[1]Mokgadi Julia Ngoepe-Ntsoane

Motives of water and sanitation entrepreneurs in South Africa

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Abstract: - The study aims to understand what motivates water and sanitation social entrepreneurs(SEs) in South Africa as they navigate the complex business environment of collaborating with municipalities in undertaking public service delivery. In an attempt to achieve higher sustainability in their SE business models, SE processes become risky and inevitably involve higher complexity as SE business model designers seek to also understand their business impact on the whole ecosystem. Any impact on any of the water and sanitation subsystems can stress or compromise the stability of the whole system.

As such, in-depth face-to-face semi-structured interview was conducted with purposively selected social entrepreneurs in South Africa's Gauteng and Western Cape provinces. The study finds that SEs are motivated by compassion, religious, problem solving motives as well as the desire for self-sufficiency for sustainable business operation so as to make impact at scale. The overall mission is to change human living environments and provide sustainable alternative public services.

Keywords: Social entrepreneurship, public services; water and sanitation, complex adaptive systems.

1.Introduction

In 2015, more than 2 billion people lived on less than $3.20 per day, with consequences for their families' well-being due to lack of access to electricity, clean water, adequate sanitation, or healthcare (WHO, 2022). (World Bank, 2018a). In 2017, approximately 70% of the world's population had access to water services, while only 45% had access to sanitation services (JMP, 2020). Between 1.5 and 2.5 billion people (Caretta et al., 2022) reside in regions where water is scarce for at least part of the year, and 3 billion people (UNICEF, 2020) do not have access to a handwashing sink with water and soap at home. By 2050, these numbers are expected to treble. Also, development and rapid urbanization are increasing global demand for water so much so that by 2050, such demand is projected to increase by 20–30% above the 2010 level (of 4,600 cubic kilometres annually). Even greater rises are expected in Africa (60%), South America (50%) and Asia (30%) (Burek et al, 2016).

With its harsh environment, erratic rainfall, and unequally distributed water resources, South Africa is a country with a water shortage. The nation's annual mean runoff is 40 mm, or one-seventh of the world average of 260 mm, and its rainfall and river flow are inconsistent, irregular, and seasonally determined (DoEA, 2011). The nation is semi-arid, with annual precipitation ranging from less than 100 mm in the west to more than 1500 mm in the east. The annual average rainfall is 450 mm, which is significantly less than the global average of 860 mm. According to climate change estimates, the eastern half of the country will experience much greater variability and more intense occurrences than the western half (DoEA, 2013). The country's water usage comprises 77% surface water, 9% groundwater, and 14% re-use of return flows (DoWA, 2013).

The majority of the nation's freshwater reserves are supplied by rainfall. Extremely variable climatic conditions, population dynamics, water-related environmental issues like the need to preserve ecosystems, economic development, and political and socio-cultural issues like food security at the national, basin, provincial, and local levels are some of the factors that influence the availability and distribution of water resources in the region.

14.1 million South Africans continued to utilize sanitation facilities that fell short of the Reconstruction and Development Programme (RDP) requirement in April 2017. Only 10,3 million households, or 64%, have access to a steady supply of water. In South Africa, 21 million people lack access to basic sanitation facilities and over 4.2 million people lack access to safe drinking water (CGPIT 2023). Additionally, of the country's 962 water

[1] Professor University of South Africa College of Human Sciences, Social Sciences Department of Development Studies

Tel: (+27)12 429 6129

E-mail: entsoam @unisa.ac.za

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treatment works (WTWs) and over 1150 municipal wastewater treatment works (WWTWs), 44 percent and about 56 percent, respectively, are in poor or critical condition and require immediate renovation as well as qualified operators. Approximately 11% of this infrastructure is totally broken.

In historically underprivileged communities in South Africa, sanitary and wastewater management systems are currently in a catastrophic state. High inequities, socioeconomic disadvantage, declining public order, and crime are all present in these areas, which are regarded as being socially disorganized (Lamasanu & Mihai, 2012). Pit latrines and groundwater sources, particularly hand-dug wells, are frequently found adjacent to one another. Poor health is frequently linked to the need for basic sanitation, which stimulates investments in sanitation infrastructure. Additionally, poor sanitation infrastructure and hygiene increase the risk of sanitation-related diseases.

When trash is not managed properly, it leads to pollution, the deterioration of resources in the human environment, and eventually economic harm. It is well known that waste collection is expensive and that high-income countries are the only ones that can collect all of their waste (World Bank, 2018b). Governments in poor nations struggle to effectively manage garbage. Urban garbage is occasionally dumped or burned in ways that seriously damage the environment. In India, open burning and landfill fires account for 19% of the air pollution linked to hydrocarbons, carbon monoxide, and particle matter (Howes, 2015). The process of segregating and handling common objects that are typically viewed as trash is known as municipal waste management (Morero et al., 2020). A large part of it is plastic, which can be separated, shredded and reused, provided it was originally segregated and is not contaminated (Mollnitz et al., 2020).

As evidenced by the adoption of the 17 Sustainable Development Goals (SDGs) by the United Nations in September 2015, the South African government is committed to improving access to water and sanitation in underserved communities as part of its inclusive development plan. This is in accordance with the South African Constitution, which requires municipalities to encourage local development, give priority to meeting the basic requirements of local communities, and make sure that everyone has access to at least a basic level of municipal services (Mafunisa, 2008). However, South African towns suffer significant problems with service delivery as a result of their extremely limited ability to carry out social development initiatives. As a result of these changes, social entrepreneurship (SE) and innovation are becoming more popular in South Africa and around the world as methods of addressing difficult sustainable development issues that the public and private sectors are unable to resolve. If society wishes to fulfill its sustainable development goals, they are an unavoidable necessity (Bewayo & Portes, 2016).

Lack of technical expertise, institutional capacity, and financial resources are major contributors to some municipalities' inability to operate, maintain, and manage water and waste water infrastructure assets effectively. Lack of funding for operations and maintenance compared to funding for new capital projects, poor revenue management, and municipalities' failure to hire technically skilled staff are further factors that contribute to the unreliability of water and sanitation services. Additionally, the funding methods for national infrastructure grants encourage the construction of new infrastructure rather than the upkeep of old infrastructure (DoWS, 2019).

According to Douglas and Prentice (2019), SEs can help with "government failure" issues. Where SEs can fill the gap is in this situation (Urban 2008:347). In the context of South Africa, SEs frequently work at the local level. By developing alternative service delivery models, particularly in the realm of water reticulation and waste management services to communities, they could help to reduce constraints on local government regarding service delivery. Social entrepreneurs (SEs) focus on the dual goals of achieving both financial sustainability and social purpose, and they develop innovative models for the delivery of goods and services that directly address fundamental human needs that are unmet by the current social or economic structures (Seelos & Mair 2005:48). While prioritising the concerns of the communities they serve, they facilitate interactions between the entrepreneur and its specific social context (Bewayo & Portes, 2016).

The majority of SE ventures in Kenya are started by non-governmental organizations, like Kickstart International, which focuses on giving irrigation tools to underprivileged farmers, and One Acre Fund, which gives farmers in remote areas inputs, extension services, storage advice, and access to markets. 72 rural villages

in the southern portion of the old Nyanza Province, a destitute area with limited coverage of improved water supply, high diarrhoea rates, and a high prevalence of HIV infection, received the safe water system (SWS) from CARE Kenya in 2000. (Makutsa, et al., 2001).

As SE business model designers strive to also comprehend their business influence on the entire ecosystem, SE procedures inevitably grow risky and more complex in an effort to achieve higher sustainability (Chipeta, Kruse & Venter, 2021). (Dunn et al., 2017; Makropoulos & Savi, 2019) systems. The stability of the entire system can be stressed or jeopardized by any impact on any of the water and sanitation subsystems. Due to strategic risks associated with adverse selection or moral hazard brought on by stakeholder participation with the service-providing social businesses, social impact is therefore not always guaranteed. The attempt to confirm the genuine socio-economic impact of these endeavors is, however, thwarted by the paucity of empirical evidence in this area (Saebi, Foss, & Linder, 2019). Also, within the wider process of creating value, SEs need to be aware of the importance of the measurement process in unlocking new value and creating valuable opportunities for innovation and growth that would otherwise be missed (Porter, Hills, Pfitzer, Patscheke, & Hawkins, 2012).

In South Africa, as in most parts of Africa, the practice of SEs is generally closer to the idea of cooperative initiatives created to address social local problems on a small scale rather than to the Schumpeterian notion of (social) entrepreneurship as (social) innovation, a view which is more typical in developed countries (Karanda & Toledano 2012). In South Africa, SEs are important because their transformative social ambition sets them apart from business with a conscience and other ways of "doing good," such corporate social responsibility or corporate philanthropy (Mair, Battilana, & Cardenas, 2012). Transformative change for urban water and sanitation systems entails a fundamental change in the way that water service is planned, designed, built, run, managed, administered, and valued. Investigating what drives social entrepreneurs to enter the challenging field of providing public water and sanitation services in South Africa is fascinating. The remaining portions of the essay are devoted to a review of the literature in section 2, a description of the objectives and methods of the research in sections 3, and a conclusion. Discussion of study findings is presented in Section 5, and the work is concluded in the last section.

1.1 Water and sanitation Management as a public good

Sanitation and water supply systems are essential for life. The provision of food, energy, health, ecosystem services, and environmental sustainability all depend on it. Therefore, the role of water in socioeconomic growth is crucial (Wheeler, Xu, & Zuo, 2020). Conventional human settlements are designed to flush away collected waste and storm water as well as channel, collect, or otherwise control flows of water around them for home use, settlement development, and farm irrigation. Grain milling and turbine operation are both made possible by the seemingly limitless renewable energy of water. In a paradoxical sense, improper water management can also result in the demise of people, animals, and plants. Water quality can be negatively impacted by certain farming methods. The release of important quantities of organic matter, agrochemicals and sediments, and the use of pesticides, fertilizers and excreta cause nitrates and phosphates to infiltrate water bodies leading to eutrophication. Pollution through sediment and nutrient is closely linked to land use changes and practices (OECD, 2020).

Waterborne diseases like cholera and typhoid have only lately been prevented due to sanitary infrastructure and technologies that demand significant maintenance costs. The cumulative impact of the past few decades in sub-Saharan Africa shows that floods and droughts alone are to blame for almost 80% of disaster-related fatalities and 70% of economic losses (Ndaruzaniye et al., 2010). Tropical cyclones and flooding damage infrastructure, property, and assets, but droughts, crop failure, and instability brought on by climate change may also drive millions of people to migrate from rural areas across borders to cities (Verisk, Maplecroft, 2018).

Urban flooding can cause unexpected destruction, as it has done recently in KwaZulu Natal and other parts of South Africa, ending lives and uprooting livelihoods. Floodwaters in cities seek to occupy the riverbeds through which they historically flowed, often encountering the new paths carved out and claimed by urban transportation routes. Finally, water’s unavailability, owing to drought and shifting patterns in seasonal precipitation, or industrial pollution can undermine the technologies developed for the densely populated industrial city to

sustain its growing numbers. In a way, the existence of South African cities and municipalities depends on water providing life as much as withholding death.

With an average annual rainfall of 465 mm (less than half the global average), South Africa has an arid to semi-arid climate, resulting in a total annual runoff of roughly 49 000 million m3/a. Approximately 10 200 million m3/a nationwide is the current reliable production of surface water at an acceptable assurance of supply. Around 70% of this volume is held in the 252 biggest dams in the nation.

Agriculture consumes 61 percent of all water used, followed by municipal use (which includes industrial and commercial users receiving water from municipal systems), and the remaining 12 percent is made up of power generation, mining and bulk industrial use, livestock, conservation and afforestation (DoWS, 2019).

South Africa is facing increasing water demands to meet the needs of a rapidly growing and urbanizing population, changing lifestyles, and economic growth. At the same time, climate change is driving the country towards a warmer and drier future, with predicted longer and more extreme droughts, and more intense floods. Climate change means that there will be less water available to meet water needs (DoWS, 2019). In South Africa, each individual uses about 237 liters of domestic water per day on average, which is 64 liters per person per day more than the global average of 173 liters per person per day. Municipal non-revenue water, which is currently at an unacceptable high 41 percent, is partially to blame for the high water use. Average physical losses in municipal systems are estimated to be around 35 percent, compared to a global best practice in the range of 15 percent, however estimates substantially vary between municipalities and service providers (DoWS, 2019).

The classic market failure is one theoretical justification for considering government action to provide waste management services. It is explained that some public goods have externalities, are not excludable, suffer from information failures, or all three. According to Cowen (1988), public goods are non-exclusive, meaning that anybody can use it, regardless of whether they have paid for it. They are also non-rivalrous, meaning that one person's use does not affect the quantity or quality of the good that is made available to others (Randall, 1993). Waste management is included in the category of "new public goods" where "social" disequilibrium frequently calls for systemic intervention due to the presence of "social" market imperfections. These issues are typically brought on by a failure of both the market and the government. According to Bozeman and Sarewitz (2005: 123), social interactions fail to reflect fundamental public values. "Those values providing normative consensus about (a) the rights, benefits, and prerogatives to which citizens should (and should not be entitled; (b) the obligations of citizens to society, the state, and one another; and (c) the principles on which government policies should be based" are referred to as public values. (2007) Bozeman, p. 13. When existing landfills deteriorate, explode, leak, or slide, endangering human health or the environment, waste acquires major public interest and becomes a problem. Waste is brought into view during garbage collection, the siting of new landfills, the introduction of non-divertible technology etc. (Dodds & Hopwood, 2006).

1.2 Complex Waterscapes of cities and municipalities in South Africa

Floods and inadequate access to water and sanitation top the list of current challenges in the Organization for Economic Cooperation and Development's (OECD, 2020) survey on water governance. Other enduring issues related to water pollution, water scarcity and droughts, aging water infrastructure, waterborne illnesses, and, last but not least, water use competition follow. A significant problem in Africa is contaminated water, where an estimated 115 people each hour pass away from illnesses brought on by poor sanitation, inappropriate hygiene, or contaminated water (UN, 2015). In Africa, poor sanitation is one of the main factors in the spread of diseases like cholera, diarrhea, dysentery, and typhoid. Given that cities are striving to accommodate a rapidly expanding population with a sufficient wastewater infrastructure, rapid urbanization is certainly a factor in the worsening of water quality. Only 20% of people in urban Sub-Saharan Africa have access to safely managed sanitation, and only 25% have access to basic sanitation (WHO/UNICEF, 2019). The World Health Organization (WHO) estimates that unclean water and inadequate sanitation contribute to more than 842 000 deaths annually.

For instance, urban audits in Côte d'Ivoire from 2013 revealed that peri-urban and informal communities lacked the necessary infrastructure and public services that were available in the central business districts. In Accra, Ghana, the accessibility of toilets, waste disposal facilities, and piped water reduces the further one travels from the city center (Vinay, 2017). In Maputo, Mozambique, the identical circumstance can be seen.

Water resources in South Africa are scarce and disproportionally distributed. More than two thirds of the nation's mean annual rainfall is currently retained in dams in an effort to address the uneven distribution of water resources and control floods and drought. Socio-technical systems are complex and "organized, transformed, and reproduced by multiple types of actors and institutions at different levels" (Lawhon & Murphy, 2012:357), where heterogeneous actors provide services in a sectoral regime, like that of sanitation. Examples of these systems include those for sanitation, waste management, and agriculture. These service regimes can be both innovative and conventional, but they must complement and align with the sectoral regime in order to exist (van Welie et al.,2018).

Cities and urban regions have been described as “staging posts in the perpetual flux of infrastructurally mediated flow, movement and exchange,” that include “the distant sourcing, movement and disposal of water reserves” and the removal of sewage (Graham & Marvin, 2009). The sociotechnical systems that bind together an urban territory are the many superimposed, contested and interconnecting infrastructural ‘landscapes’ which mediate between nature, culture, and the production of the city. Water and waste systems make up just one of these overlapping infrastructural landscapes, which include transportation, energy, and communications systems.

Water lies at the intersection of landscape and infrastructure, crossing between visible and invisible domains of urban space” and is “inextricably linked with the idea of infrastructure as a technical and organizational domain that underpins the functional dynamics of urban space (Gandy, 2014). Modern human settlement depends to a great extent on the subjugation of water, particularly by creating environments where sanitary measures limit the impacts of epidemic and waterborne disease (Melosi, 2011; Goubert, 1989). Flows of water affect everyday life, shaping public health, sanitation and salubriousness. Thus, the sanitary ideal (Patrick, 2003) of the reproduction of the city as a habitable space, particularly at the concentrations and densities of the 21st centuries, requires that freshwater be plentiful, and that used water be quickly evacuated. This sanitary ideal, borne of conditions of mid-19th century cities also mirrored emerging notions of liberalism within the city: that flows of all types, whether they be resources or information should be facilitated by the material form of the city. Forty-one percent (41%) of municipal water does not generate revenue. 35% is lost through leakage (National Water and Waste MasterPlan).

The urban poor and those living in unplanned urban settlements are disproportionally affected by flooding (see Douglas et al. (2008) for examples) as, for instance, these settlements are commonly built on marginal land including flood-prone areas, as illustrated in cities like Port Elizabeth (South Africa) and Johannesburg (South Africa) (Viljoen and Booysen, 2006). In addition, the poor materials used for construction increase flood damages and fatality in informal settlements (Pharoah, 2014). Frequent floods not only damage properties and result in direct loss of life but also disrupt traffic and expose people to health risks because of exposure to sewage, industrial waste and waterborne disease (Lall, Henderson and Venables, 2017).

Complex system challenges of SEs in water and sanitation sector.

McGranahan (2015) describes four institutional challenges to low-cost sanitation: (1) a collective action challenge, (2) a coproduction challenge, (3) an affordability challenge, and (4) a housing tenure challenge. These challenges make it difficult for the conventional institutions of the ‘‘modern” economy—private property and markets on the one hand, and the state and bureaucratic processes on the other—to provide sufficient low-cost sanitation. They also help to explain why sanitation often lags behind many other services and commodities.

A person’s sanitation problems depend in large part on the sanitation facilities and behaviours of others, and if everyone behaves in narrowly self-interested ways, sanitation will be far worse that what would emerge from efficient and effective cooperation or collective action. Suppose you live in a settlement where there is open defecation, where latrines flood onto the pathways in the rainy season or contaminate local wells, and where

people do not wash their hand after defecating. If you act alone it makes little difference to the sanitation problems you face. If those exposed to local sanitation deficiencies act collectively, rather than pursuing individual self-interest independently, all can benefit. But orchestrating this is a challenge. Markets will not supply adequate sanitation, and this is often taken as evidence of the need for state regulation or provision (to avoid what was described in Winters, Karim, & Martawardaya, 2014, as a ‘‘tragedy of the commons”).

2.1 Complex Adaptive systems social entrepreneurship business models in provision of public goods in South Africa

Access to water and sanitation services is a fundamental basic human right apart from being necessary for human development though it presents major social, economic and environmental challenges. Emerging water pollution issues are likely to substantially increase the needs and costs of wastewater management, in particular in urban environments. These include improvement of individual and other appropriate sanitation systems, combined sewers and risks of overflows, contaminants of emerging concern (such as micro-plastic) or sludge management (OECD, 2020). There are very significant concerns about the spread of diseases in informal settlements through communal toilets and taps, as well as security concerns around the use of water tanks (Hara, Ncube & Sibanda, 2020).

Social entrepreneurship is an intrinsically complex, emergent, and sustainable mode of continuous change (Roundy et al, 2018). Some SE analysts opine that SEs solve problems by understanding complexities along the lines of complex adaptive systems (Groeger et al., 2019). SEs and the environment are enmeshed in dynamic interdependencies, implying that the development of the entrepreneur’s stories, governance and value strategies are highly sensitive to and affected by the conditions in the environment. These in turn shape the SE’s strategies and on and on it goes. Water management systems are indeed complex as they comprise environmental, human, economic and technological elements with non-linear interactions (Chipeta, Kruse & Venter, 2021) inherent feedbacks, and scale-sensitive processes, and are thus prone to unpredictable outcomes (Cilliers, 2000).

Rather, much of the interaction will display co-evolutionary qualities. From a theoretical perspective, SE business model is a system that participates in, and influences the immediate ecosystem (Snihur et al., 2018), in which SEs employ theories of emergent change to the ecosystem in order for SE venture to make an impact on society. SEs need to sense the needs of the complex and competing ecosystems, at the business model pre-formation stage in the business model (Saebi, Foss & Linder 2019), such as social and commercial ecosystems, and create an adaptive space between these systems (Arena & Uhl-bien, 2016), and also to the strategy of the focal firm (Teece, 2018) by identifying and exploiting new products, processes or market.

The provision of basic services also falls within the domain of achieving the complex millennium development goals of improving health and sanitation efficiency of the economy and reducing environmental pollution. To confront such complex problems, various legislative, technological, organizational, educational and other measures are needed. As such, SEs have to deal with many established institutions and emerging ones, host of other companies and multiple stakeholders with competing interests and claims.

SEs are involved in continuous, multilevel, cooperative and evolving interactions between the socio-political, technical, financial, environmental and institutional (government and stakeholder) realms (Ghorbani, 2013:3) on policy issues, in the area of “public health, environmental concerns, and resource value, and economic inclusivity (Rodic, & Wilson, 2017).

SEs operation in South Africa, is made more complex as they directly interact with governments and public agencies accountable for citizens’ welfare in an adaptive governance system whereby all actors are included in decision making and governance processes, for positive impacts on communities (Dietz, Ostrom & Stern 2003). SEs have to negotiate political or financial support or to influence changes in policies and regulations (Pache & Chowdhury 2012).

SEs also have to engage a number of business enterprises, other SEs, subcontractors, financial institutions, and social investors in contractual arrangement to pursue its mission, some of whom it engages in further collaborative relationships, as with other organizations (NGOs, NPOs), local and central governments, residents, and the media in social activity (Muñoz & Tinsley, 2008). Stakeholders’ exhibit adaptive behaviour based on

component interactions and environmental changes (Roundy et al., 2018) and cooperate to find solutions to problems when they trust each other (Ostrom, 1990), though getting widespread agreement between relevant stakeholders is challenging (Sharma-Wallace, Velarde & Wreford, 2018; Jones, 2020).

2.2 Motivations of sanitation entrepreneurs.

There are a myriad of theories that describe the entrepreneurial mindset (Haynie, Shepherd, Mosakowski, & Earley, 2010), motivations (Carsrud & Brännback, 2011), perceptions (Renko, Shrader, & Simon, 2012), intentions (Lee, Wong, Foo, & Leung, 2011) and opportunity recognition and evaluation (Renko et al., 2012) as micro-level antecedents to entrepreneurial activities(Elliot, 2019), especially in the context of developing countries (Ghalwash et al., 2017). SEs foci consist of multiple activities, from the exploitation of opportunities to build social wealth (Sarif, Ismail, & Sarwar, 2013) to entrepreneurial activity based on communal or environmental initiatives (Canestrino et al., 2020).

Motivations and expectations (expected social, economic or environmental effects) are the principal factor which differentiates those successful nascent entrepreneurs from those who fail to achieve business success (Renko *et al.,* 2012:667). Entrepreneurial motivation triggers individuals' entrepreneurial behaviour, helping in the understanding the link between entrepreneurial intentions and execution of opportunities (action) (Carsrud & Brännback, 2011). Social entrepreneurs tend to be driven by strong social goals to pursue entrepreneurial activities, without any reward beyond the satisfaction generated by achieving their targets (Carsrud & Brännback, 2011). Motivations underpinning prosocial behaviour include self-satisfaction, religious beliefs, empathy for the poor and extrinsic factors associated with other positions or roles held by the entrepreneur (Willetts et al, 2016).

Prosocial motivation enables SEs to develop socially-oriented situational factors that push individuals to act outside the laws and regulatory guidelines in society (Minola et al., 2016), using culturally prescribed aspirations in the realization of SE desires. As such, SEs usually have the intention to do so from the beginning. This is followed by events that trigger their intention to start the business which invariably culminate in opportunity identification. In this context, individuals' intentions are the results of their attitude, subjective norms and perceived behavioural control (Ajzen, 1991). Once SEs' intentions are triggered by events, SEs knowledge of status quo, community influence, entrepreneurship, social problems, political problems, personal factors, situational factors, etc. are also triggered (Ebrashi, 2013). It is these triggering occasions that direct the connection between SEs intentions and behaviours and build the consistency of intentions to frame SEs behaviour.

SEs subscribe to the notion that social change shall not happen without focusing on people, as they are the primary assets, benefactors, and beneficiaries of any investment in the community (Di Domenico, Haugh, & Tracy, 2010). Compassion as a motivation for SE is defined as a multi-stage social process of alleviating someone else's suffering (Kanov et al., 2004) that starts when someone notices another person's pain, an event called the pain trigger (Dutton et al., 2006). It is the process of noticing someone else's pain, empathetically understanding it, and responding in some way designed to alleviate it (Frost et al., 2000; Kanov et al., 2004). The impulse to be compassionate is innate (Frost et al., 2006), in that people are intrinsically moved to help when they see other people in pain by a prosocial motivation that produces empathy for a suffering individual or community (Goetz et al., 2010; Nussbaum, 1996). This motivation is key to social entrepreneurship (Miller et al., 2012), because it enhances awareness of vulnerable circumstances and leads to an understanding of the significance of suffering and the issues contributing to it (Nussbaum, 2003).

With a prosocial perspective catalyzed by compassion, cost/ benefit analysis shifts and the risks associated with SE venture become more palatable. For SEs, empathy plays a very important role in business intentions which are explained through two complementary mechanisms: self-efficacy and social worth (Bacq & Alt, 2018). SEs' social businesses, in this context, are those whose benefit goes to a localized and weak section of the society (such as the poor, long-term unemployed, disabled, discriminated, socially excluded, etc.), a group that is often neglected by the government (Seelos & Mair, 2005; Certo & Miller, 2008).

Local, social or lifestyle motivation/orientation contributes to greater local embeddedness of business initiatives (Korsgaard, Ferguson & Gaddefors, 2015; Morrison, Ramsey & Bond, 2017). Local traditions and SEs community roots also work as a trigger to start a social business. Indigenous traditions work as a foremost factor in social entrepreneurship (Widjojo & Gunawan, 2019). Skills and knowledge that come from within the local community, supported by the active participation of local people, help SEs to reach multiple goals. Ayeni et al., (2021) talked about the desire of African people to gain social acceptance, respect and recognition by enhancing their economic status through SEs, formal or informal.

Overall, while the commercial entrepreneur seeks to create private value, SEs prime motivator is to create societal value (Mair & Noboa, 2003; Santos, 2012), so as to do something for mankind (Ghalwash, Tolba, & Ismail, 2017).

3.1 Research Aims

The need to improve and speed up water and sanitation service delivery is a concern of South African local governments. The aim of this study, therefore, is to add to the body of theoretical and anecdotal suggestions by providing an empirical analysis of the extent to which SEs measure their impact within the complex environments of water and sanitation public service provision in South Africa.

3.2 Research Question

The research questions that this study seek to understand is what motivates water and sanitation entrepreneurs in South Africa?

3.3 Research Design.

Our qualitative study focuses on social purpose businesses, and purposefully selected profitable water and sanitation sector SEs in Gauteng and Western Cape provinces. Shown in Table 1, the adopted semi-structured interview method consisted of predetermined main themes and follow-up questions (Saunders & Lewis, 2012, Ciambotti et al (2020). Participants were encouraged to speak freely about their perceptions and experiences of the general history of their SE, (2) their social business model; (3) challenges that SEs faced and how these were overcome; and (4) scaling strategies and pathway to growth, among others. This technique was appropriate as it complemented the qualitative exploratory nature of the study and that the data generated enabled purposeful theory building (Khan 2008).

Table 1: The design of empirical research (Authors).

Research subject	Social enterprises			
Research strategy	5 case studies			
Data collection method	In-depth interviews		Observations	Secondary data
Data sources	Social entrepreneurs	Stakeholders	Social entrepreneurs	Social entrepreneurs
	Triangulation			
	Ethical			
	Communicative			
	Validation of findings			

3.4 Interview technique

As a framework for the combined results, established procedures for inductive theory building (Denzin & Lincoln 2005), we used pre-developed categories and codes from the literature, and those inductively derived from open-ended questions which probed participants further until data saturation was reached after 12 interviews were conducted.

4.2 Description of Participants and Context

Residents of South Africa's poorest townships sometimes suffer from a lack of government spending on infrastructure and essential services like water, sewage, power, solid waste management, roads, and transportation, as well as health and educational programs. The sample especially included ten SEs working in the water and sanitation sector who provided trash recycling and water treatment services to communities, businesses, and individuals in addition to local governments. Engaging with these SEs yielded illuminating information about the essential ingredients for success required to develop a business model for sustainable social ventures with systemic emergent change and how they evaluate their effects.

3. Study context: municipal water and sanitation management challenges in South Africa.

In 2016, it was anticipated that South African municipalities needed R39 billion annually for operational costs to provide services to the underprivileged and an extra R41 billion for administrative costs to do the same (SADoCGTA, 2016). According to national government policy, the city of Cape Town offers free basic water and sanitation services to those living in informal settlements, with a minimum of 1 toilet for every 5 families and 1 water tap for every 25 homes within a 200-meter radius. Over 50 000 toilets are frequently cleaned, and the city furnishes and maintains over 10,000 communal standpipes (taps). Additionally, the City of Cape Town spends about R350 million annually to clean up indiscriminate rubbish dumping (CoCT, 2019). When compared to residential waste collection, this is 20 times more expensive. According to the South African National Garbage Information Baseline, municipalities would not be able to consistently provide fair waste collection services to all households, even if they tried (Madumo, 2017; SADEA, 2018b). This will result in several unmet societal requirements (Light, 2008).

The unreliability of the ideal of pure and abundant water from the tap has also recently awakened Cape Town residents as recurring droughts put restraint on water use. Limited water supply is a common occurrence in other cities. In major water-stressed capitals like Pretoria, a water crisis is imminent.

4.3 Data Analysis

Audio recordings of interviews that were transcribed and uploaded to ATLAS.ti for data analysis served as a supplement to the primary data collected between August and October 2019. These were used as data support and were uploaded to ATLAS.ti for data analysis. Even though the study employed a deductive examination of the data, the necessity to derive a cohesive approach to SEs business models across intricate ecosystems allowed us to extrapolate new themes and categories from the information, which provided the conceptual framework with some early support. Additionally, the corresponding code frequencies are evenly distributed throughout the several themes, demonstrating the measurement instrument's relational coherence and providing a fair representation of all the study concerns. The study employed both inductively obtained codes from the data as well as categories and codes from the literature as a foundation for the combined results.This is in line with established procedures for inductive theory building (Denzin & Lincoln 2005). Furthermore, by triangulating the themes within the various sectors, it can be inferred that the different sectors have low levels of variability between the different themes, therefore strengthening the coherence of the proposed conceptual framework.

5. Research findings: SEs rich story telling about their social impact

SEs are typically thrilled with the depth of their business motives and how they pursue these to address market failure. In that one needs to set the stage for emergent change, they liken it to baking a cake. Even though all the ingredients are on hand, the oven still needs to be heated. The cake can only be shared once it has been taken out of the oven. The oven isn't hot enough just now. Small-scale SE interventions have localized, gradual social effects, though Water E claims that these effects have a broader impact on South African society.

From our data, certain theme vignettes appeared. These are our own additions to the original data, and they can be seen as a composite depiction of the most important themes that emerged from the data analysis (Alvesson & Sköldberg, 2018). Citing Alexander and Becker (1978: 94), we can state that "vignettes are brief descriptions of a person or a social setting that contain precise references to what are regarded to be the most essential aspects in the decision making processes of interviewees."

5.1 SE's compassion as a motive

PPP projects are a realistic, appropriate choice because the water and sanitation sector frequently has high levels of inefficiency and requires considerable upfront investments and sunk costs (Marques, 2018). According to Ameyaw and Chan (2016), the water sector has used the PPP model most commonly in developing nations with inadequate infrastructure, which has led to benefits like lower operating costs, more labor productivity, and better quality of life for locals (Ameyaw & Chan, 2015; Davis 2005). Additionally, SEs may create low-cost solutions for healthcare, renewable energy, or water purification that can help to raise the quality of life for those who live in poverty (Onuka, 2021).

"The poor in the country make up SEs customer base. Our other initiatives are at squatter camps where we put sanitation treatment plants on a monthly retainer basis. Our service restores privacy and dignity as the person makes use of the toilet in temperature of 40 degrees celcius, under cover. – Water A

"We would like to uplift people and improve their living conditions" – Water B

"*Based on the human capital, we believe in instilling entrepreneurial spirit in our previously disadvantaged people, We are not stopping at anything; We look for solutions with our innovation……..When preparing for our project, we are always driven by the realization that we have to be four times better than our competitors at any time in order to gain market recognition... So, we are we are always looking at things that give us the motivation to excel, to be pioneers and to create new things"* – Water E

5.1b Religious motive

"*how did we get through this? you know, it must have been a higher hand. But we don't do things, to gain the favour of God, we know that he paves the way for us, and we pray for this*" – Water E

5.2a SE's problem solving as a motive

SEs said that their motivation is driven by community engagements in order to be able to be sensitive to their demands. SEs had a pretty strong incentive for solving problems that connect to social needs and market failure. Some businesspeople in Dar es Salaam, Tanzania, have built small-scale piped networks to deliver water to canteens (water kiosks) without a piped connection and sell water from the Dar es Salaam Water and Sanitation Company (DAWASCO) even in locations outside the utility's piped network. Water tankers, lorries, pushcart, and bicycle vendors are some examples of mobile merchants who purchase water from various sources and resale it to houses. Another system is where DAWASCO supplies water to a community water public taps, managed by a Water Committee elected by the community for a three-year term (cited in Obosi, 2018):

"*I think this is going to work. And I've been going at it 14 years. I believe in my solution, my product and the way it is implemented, because it involves people*" – Water D

"*But what motivates me is the fact that you're either part of the solution, or you are part of the problem. And I would rather to be part of the solution.*" – Sanitation D

"*I think we understand this; this country is going through some massive difficulties. And we have to, we have to try and make a difference.*" – Water A

"Our *ambition is to make a better life for all of us out there; At the end of the day it gives us satisfaction when we see that we have tackled a social problem and we have come out on top at the end of the day.*" – Water B

5.2b Motive to improve customer satisfaction

More than 150 people use the Iko Toilets projects in Kenya every day. This is due to the fact that they are reasonably priced and give clients other benefits like tissue papers, hand wash soap, and water (Mwangi, 2015:

50). SEs have looked for simple service supply strategies that would help customers become more independent of public services and self-sufficient:

> *"To a certain extent, customers took the initiative to do something for self-sufficiency."* – Sanitation D

> *"It's going to become more and more relevant that people start looking after their own water requirements."* – Water A

> *"The community has to be self-sufficient in basic service delivery provision. They have to accept the principle that users must pay for services.* – Water E.

5.2c Motive to become self-sufficient in public service delivery

> *"To become self-sustaining public service delivery venture. This is because we're going to grow our economy. We have to pay for the development of the economy. We have to transfer that zest and will, to show people that we have to push hard, and break barriers to become self-sustaining in this venture."* – Water E.

5.3a SE's ambition is to scale business venture

By emphasizing entrepreneurial leadership under community management, Kaboolian (1998) and Page (2005), among others, have proposed decentralizing the delivery of public services through creative community water groups. The underprivileged and currently undervalued segment of society will have more access to affordable water as a result of these creative public-private partnerships.

As part of its strategy for providing services in low-income regions, Kisumu Water and Sanitation Company (KIWASCO) and partners have delegated the delivery of water services to community-based, small-scale commercial entrepreneurs since 2004. (Obosi, 2018). Water is handled by water committees under the direction of elected officials like street chairpersons. In Dar es Salaam, Tanzania, the performance of community water projects in ensuring reliable access of water to citizens greatly depend on the performance of local political leaders (Dakyaga, Kyessi & Msami 2018).

Today's decision makers at all levels are interested in scaling SEs' social impact geographically, by product/service, or by a combination of both as they provide value to local communities and society at large (Buckingham & Teasdale, 2013). SEs are driven by a desire to make a significant influence. SEs scale through innovation, partnerships, and excellence, all of which are motivated by their own norms and values. It is suggested by Hlady-Rispal & Servantie (2018) that a deeper understanding of where and how value can be scaled through SEs value network is necessary.

> "*Our drive is to expand our business horizons, and to become one of the top water treatment companies in South Africa."* – Water E

> *"The business model is self-reinforcing I don't know where it comes from. It must be blessing from above."* – Water E

5.3b Scalability through knowledge sharing

SEs frequently engage in knowledge-sharing procedures, also referred to as cross-fertilization or cross-pollination (Avise, 2014; Gabriel, 2014). By exchanging expertise, SEs can encourage or support their scaling process and learn valuable insights from their interactions with traditional businesses. They could gain from working with other social entrepreneurs that could introduce beneficial new procedures, such those for providing social services. During this process, it was confirmed that keeping positive relationships with suppliers who comprehend the SE model is crucial for their business strategy by certain respondents:

> *"We've engaged with overseas suppliers many times; they are the manufacturers. But when they started with the tactics of maximising the profit, we decided to travel overseas to see what was going. We spent three to four weeks overseas. We gained knowledge. Upon our return we started trying our own thing."* – Water E

"In that context we've developed relationships with a group of service providers that support us in terms of our business model. So, we've got, for instance, a toxicologist and a quality specialist that we've developed relationships with. We really go and find people that support us in terms of what we do." – Sanitation A

5.3c Scalability by expansion through diversification.

By diversifying the activities associated with their mission, SEs can scale their impact (Weber, Kröger & Lambrich, 2015; Avise, 2014). SEs can do this by adding an upstream or downstream activity to their value chain (vertically), adding a new activity to their portfolio in the industry where they already operate - thereby building on their expertise (horizontally), or expanding to a completely new field of activity.

"*The strategy of the company is to become the leading water and wastewater treatment company in in South Africa, the largest, and to expand the entire group to be become a major employment creation entity and as diversified as possible."* – Water E

5.4 SEs seek sustainability of business venture

"To certain extent, I think it was more of the fact that they took the initiative to do something to be self-sufficient." – Sanitation D

"it's going to become more and more relevant that people start looking after their own water requirements." – Water A

"Yes, that the community can do it for themselves, because that's job creation and skills transfer... and it makes it theirs like they take ownership of it being more involved. It's a psychological thing. It's more than physical. It's a psychological interaction mindset change. In the bigger scheme of the involvement… a community could actually not wait for government to do this thing that they can be looking after their own interested, find in themselves to actually do the next thing without waiting. Because it's killing people to wait and wait and wait and the thing is, it's still a choice of the individual." – Water D

"To become self-sustainable, because we're going to grow our economy, You know, in, you have to pay, you know, for the development of the economy in SA you know, transfer, that zest and will, to show people that you have to push the barriers, you have to break barriers you have to push to become self-sustainable." – Water E

5.4.1 Product pricing

The Safe Water and AIDS Project (SWAP, formerly known as the Society for Women and AIDS in Kenya), an NGO that acts as a hub for neighborhood HIV self-help groups, used a "social entrepreneurship" model of SWS distribution as a means of income generation, focusing on impoverished families in rural or peri-urban communities with limited access to healthcare. According to this plan, members of the SWAP group would buy water treatment items at wholesale costs, resell them to neighbors for retail prices, and keep the difference as compensation (Mwangi, 2015:3).

"Firstly, having a safety net in regard to the service fee, instead of relying solely on the product That helps us be sustainable." – Sanitation B

5.4.1.1 SEs motive of achieving financial sustainability

Respondents emphasized the importance of measuring SEs' financial performance, often citing rigorous quantitative measures not only for tangible outcomes but even for social impact measurement, along the lines of Rawhouser et al (2019). SEs sustainability is based upon the creation of a mix of income streams by developing relational assets with external stakeholders (Newth, 2016) from corporate social responsibility funds of established firms (Barnard, 2019), such as Old Mutuals Foundation who contributed an estimated $700 million in 2014 (World Bank, 2017:38).

"Yes, the community can do it for themselves. That's job creation and skills transfer... and it makes them take ownership of it being more involved. It's psychological more than physical. It's a mindset change. In the bigger scheme of the involvement… a community could actually not wait for government to do this thing. They can look after their own interest. Because the current situation is driving people crazy. They can't wait forever." – Water D

5.4.2 SEs impact through sustainable funding.

Within the SEs business model, the positive social impacts resulting from SE efforts serve as returns for resource providing sponsors. Respondents hence cited the necessity to have a sustainable funding mechanism for the business model:

"Firstly, having a safety net in regard to the service fee, instead of relying solely on the product. That helps us be sustainable." – Sanitation B

"Our sponsors continue supporting the company. So that for me tells a story, The positive one of a sustainable relationship." – Sanitation A

5.4.3 SEs impact through sustainable human resources.

Entrepreneurial product promotion and sales approach employing local residents as vendors and agents of behaviour change was an effective method of increasing access to health products in populations with relatively low exposure to radio and print advertisements and limited access to retail stores (Mathew & Sonfield, 2004). Some SEs contribute indirectly to community's good health by ensuring that individuals live healthy lives and by promoting well-being for everyone and all ages. They do so through SEs healthcare activities after work and demonstrating social responsibility (Urmanaviciene & Butkeviciene, 2023).

It seems as though an investment in the human resources of the social enterprise reinforces its ability to manage the tension between social and financial aims, as Sanitation B pointed out:

"I think social good exceeds economic gain at this stage… we are managing these tensions by basically reinvesting into our human capital" – Sanitation B

"The ambition is to create employment, and put value in back into people's lives, making them proud of what they do, ensuring there is some upliftment of who they are… We can't underestimate the difference this makes to the specific person, his surroundings, his family, his children etc." – Sanitation E

"The land value associated with the current low cost of landfill space will grow exponentially. So, the more time you can give a landfill, the more economic benefit you give the consumer… also to ensure embeddedness of the customer into your network" – Sanitation E

5.4.4 SEs social impact through alternative service delivery model.

Respondents also frequently discussed the importance of having sustainable alternative service delivery solutions or business models. Respondents expressed a wide array of elements that constitute sustainable alternative service delivery solutions as follows:

"Repeat businesses is a good indicator of having a sustainable solution… we realized we have to grow. Once we grow, we have to keep feeding the machine. We had to find the market to be able to grow sustainably. That's why we looked at areas that are under-serviced, such as squatter camps or rural villages." – Water A

"The more and more we grow our customer base, the more product we have, the more product we have more people, the more people we employ. As we employ more people, we get and sell more products. We have to sell products to sustain the whole model." – Sanitation B.

"We are working with the customer; and in some cases, to even reduce on-site waste. This is so that we ultimately have a sustainable alternative solution and provide peace of mind. Over the years, this has been our slogan i.e., different ways of providing environmental of peace of mind; what exactly does that mean? It means customers don't have to worry about waste." – Sanitation A

6. Discussion of SEs motives in water and sanitation

This study provides a high-level overview of the various constructs that were validated by SEs in the water and sanitation sector within the theme of social enterprise's ecosystem Impact in South Africa. This was to gain some insight into the complex conundrum of assessing SEs impacts and how the tension between the social mission and financial gains was managed by social entrepreneurs.

The example of Iko Toilet in Kenya demonstrates the additional value that SEs bring in the form of cleanliness and some places the provisioning of background music playing to the satisfaction of the customer (Bluenow, 2012). Iko Toilets are full bathrooms, with multiple toilets, showers, and sinks that provide clean water and soap. It's not only completely new experience for people using them but also a pretty place for common people in the developing world.

Most SEs are involved in *co-production*, in which users – and often other local stakeholders – participate in the enterprise's governing bodies, leading to the adoption of *multi-stakeholder governance models* and bottom-up efforts to create social impact (Stephan, Kelly & Patterson, 2013). SEs operation in South Africa directly interact with governments and public agencies which are accountable for citizens' welfare in an adaptive governance system whereby all actors are included in decision making and governance processes, for positive impacts on communities (Dietz, Ostrom & Stern 2003). SEs also have to negotiate complex political or financial support or to influence changes in policies and regulations (Pache and Chowdhury 2012).

SEs also have to engage a number of business enterprises, other SEs, subcontractors, financial institutions, and social investors in contractual arrangement to pursue their mission, by engaging in further *collaborative relationships*, as with other organizations (NGOs, NPOs), local, regional and central governments, residents, and the media in social activity (Muñoz & Tinsley, 2008). Stakeholders' exhibit adaptive behaviour based on component interactions and environmental changes (Roundy et al., 2018) and cooperate to find solutions to problems when they trust each other (Ostrom, 1990), though getting widespread agreement between relevant stakeholders is challenging (Sharma-Wallace, Velarde & Wreford, 2018; Jones, 2020).

Achieving service delivery change is a formidable challenge given the obduracy of the large, complex systems that have developed over long time frames and are characterized by highly intertwined sociotechnical, economic, institutional, and organizational structures. Altering such systems poses multi-faceted challenges in social and institutional governance as well as policy implementation (Burch et al., 2014).

When SEs and resource providers are involved in *symmetric relationships*, assessing financial and social impacts help SEs to improve their performance so that all parties can achieve their common goal of creating social impact for those in need (Zamagni et al., 2015).

SEs, as hybrid organisations, co-generate social innovation with the community, resulting in widespread well-being and sustainable improvements in the living conditions of the community (Corvo & Pastore, 2018). Unsurprisingly, respondents most frequently refer to the change in human living environments as the most important outcome of social enterprises. The second most important driver of company performance was the financial gains of the organisation in line with the mission of the organisation. *Customer satisfaction* featured prominent within this category and a balanced approach or a shared vision between all shareholders was also emphasised.

Furthermore, some respondents measure impact in terms of reducing the carbon footprint, Waste A measures impact through *community satisfaction* and compliance metrics to reinforce SE 'embeddedness' and 'rules of interaction'.

Themes emerging from the study include those of SE *sustainability and scalability*. Strong emphasis has been given to the sustainability of the solutions, the venture, the industries, and the stakeholder network which enable the social enterprise to increase the scope and volume of value generation and capturing within the network. The latter is regarded as an important metric for measuring impact and performance.

SEs capitalise on economies of scale and try to reduce costs while increasing the *efficiency and productivity* of their operations and processes (Weber, Kröger & Lambrich, 2015). Some SEs emphasize how they have managed to grow the company to be one of the major contenders in their sector.

6.1 Concluding remarks

Entrepreneurial ecosystems are complex, with numerous connections and resource interdependencies, second order effects, and the capacity to produce variation. In order to supply public services in a complicated socioeconomic setting involving the government and other stakeholders, this study looked at how South African social entrepreneurs evaluate their impact. Given the practical limitations of the South African government, some respondents seek to supply alternatives to public services as a means of gauging impact. In a way similar to baking a cake, SEs try to address market failure, implying the necessity of fostering the right conditions for emergent transformation.Some SEs speak about infecting society with their impact, ultimately suggesting their passion for their social mission. They see their business model as a complex adaptive system, in which an SE, as a focal firm, needs to embed the culture of creating conditions for emergent change.

SEs complicated nuances of success stories are an interesting emerging phenomenon that relate to the measurement of success. SEs report that measuring social impact requires out-of-reach resources (time, money and knowledge) (Haski-Leventhal & Mehra, 2015). However, our respondents mostly did not encounter an unsurmountable tension between SE's social mission and firm's financial gains. They see the two as manageable mutually-reinforcing mechanisms. Maintaining trust relationships in the stakeholder network enables social enterprises to manage this tension.

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Prof Ngoepe-Ntsoane's experience spans from public sector, NGO, and Academia. She worked in the Ministry of Agriculture, Statistics South Africa, and the United Nations Development Programme before joining academia as her final career destination. She has acquired a considerable research exposure and experience since 2018 when she joined academia as a Post-Doctoral Fellow. She moved quickly through the ranks where she was appointed as a Senior Lecturer in 2019 and an Associate Professor in 2022 and to date, she holds the title of a full Professorship in the Graduate School of Business Leadership at the University of South Africa from the beginning of 2024. This is regarded as a remarkable move due to her hard work and the excellence she has displayed in her research and innovation work. Currently, she is responsible for the Development Policy and Strategies and Human Security and Development modules. She is well published within the Public Policy, Sustainable Development: (People, Planet, Prosperity), Social Justice, Gender Studies, Climate change, Economics and Business all within the Human Dignity, Rights and Ethics Niche Area.