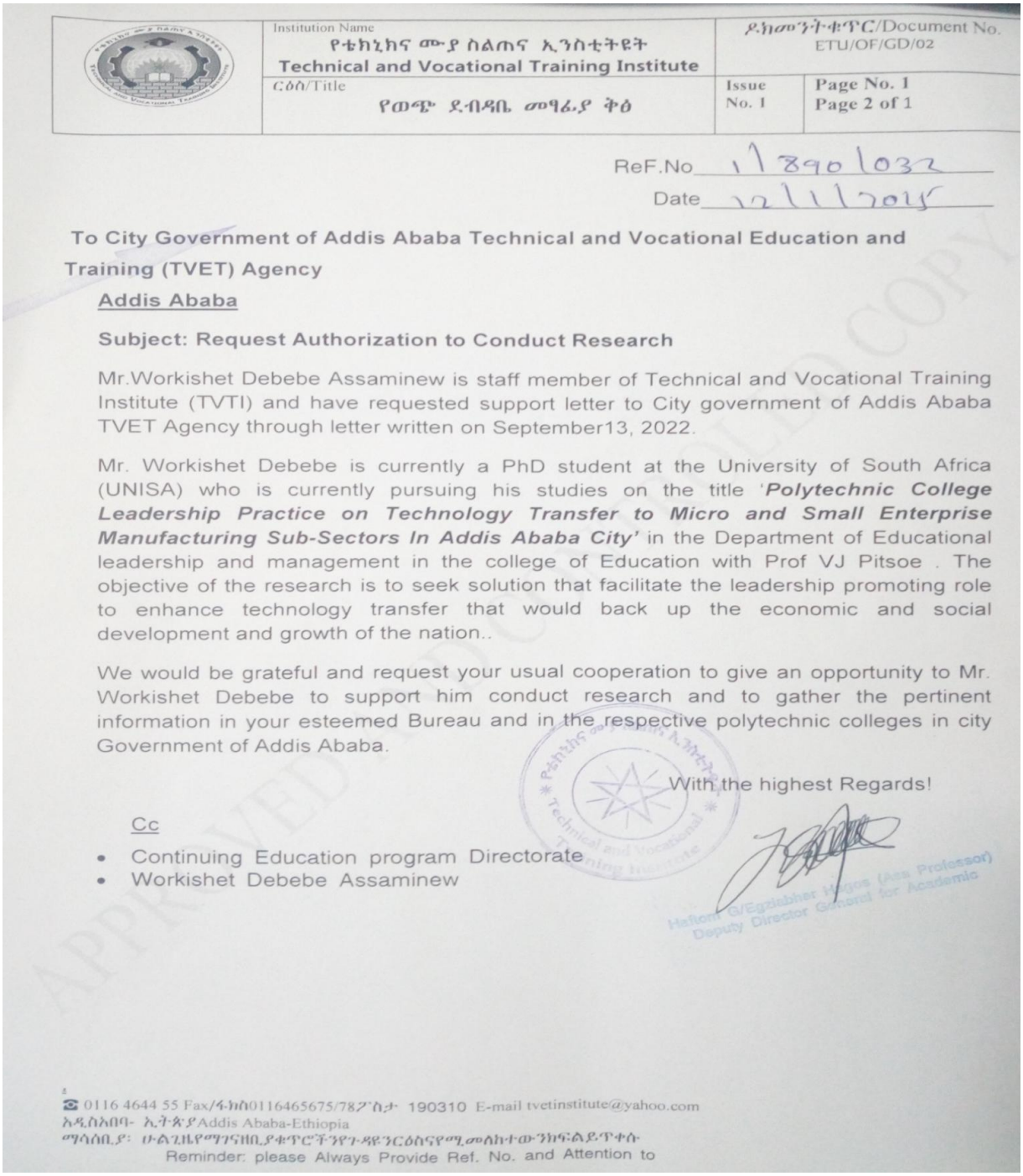
Kindly use the following to respond

1. Very unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very Satisfied in the right column and **1. Not important 2. Little important 3. Fairly important 4. Important 5. Very important** in the let column.

Current situation							**Ideal importance**				
alternatives							alternatives				
For example, if the given item is '… arousing Micro and small Enterprise curiosity via planning. ', then if you are not satisfied with the operationalization of it currently, you shall put sign (X) on number 1 (very unsatisfied); and then if you believe this is ideally crucial for improvement as way out, respond by putting sign (X) on number 5 (very important) in the right column.											
Focusing on….											
1	2	3	4	5		'…arousing MSE'S curiosity via planning.	1	2	3	4	5
1	2	3	4	5	1	…improving the students' attitudes to COVID-19 pandemic protection	1	2	3	4	5
1	2	3	4	5	2	…changing organizational form that aggravating contamination	1	2	3	4	5
1	2	3	4	5	3	…utilization of e-learning to avoid contact.	1	2	3	4	5
1	2	3	4	5	4	…local production capability building to protect COVID-19.	1	2	3	4	5
1	2	3	4	5	5	…protecting intellectual property rights for TT	1	2	3	4	5
1	2	3	4	5	6	…disseminating the acquired technology to MSE	1	2	3	4	5
1	2	3	4	5	7	…facilitating the cooperation with MSE	1	2	3	4	5
1	2	3	4	5	8	…setting self-efficacy in volatile environment due to COVID	1	2	3	4	5
1	2	3	4	5	9	…applying COVID-19 context in TT framework model	1	2	3	4	5
1	2	3	4	5	10	…participating in the various stages of the COVID-19 crisis	1	2	3	4	5
1	2	3	4	5	11	… rebuilding the breaks down in post-pandemic	1	2	3	4	5
1	2	3	4	5	12	…vaccination promotion to access it to the community.	1	2	3	4	5
						Specify other (if any)					

Thank you very much

Appendix K: Support letter from TVT Institution to Addis Ababa Technical and Vocational Training and Technology Development Bureau(AATVTTDB)



Institution Name የቴክኒክና ሙያ ስልጠና ኢንስቲትዩት Technical and Vocational Training Institute		ይክመንት-ቁጥር/Document No. ETU/OF/GD/02
ርዕስ/Title የወጭ ደብዳቤ መፃፊያ ቅፅ	Issue No. 1	Page No. 1 Page 2 of 1

ReF.No 17890/032

Date 12/11/2015

To City Government of Addis Ababa Technical and Vocational Education and Training (TVET) Agency

Addis Ababa

Subject: Request Authorization to Conduct Research

Mr.Workishet Debebe Assaminew is staff member of Technical and Vocational Training Institute (TVTI) and have requested support letter to City government of Addis Ababa TVET Agency through letter written on September13, 2022.

Mr. Workishet Debebe is currently a PhD student at the University of South Africa (UNISA) who is currently pursuing his studies on the title '***Polytechnic College Leadership Practice on Technology Transfer to Micro and Small Enterprise Manufacturing Sub-Sectors In Addis Ababa City'*** in the Department of Educational leadership and management in the college of Education with Prof VJ Pitsoe . The objective of the research is to seek solution that facilitate the leadership promoting role to enhance technology transfer that would back up the economic and social development and growth of the nation..

We would be grateful and request your usual cooperation to give an opportunity to Mr. Workishet Debebe to support him conduct research and to gather the pertinent information in your esteemed Bureau and in the respective polytechnic colleges in city Government of Addis Ababa.

With the highest Regards!

Cc

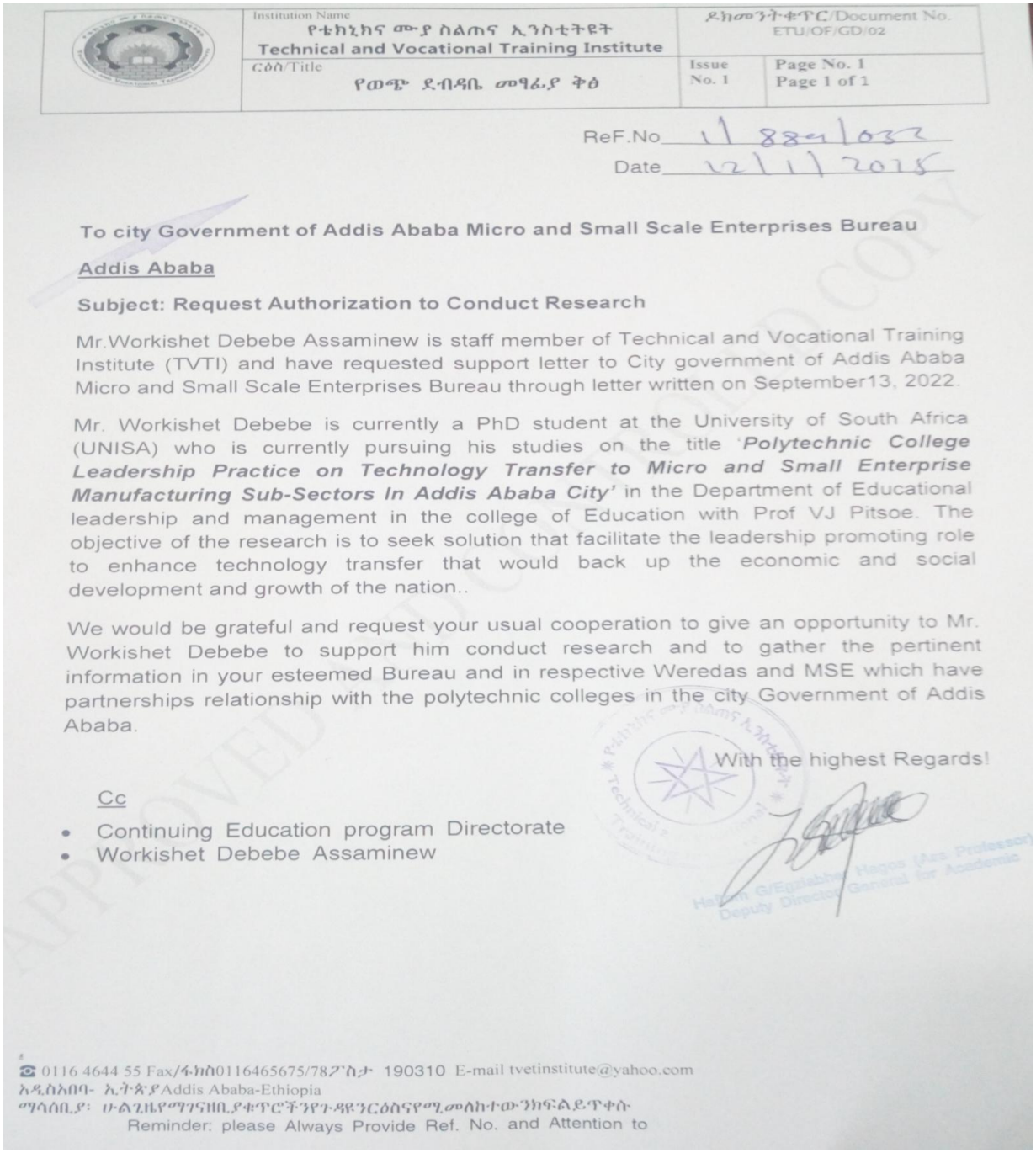
- Continuing Education program Directorate
- Workishet Debebe Assaminew

Hafiot B/Egziabher Weldu (Ass. Professor)
Deputy Director General for Academic

☎ 0116 4644 55 Fax/ፋክስ0116465675/78ፖስታ 190310 E-mail tvetinstitute@yahoo.com
አዲስአበባ- ኢትዮጵያAddis Ababa-Ethiopia
ማሳሰቢያ: ሁልጊዜየማንናዘቢያቁጥሮችንየጉዳዩርዕስናየሚመለከተውንክፍልይጥቀሱ
Reminder: please Always Provide Ref. No. and Attention to

APPROVED TVTI STAMPED COPY

Appendix L: Support letter from TVT institute to city Government of Addis Ababa Micro and Small-Scale Enterprises Bureau (AAMSSEB)



Institution Name የቴክኒክና ሙያ ስልጠና ኢንስቲትዩት Technical and Vocational Training Institute	ዶክመንት-ቁጥር/Document No. ETU/OF/GD/02	
ርዕስ/Title የወጭ ደብዳቤ መሣሪያ ቅፅ	Issue No. 1	Page No. 1 Page 1 of 1

ReF.No 11 884/033

Date 12/11/2015

To city Government of Addis Ababa Micro and Small Scale Enterprises Bureau

Addis Ababa

Subject: Request Authorization to Conduct Research

Mr.Workishet Debebe Assaminew is staff member of Technical and Vocational Training Institute (TVTI) and have requested support letter to City government of Addis Ababa Micro and Small Scale Enterprises Bureau through letter written on September13, 2022.

Mr. Workishet Debebe is currently a PhD student at the University of South Africa (UNISA) who is currently pursuing his studies on the title '***Polytechnic College Leadership Practice on Technology Transfer to Micro and Small Enterprise Manufacturing Sub-Sectors In Addis Ababa City'*** in the Department of Educational leadership and management in the college of Education with Prof VJ Pitsoe. The objective of the research is to seek solution that facilitate the leadership promoting role to enhance technology transfer that would back up the economic and social development and growth of the nation..

We would be grateful and request your usual cooperation to give an opportunity to Mr. Workishet Debebe to support him conduct research and to gather the pertinent information in your esteemed Bureau and in respective Weredas and MSE which have partnerships relationship with the polytechnic colleges in the city Government of Addis Ababa.

With the highest Regards!

Cc

- Continuing Education program Directorate
- Workishet Debebe Assaminew

☎ 0116 4644 55 Fax/ፋክስ0116465675/78ፖስታ 190310 E-mail tvetinstitute@yahoo.com
አዲስአበባ- ኢትዮጵያAddis Ababa-Ethiopia
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Reminder: please Always Provide Ref. No. and Attention to

APPENDIX M: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT POLYTECHNIC COLLEGE



June 13, 2022.

Workishet Debebe Assaminew
Student at the University of South Africa (UNISA)
Department of Educational Leadership and management
Mobile: 251 0913125577, e-mail:Workishetdebb@gmail.com.
To: City Government of Addis Ababa Technical Vocational Training Technology Development Bureau(AATVTTDB)
Addis Ababa

Subject: Request for permission to conduct research at polytechnic college

Dear Sir/Madam.

I, Workishet Debebe Assaminew, am doing research with Prof. VJ Pitsoe, a professor in the Department of Educational Leadership and Management in the College of Education at the University of South Africa, towards a doctoral degree in education management. I kindly request your very esteemed bureau to write a permission letter to polytechnic colleges to conduct research on the topic entitled '*Practices of polytechnic leadership on technology transfer to micro and small enterprises in Addis Ababa, Ethiopia'*.

The aim of the research is to seek solutions that facilitate the leadership promoting role to enhance technology transfer that would back up the economic and social development and growth of the nation. The study will entail the collection of both quantitative and qualitative data, which is imperative to enrich the result. The benefit of this study will help supervisors', leaders/managers in the TVET institution, MSE practitioners, policy formulators in the area, researchers, and technology transfer offices to support TT activities. Indeed, this research has no potential risk to the respondents or to the institution where the research is held. If needed, the feedback from the research will be provided to the bureau through publication, conferences, and seminars.

With regards!

Workishet Debebe Assaminew

Student

APPENDIX N: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT MICRO AND SMALL ENTERPRISES MANUFACTURING SUB-SECTORS



June 13, 2022.
Workishet Debebe Assaminew
Student at the University of South Africa (UNISA)
Department of Educational Leadership and management
Mobile: 251 0913125577, e-mail:Workishetdebb@gmail.com.

To: City Government of Addis Ababa Micro and Small Enterprise Development Bureau(AAMSEDB)

Addis Ababa

Subject: Request for permission to conduct research at Micro and Small Enterprises manufacturing sub sectors

Dear Sir/ Madam

I, Workishet Debebe Assaminew, am doing research with prof VJ Pitsoe, a professor in the Department of Educational Leadership and Management in the College of Education at the University of South Africa, towards a Doctor of Philosophy in Education Management. I kindly request your very esteemed bureau to write a permission letter to sub-cities and woreda where the MSE partnership for the sample polytechnic colleges are found to conduct research on the topic entitled ***'Practices of polytechnic leadership on technology transfer to micro and small enterprises in Addis Ababa, Ethiopia'*.**

The aim of the research is to seek solutions that facilitate the leadership-promoting role to enhance technology transfer that would back up the economic and social development and growth of the nation. The study will entail the collection of both quantitative and qualitative data, which is imperative to enrich the results. The benefit of this study will help supervisors, leaders/managers in the TVET institution, MSE practitioners, policy formulators in the area, researchers, and technology transfer offices to support TT activities. Indeed, this research has no potential risk to the respondents or to the institution where the research is held. If needed, the feedback from the research will be provided to the bureau through publications, conferences, and seminars.

With regards!

Workishet Debebe Assaminew
Student

APPENDIX O: LETTER OF AUTHORISATION TO THE RESPECTIVE POLYTECHNIC COLLEGES



Institution Name
የቴክኒክና ሙያ ስልጠና ኢንስቲትዩት
Technical and Vocational Training Institute

Document No. ETVI/OF/GD/02

Title: የውጭ ደብዳቤ መላፊያ ቅፅ

Issue No. 1 | Page No. 1 Page 3 of 1

ReF.No 1120461032
Date

To: General Winget Polytechnic College
Misrak Polytechnic College
Entoto Polytechnic College
Nifas Silk Polytechnic College
Tegbare-id Polytechnic College

26/04/2015

23 DEC 2022

Addis Ababa

Subject: Request for Support to Conduct Research

Mr. Workishet Debebe Assaminew is a staff member of the Technical and Vocational Training Institute (TVTI) and has requested a support letter to the respective polytechnic colleges through a letter written on September 13, 2022.

Mr. Workishet Debebe is currently a PhD student at the University of South Africa (UNISA) and is currently pursuing his studies entitled "**Practices of Polytechnic Leadership on Technology Transfer to Micro and Small Enterprises in Addis Ababa, Ethiopia**" in the Department of Educational Leadership and Management in the College of Education with Prof. VJ Pitsoe.

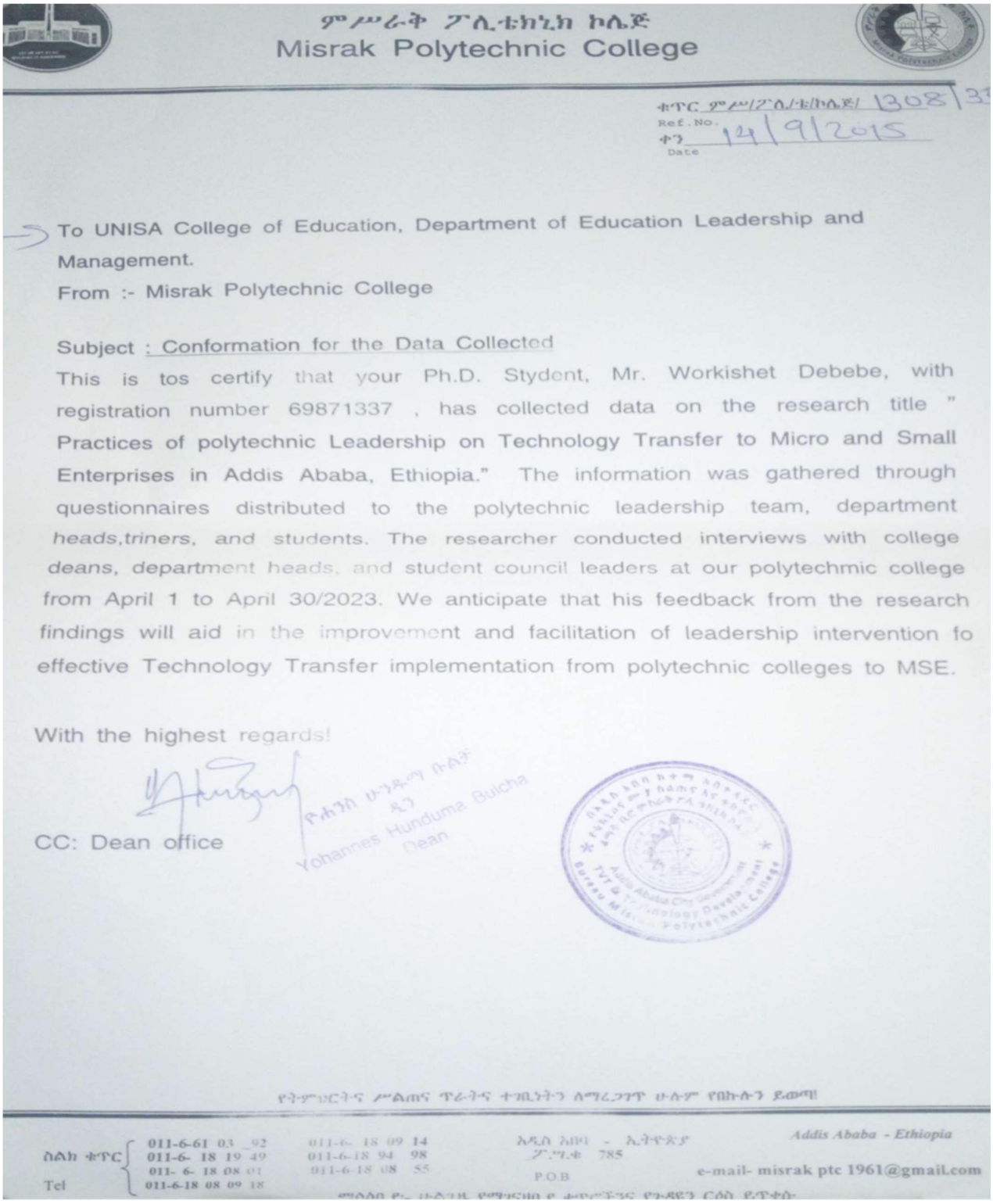
The objective of the research is to determine the practices of the leadership teams of the Addis Ababa Polytechnic College on technology transfer (TT) activities to the micro- and small enterprises (MSEs) manufacturing sub-sector.

We would appreciate and request your usual cooperation in allowing Mr. Workishet Debebe to gather relevant information at your esteemed polytechnic colleges.

With Regards!

Continuing Education Program Director
Workishet Debebe Assamionew

APPENDIX P: LETTER OF CONFORMATION FROM THE SUBJECT POLYTECHNIC COLLEGE FOR THE DATA COLLECTED



ምሥራቅ ፖሊቴክኒክ ኮሌጅ
Misrak Polytechnic College

ቁጥር ምሥ/ፖሊ/ቴ/ኮሌጅ/ 1308/3
Ref.No.
ቀን 14/9/2015
Date

To UNISA College of Education, Department of Education Leadership and Management.

From :- Misrak Polytechnic College

Subject : Conformation for the Data Collected

This is tos certify that your Ph.D. Stydent, Mr. Workishet Debebe, with registration number 69871337 , has collected data on the research title " Practices of polytechnic Leadership on Technology Transfer to Micro and Small Enterprises in Addis Ababa, Ethiopia." The information was gathered through questionnaires distributed to the polytechnic leadership team, department heads,triners, and students. The researcher conducted interviews with college deans, department heads, and student council leaders at our polytechmic college from April 1 to April 30/2023. We anticipate that his feedback from the research findings will aid in the improvement and facilitation of leadership intervention fo effective Technology Transfer implementation from polytechnic colleges to MSE.

With the highest regards!

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ዲን
Yohannes Hunduma Bulcha
Dean

CC: Dean office

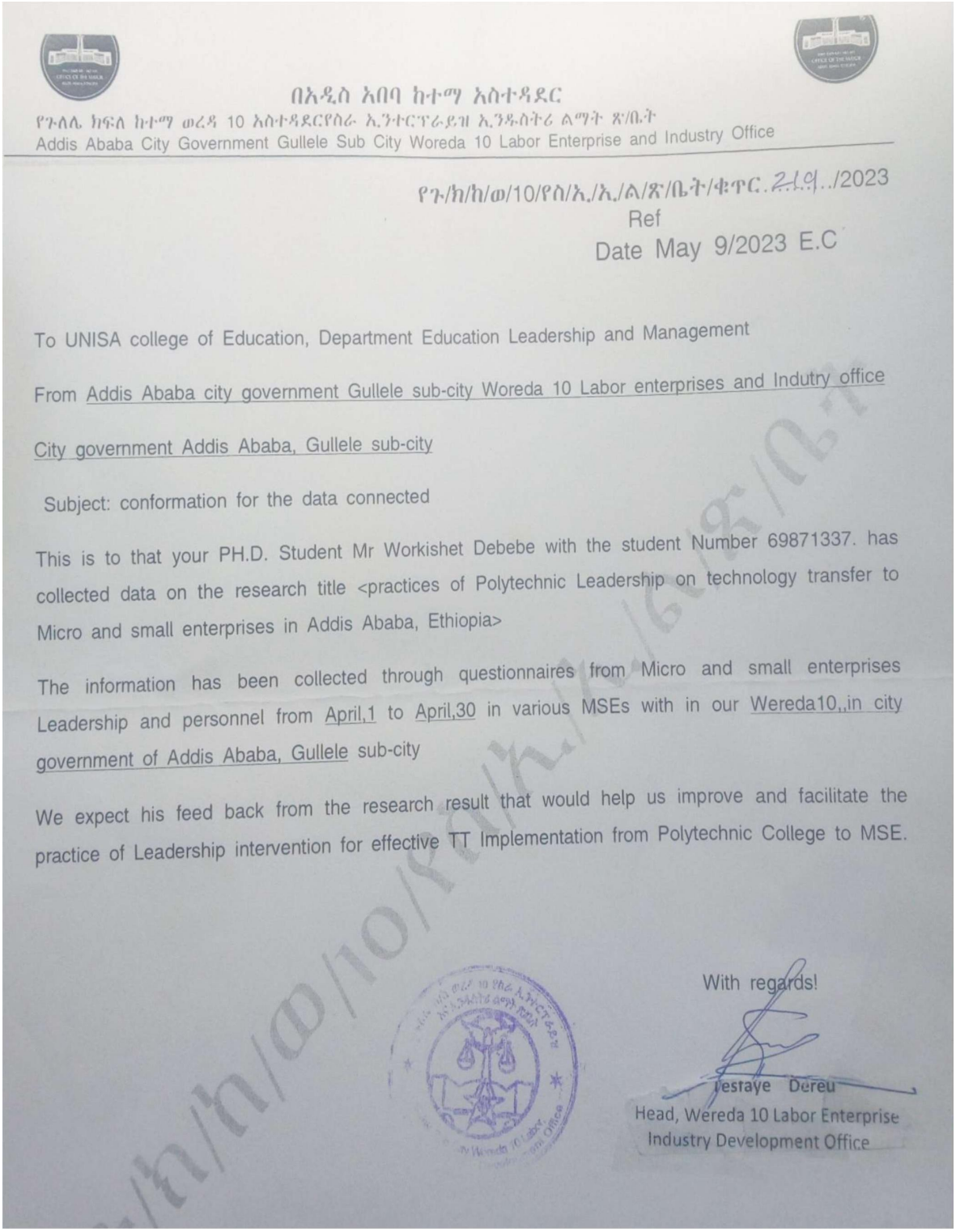
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አዲስ አበባ - ኢትዮጵያ
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P.O.B

Addis Ababa - Ethiopia
e-mail- misrak ptc 1961@gmail.com

APPENDIX Q: LETTER OF CONFORMATION FROM THE SUBJECT WEREDA ADM FOR THE DATA COLLECTED



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Addis Ababa City Government Gullele Sub City Woreda 10 Labor Enterprise and Industry Office

የጉ/ክ/ከ/ወ/10/የስ/ኢ/ኢ/ል/ጽ/ቤት/ቁጥር..፫፤፯../2023
Ref
Date May 9/2023 E.C

To UNISA college of Education, Department Education Leadership and Management

From Addis Ababa city government Gullele sub-city Woreda 10 Labor enterprises and Indutry office

City government Addis Ababa, Gullele sub-city

Subject: conformation for the data connected

This is to that your PH.D. Student Mr Workishet Debebe with the student Number 69871337. has collected data on the research title <practices of Polytechnic Leadership on technology transfer to Micro and small enterprises in Addis Ababa, Ethiopia>

The information has been collected through questionnaires from Micro and small enterprises Leadership and personnel from April,1 to April,30 in various MSEs with in our Wereda10,,in city government of Addis Ababa, Gullele sub-city

We expect his feed back from the research result that would help us improve and facilitate the practice of Leadership intervention for effective TT Implementation from Polytechnic College to MSE.

With regards!

Tesfaye Dereu
Head, Wereda 10 Labor Enterprise
Industry Development Office

APPENDIX R: A LETTER ENTREATING POLYTECHNIC COLLEGE DEAN/ DEPARTMENT HEADS/ MSE LEADERS, ADDIS ABABA CITY TECHNICAL VOCATIONAL TRAINING AND TECHNOLOGY DEVELOPMENT BUREAU TOP-LEADERS



September 13, 2022

Dear respondent

This letter is an invitation to get your participation in this research. I, Workishet Debebe Assaminew, am conducting as part of my research as a Ph.D. student entitled " Practice of Polytechnic Leadership on Technology Transfer to Micro and Small Enterprise Manufacturing Sub-Sectors in Addis Ababa City" at the University of South Africa in the Department of Educational leadership and Management in the College of Education. I have proposed this study under the guidance of Prof VJ Pitsoe, department of Educational Leadership and management in UNISA. The study primarily aims at determining the lived practice of the Polytechnic Leadership team on the technology transfer activities from polytechnic college to the Micro and Small Enterprise manufacturing sub-sector. It will pursue solutions and focuses on introducing framework for practitioners and supervisors to improve the monitoring and assessment credo in the area.

Your institution is selected as a critical respondent for this research. Therefore, your genuine response streamed from experience will determine the quality of the study. I highly value and respect your opinion on each section. The information will be used only for academic purposes and will remain confidential.

The study entitled with; '***Practices of polytechnic leadership on technology transfer to micro and small enterprises in Addis Ababa, Ethiopia'*** is essential to contribute to the social and economic development of the nation.

The study will entail the collection of both quantitative and qualitative data, which is imperative to enrich the result. The benefit of this study will help supervisors, leaders/managers in the TVET institution, MSE practitioners, policy formulators in the area, researchers, and technology transfer offices to support TT activities. Indeed, this research has no potential risk to the respondents. If needed, we will send the feedback from the research finding to the bureau through publications, conferences, and seminars.

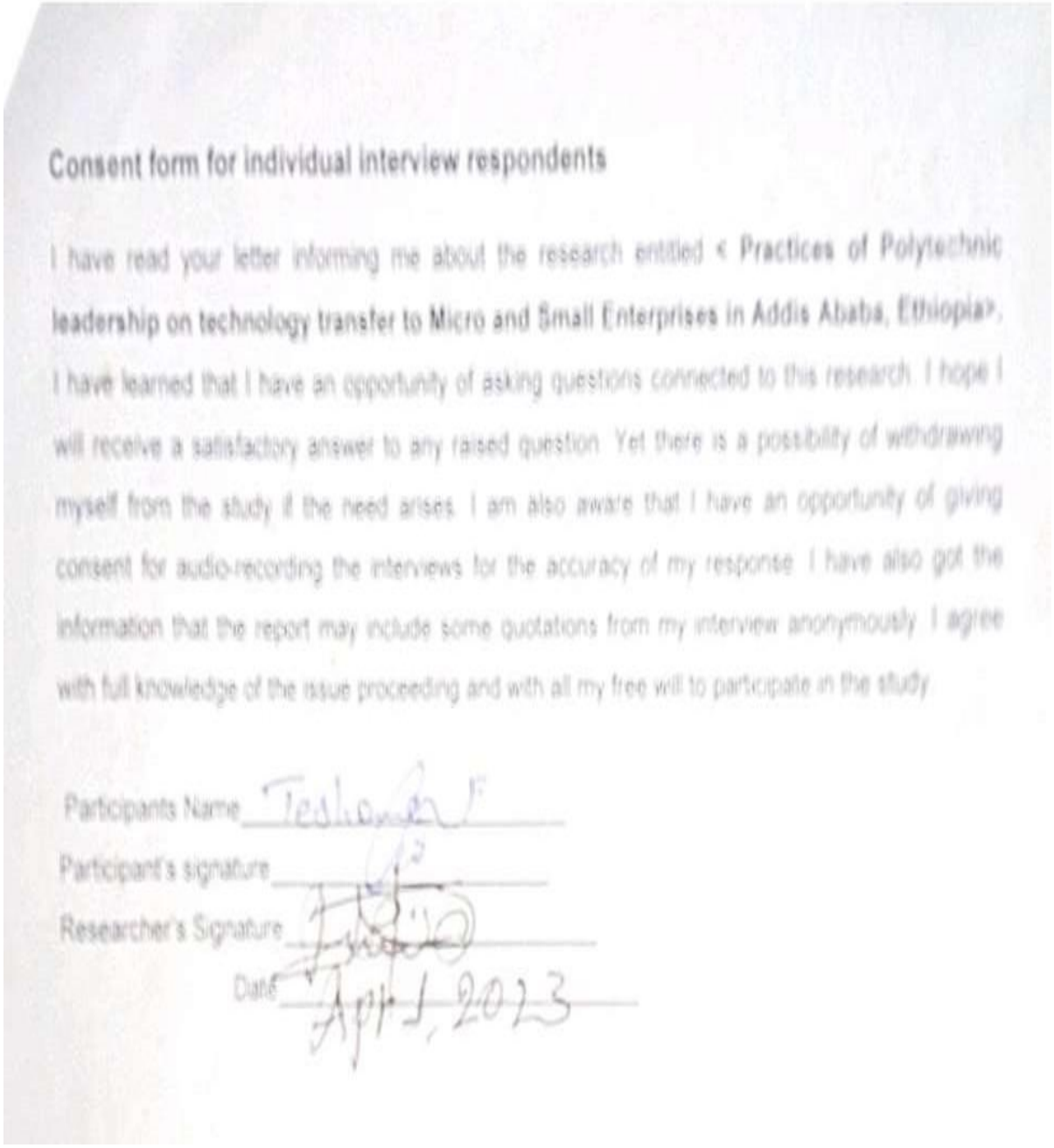
Your participation in this study is only voluntary. This interview will take approximately one hour. It will take place in a mutually agreed upon venue and time that makes your convenience. You might decline to answer any interview questions if you wish; moreover, you may withdraw from the research without hesitation.

The interview will be audio recorded for authentic information collection and further easy analysis with your consent. I will send you the transcription to allow you to clarify any points that you feel need improvement and to crosscheck the accuracy of the conversation made during the interview. All the information you provide will remain confidential. The report will reveal names and other identifying issues omitted from appearing in the report. However, we use essential quotations anonymously with your full consent. We will preserve data and password protected for five years. Indeed, this research has no potential risk to the respondents.

If you have questions about the study and your participation issues in the research, kindly contact me at +251 913125577 or through email at workishetdebb@gamil.com. I look forward to speaking with you, and I thank you greatly in advance for your resourceful cooperation with me in this project. Lastly, I will request you to sign the consent form placed on the next page.

Sincerely Yours

APPENDIX S: CONSENT FORM FOR INDIVIDUAL INTERVIEW RESPONDENTS



Consent form for individual interview respondents

I have read your letter informing me about the research entitled < Practices of Polytechnic leadership on technology transfer to Micro and Small Enterprises in Addis Ababa, Ethiopia>. I have learned that I have an opportunity of asking questions connected to this research. I hope I will receive a satisfactory answer to any raised question. Yet there is a possibility of withdrawing myself from the study if the need arises. I am also aware that I have an opportunity of giving consent for audio-recording the interviews for the accuracy of my response. I have also got the information that the report may include some quotations from my interview anonymously. I agree with full knowledge of the issue proceeding and with all my free will to participate in the study.

Participants Name Teshome T.

Participant's signature

Researcher's Signature

Date April 1, 2023

APPENDIX T: SAMPLE TRASCRIBED INTERVIEW RESULT

Place of Interview- Bureau
Position- Team leader for Technology Research and Study at City Government of Addis Ababa Technical Vocational Training and Technology Development Bureau
I**nterviewee Code**; TOP L, # 3
Age:38
Qualification: MA
Interviewer: [I]

Technical and Vocational Training and Technology Development---- Interview

Interviewee and interviewer	Word of the participants
[I]	Thank you very much for taking the time to participate in the interview. To begin the interview, please introduce yourself briefly.
[TOP L, # 3]	My name is **TOP L, # 3**. I am working as the head of the technology research and research group in the Technical Vocational Training and Technology Development Bureau.
[I]	How do you evaluate the status of the TT especially from the TVET sectors to the micro and small (MSE) manufacturing sub sectors from planning, effective communication, setting the enabling environment and spanning the boundaries point of view?
[TOP L, # 3]	From my experience and my long-term work here, in the first place, there is a situation where better work is done in terms of planning, based on the prevailing potential, as far as the internal situation is concerned. Planning based on better potential refers to a method of planning that is based on the available resources in the field, as opposed to the previous convention, which concentrated on planning the transfer of numerous technologies. In the past, there was no result. It wastes resources, time, and human resources. It used to be that the results were small. But in the current situation, we have avoided playing with a large quantity

Interviewee and interviewer	Word of the participants
	by focusing on transferring technology in a few numbers that are effective in terms of market value Yet, some colleges show the behavior of returning to the previous way of working – fixing on numbers rather than quality. However, they end up selling information that contradicts this by complaining about the scarcity of resources. However, we gave directions for them not to stick to large numbers, but rather to focus on bringing a culture of transferring value-adding technology to prevent shortages of resources and time wastage. This is one of them. From a planning point of view, not planning in collaboration with the appropriate stakeholders is another gap. There is a big gap in planning internally, be it at the bureau level or about the federal government and other stakeholders as well. From the point of view of micro- and small enterprises, it is necessary to plan and communicate with them, for we are working for MSE development and market creation. This is a Loophole, as long as there is no concerted planning. The effective communication issue is also a part of this. It has three phases. The first planning phase is the preparatory work. The Implementation phase and the third one are phases of monitoring and control, in which the gap is available. Nowadays, there have been better beginnings of planning in collaboration, though the gap is still available, as far as planning in collaboration is concerned. In terms of improving the working environment, it is a situation where things are currently being done to keep the office in a better condition.

Interviewee and interviewer	Word of the participants
[I]	What tasks/issues has the leadership team given emphasis and left on the other hand? Explain the tasks that receive consideration and blind eyes from the part of the leadership team?
[TOP L, # 3]	Human resource capacity building, in my opinion, has received less attention. The capacity gap might be the issue of interpersonal communication; it might not be leadership development; in general, ignoring the human capacity-building issue is clearly available. Human capital, in fact, makes the institution effective. Hence, I feel that working on building the capacity of the human resource is lagging behind.
[I]	What are they paying attention to?
[TOP L, # 3]	The practice that is focusing on bringing results based on planning has received strong attention. It is what I could appreciate.
[I]	In which area/s do TVET/polytechnic College and MSE have better cooperation in Addis Ababa city? To what extent is it strong?
[TOP L, # 3]	Concerning the cooperation of MSE with technical and vocational training institutions, I think the better advantage is the type of professional support and monitoring service that the technical and vocational education sectors have rendered to the MSE for the cooperation. It has brought better results even though there are ups and downs to its practice. If a gap is available, I think it would be embedded in the service given with the transfer of technology, for it may probably address the needs of the MSE. It might not be given based on the market demand and the interest of the MSE; however, there are various ways that the polytechnic college rendered support in the form of the following affairs: it could be KAIZEN; it might be skills support;

Interviewee and interviewer	Word of the participants
	and yet it might be entrepreneur issues. Whatever the case may be, I think the rendered support has made its contribution to MSE development.
[I]	What opportunities are there to enhance the technology transfer from the polytechnic colleges to the MSE in the current situation? Can you briefly explain from the government, TVET /polytechnic colleges and MSE manufacturing sub-sectors?
[TOP L, # 3]	In my view, even if technologies do not produce results as expected, it enabled the micro and small enterprise to copy and transfer sophisticated technology and technology with market value. For instance from metallic technology angle, there is a situation that the enterprise could transfer technology with different market value. Although it has not reached the desired level, many enterprises are taking our model, produce it and selling it to others. This is one of the good things that I have to appreciate.
[I]	What are the problems/barriers that combat the progress of TT activities from the polytechnic college to the MSE manufacturing sub-sectors?
[TOP L, # 3]	One of the challenges is that it requires institutional coordination. Technology transfer itself requires the participation of stakeholders. It could not be effective only through the sole performance of technical and vocational training. Therefore, when technology is transferred from polytechnic institutions to micro- and small-sized enterprises, it requires the cooperation of the proper stakeholders, such as the micro- and small-sized enterprises bureaus for machine leasing, land management, and loan service management. That enterprise needs a convenient environment, a convenient infrastructure, and a convenient facility to implement

Interviewee and interviewer	Word of the participants
	the technologies transferred through technical and vocational training colleges. This is a challenge. At this time, if the good technology that they wanted is provided by others, there are fundamental problems in the enterprises. Without solving those fundamental problems, there will be no results.
[I]	What opportunities are there to enhance the technology transfer from the polytechnic colleges to the MSE in the current situation? Can you briefly explain from the government, TVET /polytechnic colleges and MSE manufacturing sub-sectors?
[TOP L, # 3]	When I come to the government, I believe that the government has a better vision and a better focus at this time. For instance, there is no financial problem due to the optimal budget allocation for technical and vocational training institutions. However, there is an operational and business process problem. On the other hand, at this time, the government's recognition of the technical and vocational training sector is at its better level. This is the time when the government recognized the value of the technology that the technical and vocational colleges have worked on. Moreover, now is the time to operationalize the introductions of various technologies produced at this time. For instance, Fowl Gage is being developed at the city level. It would produce for the city dwellers, and such platforms have come into view to help the dwellers raise chickens. I think this is a great endeavor on the part of the government. I believe that tomorrow and the day after tomorrow, these technologies will be implemented based on research and planning. This will make a difference in changing the campaigning operation to a planning-based one. This is a good

Interviewee and interviewer	Word of the participants
	deed as far as the government is concerned. The great opportunity from our side is the restoration of the mindset that has brought a shift in the focus from number/quantity/ games to the focus of limited technology having economic advantage and market value in the technical and vocational institution sectors. It is a great opportunity to get out of the quantitative mindset and enter the work of those who have value and those who have market value and economic value. When it comes to colleges, this is not the time to look for someone to work on technology in terms of human resources. Through the process, the interest, skills, and knowledge of working with technology are greatly improved. Time matters to make the best technology. Maybe if we can fix the existing bureaucratic bottleneck, for example, we can create a favorable environment for the colleges in which technology transfer is detached from promotion issues, and we could create favorable conditions for the college to strengthen their income by selling the produced technology there, there would be a better capability there [in the college]. Even at the management level, capacity is being created. Now there is a situation where technology works prevailed at the management level. This is one of the great potentials. People should be free from associating technology transfer with career upgrading; rather, they need to attach its importance to the country and the economic impact it has. Hence, a person should move away from the mindset of thinking of whether to get the promotion or not for the technology he has transferred.

Interviewee and interviewer	Word of the participants
[I]	How do you evaluate the support rendered to strengthen the TT activities from the polytechnic college to the MSE manufacturing sub-sectors of your Agency in the city government Addis Ababa?
[TOP L, # 3]	It varies depending on the type of service rendered by the city administration. As I told you earlier, it could be in skills support, it could be in kaizen, it could be in entrepreneurship —the support rendered in these cases has brought change, whether it is minimal or capital. It has contributed. There is a situation where micro- and small enterprises have reached a better level of operation than common and traditional operations and poor accounting systems using the support rendered. On the other hand, in the case of technology transfer, even though technology has been transferred so far, MSEs are not at the level of producing and selling the technology transferred. Multiple factors are there. First, stakeholder involvement is required. MSEs need convenient loan services, a place where they can produce, etc.; fulfilling the necessary infrastructure is in the hands of other stakeholders beyond the technical and vocational sectors. Hence, the work is done not only by the technical and vocational sectors but also by other stakeholders.
[I]	What strategic ways do you think that can better improve the TT activities from polytechnic to MSE and vice-versa?
[TOP L, # 3]	First of all, at the city government level, a survey study has to be done to start the work of technology from the beginning. When conducting the study, the involvement of stakeholders and joint planning should be taken into consideration. After identifying the technologies that can work at the city level and taking the potential

Interviewee and interviewer	Word of the participants
	the area has into consideration, determining the appropriate technology as per the potential is necessary. The necessary resources and the overall logistics need to be identified ahead of time, along with the responsible body to work on the technology. The responsible body should discuss, and the transfer must be planned on quality based on economic and market value rather than focusing on quantity. There must be a monitoring system for the transferred technology.
[I]	Thank you very much for the opportunity you gave me. Thank you.
[TOP L, #2]	No problem. I thank you too.

APPENDIX U: LANGUAGE EDITING CERTIFICATE

EDITING AND PROOFREADING CERTIFICATE

22 Osche Street

The Reeds

Centurion

0157

15 October 2025

TO WHOM IT MAY CONCERN

This certificate serves to confirm that I have edited Workishet Debebe Assaminew's thesis titled, **"PRACTICES OF POLYTECHNIC LEADERSHIP ON TECHNOLOGY TRANSFER TO MICRO AND SMALL ENTERPRISES IN ADDIS ABABA, ETHIOPIA."**

I found the work easy and intriguing to read. Much of my editing basically dealt with obstructionist technical aspects of language, grammar and syntax, which could have otherwise compromised smooth reading as well as the sense of the information being conveyed. I hope that the work will be found to be of an acceptable standard. I am a member of Professional Editors' Guild.

Hereunder are my contact details:



Jack Chokwe (PhD – University of Leicester (United Kingdom)

Contact numbers: 072 214 5489

jackchokwe@gmail.com

www.academicproeditor.co.za

Professional EDITORS Guild



APPENDIX V: TURNITIN SAMMURY SIMILARITY REPORT

Similarity Report

PAPER NAME	AUTHOR
Workishet Debebes final Thesis.docx	WORKISHET DEBEBE ASSAMINEW

WORD COUNT	CHARACTER COUNT
120871 Words	675441 Characters
PAGE COUNT	**FILE SIZE**
431 Pages	17.4MB
SUBMISSION DATE	**REPORT DATE**
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