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Sustainability of Social Enterprises Involved in Waste Collection and Recycling Activities: LESSONS from Tanzania

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ABSTRACT

This article investigates how social enterprises providing waste collection and recycling services overcame start-up challenges and sustain their operations. Based on analysis of five cases in Tanzania, it is evident that waste collection and recycling enterprises start as entrepreneurial entities driven by the opportunity to fill the service delivery gap left by the state. Although the enterprises studied have had a social impact, they have experienced several challenges, including limited access to resources, negative perception of their activities, competition, unsupportive policies, unreliable supply of raw materials, dishonesty of staff and/or waste pickers and poor working conditions. However, the enterprises sustained themselves through good management, engaging the right teams, supporting waste pickers, marketing and networking, developing their skills, using appropriate technology, reinvesting their earnings, diversifying and being members of cooperatives. The article contributes to knowledge by combining the traditional entrepreneurship and socio-environmental entrepreneurship perspectives to explore the sustainability of waste collection and recycling enterprises.

KEYWORDS

Entrepreneurship; social enterprise; waste collection; recycling; sustainability

Introduction

One of the central concerns about solid waste management (SWM) is the sustainability of the grassroots initiatives providing waste collection and recycling services in developing countries. While several social and environmental entrepreneurs are becoming part of the formal waste management system, little is known about the functioning and sustainability of social enterprises involved in SWM (Rathi 2006; Guerrero, Maas, and Hogland 2013). To address this gap, we draw on the entrepreneurship theoretical view and socio-environmental entrepreneurship literature (e.g. Isaak 2002; Walley and Taylor 2002) to explore the sustainability strategies of waste collection and recycling enterprises in Tanzania. In particular, we investigate how social enterprises providing waste collection and recycling services overcame start-up challenges and sustain their operations. By enterprise sustainability we mean its ability to overcome start-up

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challenges, survive, grow and become competitive (Charles 2014). Accordingly, we provide a greater understanding of the sustainability of enterprises that combine social goals with the pursuit of profitable opportunities to address environmental and service provision gaps left by governments (Mair and Marti 2006; Huybrechts and Nicholls 2012; Warnecke 2013). It is noted that due to the failure of the state, waste pickers and other actors establish themselves as small groups, extended families, cooperatives, associations, community based-organisations (CBOs) or micro-entrepreneurs to carry out selective waste management activities (Gutberlet et al. 2016). Regardless of whether their motive is commercial, environmental or social, these actors are seen as key players in complementing the waste management service previously dominated by an insufficiently functioning public sector (Huisman, Breukelman, and Keesman 2016).

Given the increasing amount of solid waste generated in urban areas, the main dilemma is whether the emerging social enterprises have the capacity to sustain SWM activities. A logical question is that if local governments are unable to provide a satisfactory SWM service using their own resources, can grassroots initiatives provide this service effectively? This question has prompted research on waste management in socio-environmental entrepreneurship discourses (Gutberlet et al. 2016). Studies have attempted to show how an innovative form of creating economic and societal value by means of an environmental breakthrough or socially beneficial market innovations contribute to the well-being of societies (Schaltegger and Wagner 2011). The role of grassroots initiatives in improving urban waste management by providing a waste collection service is acknowledged (Gutberlet et al. 2017). The literature agrees that collaboration between all stakeholders is needed to create an effective SWM system and that there is huge potential in enhancing private sector involvement (Guerrero, Maas, and Hogland 2013; Wilson, Velis, and Rodic 2013). It is evident that some initiatives initially taken by CBOs have turned into socio-environmental small-scale businesses and then into institutional entrepreneurial initiatives (Gutberlet et al. 2016). Nevertheless, in many cities of the global south, local governments, policy actors and development projects doubt the capacity of social entrepreneurs to play the role of cleaning cities. Likewise, the literature wonders whether social enterprises that operate alongside the public sector to fill service delivery gaps, such as collecting, sorting and processing waste, can be sustainable (Guerrero, Maas, and Hogland 2013). This calls for more research on the characteristics and functioning of social enterprises involved in SWM.

In this article, we analyse social enterprises involved in collecting and recycling waste in Dar es Salaam, Tanzania. The criteria that make an organisation a social enterprise are its social aim, innovativeness and business orientation. In recognition of the fact that waste collection and recycling initiatives in Dar es Salaam vary in their legal structures (Huisman, Breukelman, and Keesman 2016), we group the initiatives studied together under the broad concept of social entrepreneurship and name them social enterprises. We recognise that social enterprises can provide small-scale, low-cost solutions that are adapted to the local context and can help the public sector to be innovative and more cost-effective (Huybrechts and Nicholls 2012). They search for inventive ways to sustain themselves and use market-oriented activities to generate an income that can then be reinvested in their organisation. We note a growing

consensus that social entrepreneurship has huge potential to solve the waste problems that developing countries face. Contrary to the literature that looks at social entrepreneurship from the social purpose perspective (e.g. Thompson 2002; Haugh 2007), we reveal how innovative and entrepreneurial waste management enterprises evolve to meet society's needs as well as generating a return to ensure their sustainability. As such, the article increases our understanding of the functioning of social enterprises by showing how capable they are of both pursuing the social goal and generating an income.

The next section presents the theoretical and empirical literature on entrepreneurship and socio-environmental entrepreneurship. The methodology section presents the context, study design, data collection approach and analysis. Thereafter, the findings are presented in the form of a description of each initiative and cross-case analysis. Finally, a discussion of the findings, implications and conclusions are presented.

Literature review

Our article is informed by entrepreneurship theories with an emphasis on the socio-environmental entrepreneurship literature. The extant literature shows that the term 'entrepreneurship' has a diverse range of meanings, drawn from several economic, psychological, cultural and sociological views. In traditional economics in the seventeenth and eighteenth centuries, an entrepreneur was perceived to be someone who undertakes a project or activity. Later on, entrepreneurs were perceived to be those who shift economic resources from an area of lower to an area of higher productivity and greater yield, as well as agents of change that move the economy forward by serving new markets or creating 'new ways of doing things' (Dees 2001), and innovators who start new profit-seeking business ventures (Schumpeter 1934). Schumpeter emphasises that entrepreneurship is the act of carrying out new combinations of productive resources. Wickham (2004) asserts that entrepreneurship is the creation of new value by identifying new opportunities, attracting the resources needed to pursue those opportunities and building an organisation to manage those resources. It involves discovering, evaluating and exploiting opportunities, and a set of individuals, who discover, evaluate and exploit them (Shane and Venkataraman 2000). According to Madhuri (2013), entrepreneurs have entrepreneurial attitudes and skills, such as business know-how, innovativeness, creativity, flexibility, the willingness to take risks and are oriented to growth.

In this article, we hypothesise that entrepreneurs can find new opportunities for managing waste, which can be successfully converted into a business while addressing social and environmental challenges. In this way, we incorporate social and environmental aspects in the conceptualisation of entrepreneurship. In line with Dean and McMullen (2007), we observe that entrepreneurship theories have the potential to explain the market conditions in which entrepreneurs can earn entrepreneurial rent by reducing social and environmental harm. Consequently, our analytical framework draws on a typical explanation of economic entities to analyse the socio-environmental entrepreneurship context encompassing both social and environmental values. Social entrepreneurship is perceived as an innovative way of creating economic

and social value by means of an environmental breakthrough that is socially beneficial (Schaltegger and Wagner 2011). It is broadly defined as "a process involving the innovative use and combination of resources to pursue opportunities to catalyse social change and/or address social needs (Zahra et al. 2009; Gutberlet et al. 2016). Zahra et al. focus on how social entrepreneurs discover and take advantage of opportunities for the purpose of promoting social wealth via the creation of new ventures or the recombination of existing organisations. Basically, socially entrepreneurial activities blur the traditional boundaries between the public, private and non-profit sector, and emphasise hybrid models of for-profit and non-profit activities (Johnson 2000). Although it can occur within governmental sectors, in most of the literature it refers to social entrepreneurship across the non-profit or business sectors (Austin, Stevenson, and Wei-Skillern 2006), and this conceptualisation is adopted in our article. It is noted that entrepreneurs within the social economy play a role in pioneering creative responses to environmental issues, although often with only limited impact in terms of the wider dissemination of solutions. Although environmental entrepreneurship is variously called green entrepreneurship (Isaak 2002), ecopreneurship (Isaak 2002; Walley and Taylor 2002; Gutberlet et al. 2016), sustainable entrepreneurship (Dean and McMullen 2007) and sustainability entrepreneurship (Tilley and Young 2009), we consistently use the term environmental entrepreneurship to avoid confusion of terms and concepts. In this connection, we view grassroots initiatives as those taken by socio-environmental entrepreneurs, who contribute to the overall environmental and social progress through their innovative initiatives (Beveridge and Guy 2005). The motivation of socio-environmental entrepreneurs is to earn money while contributing to solving environmental problems, such as the lack of effective SWM services (Gutberlet et al. 2017).

In the light of the socio-environmental entrepreneurship literature, some researchers have attempted to study the participation of those at the grassroots engaging in waste management. For instance, Tefera and Negussie (2015) examined the opportunities and challenges of micro and small enterprise (MSEs) involved in SWM in selected cities in Ethiopia. Their findings indicated that the potential opportunities MSEs had through being involved in waste management were delivering a quality service, protecting the environment, providing jobs through charging those willing to pay and social equity. However, most MSEs were affected by limited resources and lack of support, the perception and awareness of the community, inadequate training, unorganised fee collection strategy and limited revenue. In terms of the motivation of those at the grassroots for being informally involved in waste management, Baud and Post (2002) established that they are often driven by poverty, and so in their struggle for survival they start their operations spontaneously, but sometimes continue them haphazardly. Further, research shows that waste pickers find it difficult to create formal cooperatives or associations, they cannot access funding opportunities, are susceptible to price oscillations and are subject to exploitative relations with intermediaries (Tirado-Soto and Zamberlan 2013). It is often hard for organised waste pickers to achieve self-management through 'induced networks' and public-private partnerships (Tirado-Soto and Zamberlan 2013). Gutberlet et al. (2016) revealed that while in most cases organised waste pickers receive some form of financial support or technical

advice from an NGO, a university or local government, one of their most significant challenges is how to continue with their operations once the support ends. Contrary to many authors, Rouse and Kenman (2005) found that those operating in the informal sector are much more likely to be sustainable. Rouse (2006) added that managing solid waste in partnership with the private sector can save public money as it devolves responsibility for certain activities to informal partners. Ideally, municipalities and development partners/actors should provide waste pickers with adequate facilities (warehouses, equipment, vehicles, etc.), waste transfer points (Gutberlet et al. 2017) and public space (Zapata Campos and Zapata 2013). These authors support integration of those operating in the informal sector in the existing SWM system to ensure their sustainability.

Although the role of government and development projects in supporting waste pickers and recycling networks is acknowledged (Zapata Campos and Zapata 2013; Gutberlet et al. 2016), our article shows how socio-environmental enterprises can be sustained through entrepreneurial practices. We are aware that much of the existing literature does not see waste management activities (e.g., collecting, transporting, recycling, storing and reusing) as entrepreneurial opportunities that can be exploited for profit while addressing a social challenge. However, using the social entrepreneurship idea, we assume that those at the grassroots involved in SWM can operate entrepreneurially to generate revenue and reduce waste, thereby creating social value. Yet, previous empirical literature fails to explain why some initiatives start, grow and become sustainable while others fail within the same context of waste management. In our case, we assume that micro-enterprises can be active in SWM by creatively searching for new ways to collect, reduce or, where possible, recycle waste. These micro-enterprises can make a profit by providing a sound waste management service or filling a gap in the waste collection service (Ahmed and Ali 2004).

Methodology

This article draws on a qualitative study that was done in Dar es Salaam, the largest commercial city in Tanzania, with an estimated population of over five million people and a growth rate of 4% (World Population Review, 2019[1]). The city generates 5,600 tons of waste daily, putting pressure on the existing infrastructure and institutional capacity (Huisman, Breukelman, and Keesman 2016). Dar es Salaam was a suitable study area given the wide variety of those at the grassroots and private enterprises involved in collecting and recycling waste. The main actors comprise: (i) city/municipal councils; (ii) small groups collecting waste from private residences and transporting it to temporary collection points; (iii) CBOs & NGOs; and (iv) individuals (especially youth) collecting recyclable/reusable waste and selling it directly to intermediaries and recyclers.

The study was based on the explorative research design. The exploratory research was considered suitable for gaining an insight into the nature of private waste collection and recycling initiatives, for providing a greater understanding of the research issue and for developing a proposition for further analysis (Hammersley and Atkinson 2007). It also provides the context and sets out to answer the 'how' and 'why'

questions pertaining to the issue being researched. To gain an understanding of both the waste management system and private waste management initiatives, a combination of data collection methods was used. Specifically, we began with an intensive literature review and developed a checklist of the issues to be addressed based on the extant literature and the research setting. Waste management initiatives were then mapped, which entailed focus group discussions and semi-structured interviews with at least 40 entities involved at the grassroots. Most of these were unregistered/informal community-based groups, private companies, registered associations, self-help groups and registered CBOs, which provided various services, such as collecting, transporting, sorting, processing, recycling and composting waste, as well as buying and selling waste material.

After the mapping exercise, five cases were purposefully selected for in-depth analysis, since they met the criteria for social and/or environmental entrepreneurship as they were motivated to both serve the community and make a profit. All five enterprises had operated for at least two years and they were ready to reveal their sustainability strategies. The data were collected through semi-structured interviews and observation. The interviews were guided by the checklist, which sought to obtain the life story of the respondent; a profile of the initiative, its development, operations and the working environment; marketing and networks; management and governance; opportunities and challenges; innovative practices and sustainability strategies. The respondents were owners and senior leaders of the initiatives who were well informed about their social enterprises. All initiatives/enterprises were visited by the researchers and/or research assistant to observe their operations and facilities. The interviews and field visits took place between April and December 2018. The length of the interviews varied from 45 min to 1 h, and were all recorded for later retrieval and transcription of the data. The researcher and/or research assistant also took notes during the meetings and interviews with the respondents.

After the interviews, the data were transcribed and the summary tables of key observations and evidence obtained in regard to key research issues from different respondents were then produced. In coding and organising the data, the study objectives and issues identified from the literature were considered. The data were reviewed and edited where necessary to ensure the quality and accuracy of the data and information included in the findings. A qualitative content analysis of individual and across cases was done to generate emerging themes informed by socio-environmental entrepreneurship theories. A meeting with the respondents was organised to discuss and validate key observations and empirical themes from the results. Common views and evidence from different sources were then combined to produce the findings presented in this article.

Waste management systems in Dar Es Salaam

Traditionally, waste management in Dar es Salaam has been the responsibility of city/municipal councils. While the city council manages the dumpsites in terms of their coordination, planning, financing, maintenance and closure, municipalities are responsible for overseeing the collection and transportation of waste, fee collection, local

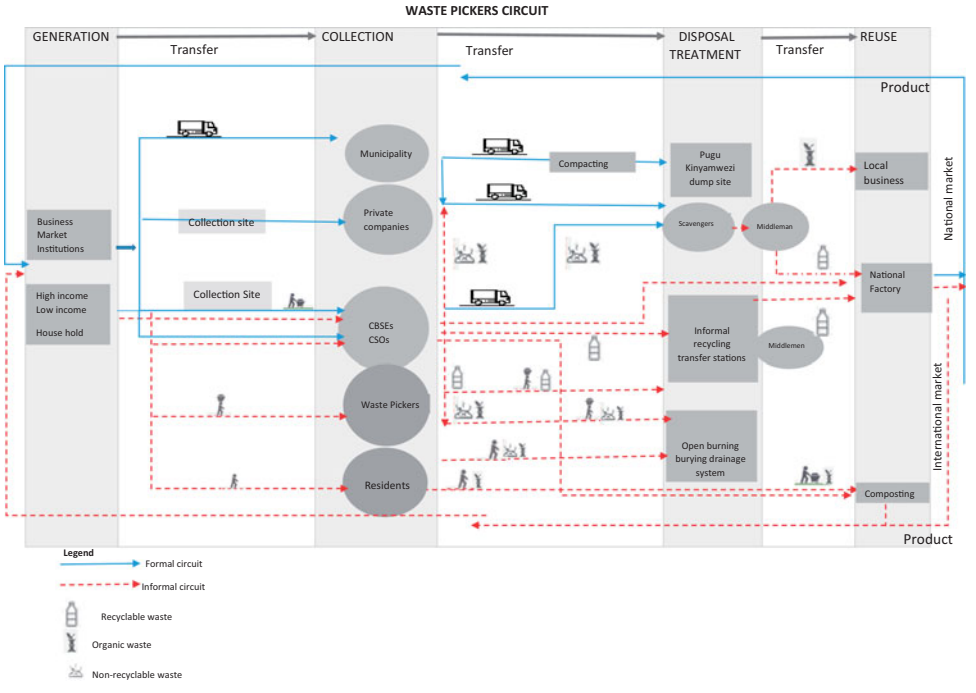


Figure 1. Solid waste management value chain in Dar es Salaam. Source: University College of London, Development Planning Unit (2017).

waste recovery, recycling and composting. They are also responsible for collecting and transporting waste from public places and coordinating the collection and transportation of waste in wards and sub-wards. The wards authorise the formation of CBOs to establish waste collection systems, to set up neighbourhood waste collection sites and to collect fees. Whereas service providers at sub-ward level are contracted directly by the municipality, ward councillors and sub-ward chairpersons have the role of maintaining the relationship with these service providers and ensuring the payment of fees. In practice, wards also contract private service providers to collect waste directly from households or from the neighbourhood collection sites. The formal waste management system consists of either public or private enterprises, which are licenced to operate in accordance with regulations designed to protect the environment and public health.

The review of the previous reports revealed that the SWM value chain in Dar es Salaam entails waste generation, collection, disposal and reuse (Figure 1). The solid waste, which entails non-liquid material, originates from domestic, commercial, industrial, institutions' and agricultural activities (Maziku 2014). Municipalities and established private companies have the capacity to compact waste and transfer it to the dumpsite. However, only 40% of the waste ends up in the city's only dumpsite, Pugu Kinyamwezi. Most of what remains is burned, buried in open pits or disposed of in streets, streams and drainage systems, with only a small fraction being recycled or reused, and so in recent years the city has embarked on decentralising waste management activities. Consequently, in most affluent planned areas, waste from households, commercial establishments, institutions and industry is generally collected by private

companies and taken directly to the dumpsite. When the vehicle collecting the waste is unable to gain access to it in these areas, it is taken initially to neighbourhood collection sites by handcart for bulking and informal resource recovery before transporting it to the dumpsite. In areas where people are less affluent and the neighbourhoods are more congested, waste is picked up by handcart for delivery to neighbourhood collection sites or it is taken directly to these sites by householders. In some cases, commercial waste pickers collect specific types of waste (e.g., plastic, aluminium scraps, iron sheets, bones, steel scraps, paper and glass) from residential areas, business premises and institutions and sell them to intermediate handlers. While contracted companies subsequently pick up the accumulated waste from the neighbourhood collection sites and transport it to the dumpsite, in areas where the collection service is poor, individuals commonly dump their waste in drainage ditches or streams and by the road side. Basically, waste collection in unplanned areas is constrained by the huge amount of waste generated, the low collection rate, inadequate financing of waste collection and the unsustainability of waste pickers' organisations.

Findings

The findings presented in this article are based on the five cases involved in the study. The findings begin with a brief description of the cases followed by cross-case analysis reflecting the major themes.

Case I: Green Conservers

A community-based group of ten youths (four males and six females) which aims to reduce accelerating deforestation due to the use of charcoal. Established in 2017 and registered as a CBO in 2018, the group's main activity is manufacturing briquettes using waste material. The group leader, an electrical engineer who graduated from Dar es salaam Institute of Technology (DIT), saw the opportunity to recycle waste to make briquettes for domestic consumption from the readily available waste and the effort to promote the use of briquettes as an alternative source of energy. While the community was becoming aware of the need to conserve trees, the government restricted people from cutting down trees without a permit. He mobilised his friends to join him and he raised capital through members' contributions of around $25 each. They currently have around $1500 compared with the initial investment of $500. However, the most critical start-up challenge was limited resources (capital, skills and the right partners). They were denied bank loans, and so attracting competent graduates to join the group was always a challenge due to the lack of a steady flow of income to pay good salaries. The negative perception that waste could not be a viable business for university graduates, the newness of briquettes, and cheap charcoal in the market made it difficult for Green Conservers to move forward as expected. This required an additional effort to educate members and the community to accept Green Conservers as a viable social enterprise. In addition, some local government leaders demanded money from the group before they collected waste, arguing that wards lost part of the waste collection fee that could be earned by partnering with formal waste collectors. However, access to skills from abroad, raising capital gradually and selecting committed members with complementary skills enabled them to overcome start-up challenges, noted the group leader.

Initially, they begun collecting solid waste from the community using their hands and simple technology to make briquettes. Through the technology learnt at a three-month course attended by the group leader at Uganda Institute of Technology, the group designed burning, crushing, mixing and binding and compacting machines, which are used to make between 200 kg and 500 kg of briquettes per day. The group has a formal management structure, with the Managing Director (group leader), Production Manager, Marketing and Distribution Manager, Waste Collection Leader, Production Supervisor and Sales Representatives. To address management challenges, they have a disciplinary policy whereby each group member is fined $1 when he/she breaks the rules, which is deposited in the group's account to cover operational costs. They have received training in management and entrepreneurship to build their capacity. Sometimes, they engage university students as interns to complement their team. Overall, they embrace team spirit, transparency and accountability to ensure that their group survives and grows. The Managing Director keeps a record of the income generated and all members have the right to access it when they need to. The income obtained is used to pay salaries and the excess is reinvested in their business.

Several strategies have been applied by Green Conservers to ensure their sustainability. They provide training to community members as a way of recruiting customers. Personal selling, exhibitions and social media are used to reach community members and their customers. The group connects and networks with NGOs that support youth creativity and it has been supported to attend several exhibitions. They also go from door to door to demonstrate and sell their products. They participate in radio and TV programmes to talk about their initiative so as to make their group known. Their slogans are "Our waste our energy, let's keep it clean", "waste is wealth" and "waste is employment". They have been invited to attend various environmental workshops and exhibitions organised by the government. They connect with waste collection companies to get some waste for free as they take it to the dumpsite. They educate their suppliers to separate the waste before they dispose of it, which is very helpful for utilising the raw material. Sometimes they provide free samples to stimulate the market. They have had several meetings with the Minister responsible for the environment, who sometimes refers to their activities in his speeches. The Small Industrial Development Organisation (SIDO), a government body responsible for promoting industries, has been helping them to design machines at low cost.

After noting that some customers felt that the briquettes were not as good as charcoal due to their smaller size, they created a bio-briquettes machine, which produces briquettes that look like charcoal. This has expanded our market, noted the group leader. They are able to produce 500 kg of briquettes per day, selling at $0.4–0.5 each, with a profit margin of 20–30%. During the interview, they said they had extended their technology to create pavement blocks and tiles using the residual waste not used for making briquettes. Other future products are furniture and decoration materials from bottles and other waste material. 'Our goal is to absorb all types of waste and let no waste be sent to the dumpsite' noted the respondent. Exploring sources of cheap raw material (waste) and getting access to funding are their highest priorities.

Case II: Kwa Makamba Initiative

Kwa Makamba is a waste collection group established in 2015 by three youths after seeing an opportunity to start a waste collection and recycling business based on each other's strengths. The group leader thought up the business idea and learnt about it from a woman who was collecting waste in a nearby area. After sharing the idea with two friends, they joined him and got a grant of $100 from the group leader's sister. Although the group is not yet registered, it has grown from one waste collection centre to three centres employing three security guards and three support staff. Their capital has grown to around $600, the main source being the reinvestment of the profits earned and loans received from their clients. The efforts made by them and their trustworthiness have enabled them to qualify for a loan four times.

The main activity of the group is to collect hard and soft plastic, nylons and empty cans from small-scale waste pickers, which they sell in bulk to recycling industries. When it started, the group members used to do everything themselves at the first centre. Later on, each group member took charge of one collection centre, working with and supervising the support staff. Their organisational structure is made up of the Group Leader, Branch Supervisors, support staff and site guards. For the purpose of quality control, each centre inspects and weighs the collected waste to get rid of unwanted substances before packaging the required material. They are connected with at least 20 waste pickers, who supply them with the material they need. In order to keep the suppliers, they provide them with small loans to help with their medical costs. They avoid working with drug-addicted waste pickers to ensure the reliability of the waste.

The clients of Kwa Makamba are Indian and Chinese waste processors who provide the initiative with safety gear and interest free loans. The waste collected at one station varies from 1.5 to 2 tons of soft plastic, and from 800 kg to 1 ton of hard plastic. The selling price for 1 kg of plastic was $0.2 and $0.4 for soft and hard plastic, respectively. The clients pay for the transport of material from the site to the industry. However, the main challenges are abrupt price fluctuations, theft, and the unreliability of waste pickers, inadequate quality of the material collected, and low demand to match supply.

Kwa Makamba received a supplier's award of $150 from Yan industry. Because the success of their business lies in a strong supply chain, they decided to offer loans to waste pickers and engage them on a daily basis to ensure they stay connected with them. Treating waste pickers with respect and valuing them have made our suppliers trust our group, reported the group leader. The group provides medical support and a holiday allowance of $3 each per holiday. This has reduced staff turnover. Through collaborating with their Chinese clients, they have been able to offer training in waste management to 20 young waste pickers. The youth that have been trained have started similar initiatives.

In order to diversify and reduce business risks, the group established a small retail shop selling groceries and employed another person to run it. However, returns from the shop are smaller than what they earn from recycling. Their main goal is to establish a small waste-processing factory that will sell semi-processed recycled material, which is more profitable than selling unprocessed waste. The main resource needed is capital, as they already have the skills needed to operate a small recycling plant, reported the group leader.

Case III: Mama Swai Initiative

The idea of Mama Swai originated from her son in 1999 when he was studying at primary school. He got his idea after seeing waste pickers generating some money from what they were doing. He began to collect perfume bottles and sell them to waste collectors around their home. Although he was later prevented by his father from doing this because he was studying, he started again in 2005 when he was in high school.

He then engaged in recycling plastic, which his mother supported by giving him start-up capital of $250. They started with one recycling centre and, at the time of the interviews they had added three more, recycling steel/iron, plastic bottles, hard plastic material, sulphates and nylons. The son is now a graduate and working full time in the family business with a running capital of $1500. His mother is in charge of the business and he is the business manager. They have four support staff and three site guards. The staff are paid according to their performance and capacity. Those who bring new suppliers and keep the existing ones are paid more. They collect 1.5–2 tons of waste daily, generating $8500 per month compared with $3700 when they started.

They use machines for reshaping steel and iron pipes, and scales to weigh them, and they provide first aid kit, gloves and boots. They use the scales to ensure that the waste pickers get the right amount of money for what they have collected. They also provide faithful and loyal waste pickers with wheelbarrows to transport the waste they collect, and to increase its volume.

To sustain their business, they empower waste pickers/suppliers through training and counselling. The make special arrangements for the waste pickers to save some of their income, which is shared at the end of each month. However, due to their religious orientation they buy waste mainly from the Muslim community and do not borrow money from the bank because of the interest. I remember we were approached by the local government asking us to take out a youth loan from them but we rejected the offer, because we had to pay interest, noted the respondent. The business does not allow unethical/illegal business to take place on their premises, such as selling cigarettes and drugs. They also have a principle of not charging excessively high price, which has made them more competitive in terms of pricing. Where necessary, they provide waste pickers with loans without interest to enable them to sustain their business, which has increased their loyalty.

The business faces several challenges, including a management challenge, theft and the dishonesty of some waste pickers. Some of their supervisors do not keep adequate records to show that the purchases and expenses incurred are correct. Occasionally, we have had to close some of our centres due to theft, noted the respondent. They now engage women supervisors as they believe they are more trustworthy than men. The only challenge with women is the higher rate of absenteeism than men. Further, unexpected price fluctuations of waste material has resulted in loss. The business appreciates the contribution of Mazingira Cooperative Society in negotiating for better prices for their members.

Despite several challenges, the business has enabled the family to pay their bills, including school fees and financing family expenses. They have enabled at least 12 waste pickers to become successful business people engaged in agribusiness and other enterprises. They are planning to establish three new collection centres upcountry and grow to become a recycling enterprise.

Case IV: Maisha Bora Creation

Maisha Bora Creation is a privately owned informal enterprise established in 2017 to design, make and sell decorative materials for furniture from used vehicle tyres. This enterprise was created as a new source of income for the founder after a decline in the welding business he was engaged in before. After graduating from the Institute of Social Work in 2014, the owner faced an employment challenge and decided to volunteer at a welding company. He then started his own welding business and later on moved to recycling tyres. Although it took time to secure a market for his products, he managed to convince his close friends to become clients.

This started as a one-man business and later he employed a production assistant due to the increased demand for their products. Since then, they have created jobs for seven staff. They offer a variety of products, including garden and beach chairs, coffee tables, dressing tables, wall mirrors, cafeteria and pub chairs and tables, swings, artificial flowers and flower pots. Given that the business involves the use of fire during moulding, technical positions are held by men, and only two positions (i.e., marketing and sales representatives) are held by women. They use various types of machines, including a grinder, grill, welder, jigsaw and compressor for painting. They pay their employees according to their performance, whereby they are paid for the work done as a way of motivating them. They provide on-the-job training for their technicians in how to produce new designs to ensure they are competitive. They have set the reporting, lunch and closing time.

The business is located at a place with several garages to facilitate access to used tyres and customers. Their target customers are households, nursery schools and recreational centres. Maisha Bora's prices vary depending on the size of the project and inputs such as paint, bolts, pipe and wire. The use of social networks has enabled them to brand their products and acquire even more customers. They have promoted their social media pages through various superstars' accounts, which have a large number of followers. They connect with other recyclers through social media, such as NGOs that are concerned with human dignity and the environment, to learn and share their creativity. Often, the Maisha Bora Creation team receives new designs from customers and social media which have made them competitive.

One of the major challenges they are facing is the lack of a showroom. Instead, they use social media and word of mouth as key marketing techniques. In most cases, furniture stores are reluctant to accept their products. Insufficient capital was also cited as one of their leading challenges, mainly because of lack of collateral to secure a loan. Thus they finance their business from their own sources and the profits generated. Although they have sought government support several times, they are yet to receive any. They plan to partner with various reputable furniture stores to increase sales, and to create royal gardens in different

places to demonstrate their products. Their long-term goal is to grow to become an efficient and effective medium sized industry recycling tyres and paper.

Case V: Mama Said Initiative

Mama Said is a group of three people established in 2014 to collect plastic and used bottles, and sell them in bulk to recycling industries. After getting the idea from a friend, the founder shared it with two youths who liked it and joined her to start the initiative with a loan of $250 from the village community bank. They started at a member's house, as they did not have money to rent premise. But collecting waste at home caused the neighbours to complain, which prompted the local government to stop them. They secured an open collection centre from the local government and operated there for three years, after which they had to return it to the government. They moved to another open site, where they are still operating. They also have a new centre at another location. Their capital has grown to $1250 and they employ two site guards. The chairperson is in charge of the group, while the two assistants and staff undertake the day-to-day operations, such as checking the quality of the plastic and bottles, weighing and delivering them.

Operationally, they collect from 500 to 800 kg of waste per day and transfer it to clients using hired vehicles. Due to their long-term relationship with Coca-Cola Tanzania, the company helped them enclose their waste collection centre with grills for security, but the place lacks basic facilitates such as water, electricity and shade. They appreciate receiving more than 500 kg of plastic freely from Coca-Cola. In addition, their main competitive advantage is their ability to engage suppliers/waste pickers. In some cases, they help suppliers pay school fees, and pay their salaries in advance for rent or any other pressing need. They have offered two waste pickers a place to sleep as they did not have any other option. They provided four suppliers with building material (iron sheets and wood) to cover the place where they sleep.

The main clients for their products that are readily available are local and foreign bottle manufacturing companies. However, price fluctuation has been a major challenge, mainly because of the growing competition from cheaper supplies from China. The working conditions are quite poor as the area does not have shade. The theft of material by waste pickers from each other and sometimes from them is still a challenge, as is the use of abusive language by the waste pickers. On a few occasions, the staff have been attacked by waste pickers for no good reason. It requires very good customer care and people skills to deal with waste pickers, noted the group leader.

Their main plan is to begin adding value through sorting and crushing. They believe that selling semi-processed products pays more than selling unprocessed ones. They also plan to have more branches and are searching for more capital for further growth.

Table 1 presents the types of enterprises/initiatives studied, their reasons for starting up, their challenges, management structure and operations as well as their sustainability strategies. While the results show different types of ownership, it appears that all of them were privately owned/community-based groups or enterprises (registered/unregistered). These enterprises started with a small amount of capital raised through members' contributions, family savings, grants from family members and loans from friends or the village community bank. The main activities carried out by them were collecting processing, buying and selling (intermediation) and recycling waste. However, they all combined their key roles with other services, such as lending to their members, running a supplementary business, training and counselling waste pickers and disseminating their ideas. Basically, their activities are reflected in the reasons for starting their enterprise, which were primarily the existence of a business idea/opportunity, to create employment for themselves, having access to start-up resources and providing a social service (e.g., supporting youth and protecting the environment). Most owners/leaders of the enterprise were young graduates, who worked with fellow youths and/or family members.

Despite variations, they faced a number of start-up challenges relating to limited access to resources, the negative perception of waste management, low income, competition, unsupportive local government, unreliable supply of material, theft and dishonesty of waste pickers, lack of management skills, poor working conditions, and difficulty in getting clients at the beginning. However, they were all able to move

Table 1. Characteristics of social enterprises studied and their sustainability strategies.

Cases	Type of enterprise	Reasons for start-up	Challenges	Management & operations	Sustainability strategies

Case I	• Youth group
	• Registered by Municipality
	• Main activity: collection & processing waste
	• New and growing
	• Voluntary membership
	• Start-up capital of $250 from their own source
		• Opportunity
		  • *Awareness*
		  • *Policies*
		  • *Development projects*
		  • *Freely available raw material*
		• Employment creation
		• Preserving the environment
			• Limited Access to resources
			  • *Capital*
			  • *Skills*
			  • *Members*
			• Negative perception
			• Limited awareness
			• Unstable income
			• Competition
			• Demand for bribe by local government
				• Structured & clear division of roles
				• Group members & staff working together
				• Operational guidelines & their enforcement
				• Deployment of the right personnel
				• Collection of solid waste from the community & processing it
				• Selling briquettes to individuals
					• Mobilize complementary skills
					• Seek competencies
					• Re-investment
					• Marketing & networking
					• Technology
					• Visibility
					• Access to material
					• Training community members & customers
					• Start small
					• Acquire competencies
					• Transparency & accountability
					• Teamwork & attracting talent
					• Product development
					• Expose the initiative

Case II	• Youth group
	• Not registered
	• Got a grant of $100 from a family member
	• Main activity: waste collection
		• Opportunity
		  • Got the idea from a neighbour
		  • Grant
		• Employment creation
		• Sharing competencies
			• Low demand during high season
			• Price fluctuation
			• Theft & dishonesty of suppliers
			• Inadequate quality control
			• Unreliability of suppliers/ waste pickers
				• Organised management & roles
				• Collecting waste and selling in bulk to factories/processors
				• Disseminating the idea
					• Retention of waste pickers
					• Support by clients (safety gear & loans)
					• Learning from clients
					• Excellence
					• Staff retention
					• Diversification to other businesses
					• Hardworking & trustworthiness
					• Competence of the owners

Case III	• Informal family business • Family capital of $250 • Activity: Intermediary • Three branches	• Opportunity • Observed the income of waste pickers • Employment generation	• Management challenge • Theft & dishonesty of waste pickers • Absenteeism of women members	• Slightly structured with clear roles of owners & staff • Collecting & selling waste • Owners & staff working together as a team	• Performance-based reward • Competence of the owners • Capacity building of waste pickers (tools, loans, training & counselling).

(*continued*)

Table 1. Continued.

Cases	Type of enterprise	Reasons for start-up	Challenges	Management & operations	Sustainability strategies
					• Ethical business • Competitive pricing • Engage trustworthy women supervisors • Membership of cooperative society • Support waste pickers to become entrepreneurs
Case IV	• Privately owned enterprise • Processing their formalisation	• Business potential • Generating employment • Helping the community	• Getting clients at the beginning • Lack of showroom • Reluctance of furniture centres to accept their products • Insufficient capital • No support by the government	• Quite structured with clear division of roles • Purchasing & recycling tyres	• Engage qualified employees • Performance-based pay • On- the-job training • Learning • Staff guidelines & rules • Managing costs • Strategic location • Social networks (connections & new ideas) • Delivery model • Vision
Case V	• Group of one older person & youths • Started with a loan of $250 • Activity: intermediary • Two centres	• Got the idea from a friend • Access to start-up capital • Start-up place	• Theft • Price fluctuation • Poor working conditions • Attack by waste pickers	• The group leader, members & staff have allotted roles • Buying and selling recyclable material in bulk	• Work space given by local government • Support from a corporate organisation • Provide support to suppliers/waste pickers (equipment, home, training, loans, etc.) • Good customer service & peoples' skills • Plan & motivation to grow

from the start-up to the survival stage as some of them had the potential to grow. In terms of their development, it is evident that both the formal and informal enterprises were somewhat structured, with a division of roles, operating principles. All of them had been able to engage staff to support the group/enterprise founders. With respect to sustainability, the findings indicate that most strategies were quite similar to the ones applied by commercial enterprises, which were: adequate division of roles; engagement and retention of competent teams with complementary skills; application of feasible technologies; governance (transparency, performance-based rewards and operating guidelines): marketing and networking (training, exposure of the initiative, linkage with waste suppliers, membership of association/cooperative); support by a corporate organisation or local government; and empowering suppliers.

Discussion and implications

The findings presented in this article indicate: (i) how social enterprises providing solid waste collection and recycling services emerged and overcome start-up challenges and; (ii) strategies applied by those enterprise to ensure their sustainability. In terms of how the enterprises emerged, it is evident that they started small with an individual/group, who were largely motivated by the existence of a business opportunity. Starting small was considered appropriate because the enterprise required little initial investment, manpower and less compliance requirements. Although the owners/groups had a social motive for starting their enterprises, the main motivation was the existence of an opportunity that would ensure their survival, growth and the generation of employment. These findings support our initial assumption that even with a social goal in mind, social enterprises need to be run entrepreneurially. Contrary to the literature which assumes that those enterprises can hardly practice self-management and become sustainable (Tirado-Soto and Zamberlan 2013), our findings demonstrate that social enterprises can fill service delivery gaps, such as waste collection and recycling, while generating an income, employment and linkages in the waste value chain. Like other entrepreneurs, the enterprises and groups studied took advantage of the opportunities presented by the lack of service delivery to fill the gap for the communities affected. As noted from the entrepreneurship literature (e.g., Shane and Venkataraman 2000; Madhuri 2013), the social enterprises studied demonstrated several entrepreneurial traits (innovation, opportunity orientation, mobilisation of resources, commitment, vision, etc.). In line with Dees (2001) it was observed that like other entrepreneurs, the social entrepreneurs studied were creative and innovative, with a vision to grow. The findings challenge the previous understanding of social entrepreneurship as "the phenomenon of applying business expertise and market-based skills in the non-profit sector such as when non-profit organisations develop innovative approaches to earn an income" (Austin, Stevenson, and Wei-Skillern 2006). Indeed, the findings show that social enterprises involved in SWM can start with a profit motive in their mind and meet both social and business goals.

It is interesting to note that, although the main motivation of the enterprises studied was not to pursue a social goal but to seise a business opportunity which emerged due to service delivery gaps, they still had a social aspect in their operations,

such cleaning the environment, creating jobs and empowering the waste pickers. Besides collecting and recycling waste, some enterprises educated other players in the waste value chain to increase their knowledge on how to manage waste (e.g., Mama Swai Initiative). Some of them participated in other supplementary activities of a social nature (e.g., Kwa Makamba initiative) to complement their core role. An interesting observation here is that even with a business mind-set, the collection and recycling of waste has the potential to make a social contribution and operate as a social enterprise. Recognising self-sustaining social enterprises involved in SWM could therefore help to expand the scope of collaboration between the local government and private sector. Contrary to the practice whereby large cleaning companies are awarded contracts to collect and transport waste on behalf of the state (Huisman, Breukelman, and Keesman 2016), emerging social enterprises appeared to have an important role to play. This implies that involving those at the grassroots in collecting and recycling waste could improve the effectiveness of the waste management services (Ahmed and Ali 2004). Accordingly, we argue that despite their size and legal status, social enterprises can provide a possible solution to social and environmental problems left by governments, especially where the state is unable to provide adequate SWM services.

However, notwithstanding the fact that social enterprises involved in collecting and recycling waste were characterised by ease of entry, small-scale operations, labour-intensive technology and family/group ownership, they experienced similar start-up challenges to those affecting most micro and small enterprises in other sectors. For instance, the challenges relating to start-up capital, negative perception, management and operations, marketing and poor working conditions have been reported by previous studies (Charles 2014; Olomi, Charles, and Juma 2018). Based on the cases studied, it is apparent that, like other micro and small businesses, waste collection and recycling initiatives in Tanzania, and perhaps in other developing countries, need to adopt an entrepreneurial orientation and reduce dependence on state/development projects given that opportunities for growth exist and expected support is not assured. It is clearly observed that, despite the efforts to access government support, only one case (Mama Said Initiative) secured temporary work space from the government, which was later repossessed. Other enterprises tried to involve the local government in their operations, but they hardly experienced any serious collaboration.

In terms of sustainability, the findings demonstrate that all five enterprises had the potential to be sustainable. It was observed that four enterprise started between 2014 and 2017 and one of them (i.e., Mama Swai) started in 1999. Regardless of their age, it was noted that all five had grown in terms of sales, number of employees and investment. As shown in Table 1, the enterprises studied used similar sustainability strategies to those of entrepreneurial entities in Tanzania and Africa in general. For example, strategies like adequate management, engaging and retaining the right people with adequate skills, supporting suppliers, marketing and networking, developing skills, using adequate technologies, reinvesting, diversifying and being members of business associations have been documented as the survival and growth strategies of micro, small and medium enterprise in Africa (Charles 2014; Charles et al. 2017; Hansen et al. 2018; Olomi, Charles, and Juma 2018). However, besides the traditional business survival strategies of small enterprises, it is important to emphasise that the

owners of waste collection and recycling enterprises in Dar es Salaam were quite strategic at the beginning in attracting the required talent. Whereas most micro and small enterprises are run by owner-managers (one person), the initiators of the enterprises studied were able to sell their ideas and convince other people to join them.

Our findings indicate that after the studied enterprises realised that the sale of products or services was not enough to sustain them, they attempted to supplement their income from other productive activities (e.g., Kwa Makamba Initiative). This demonstrates their commitment to a social goal and the view that most social enterprises use hybrid income models to sustain their operations (Zahra et al. 2009). It indicates that social enterprises involved in SWM search for inventive ways to sustain themselves, try to establish new partnerships and recognise opportunities to do things differently. Furthermore, one entrepreneur (Mama Said) was able to obtain the support of a corporate organisation (Coca Cola), while others (e.g., Kwa Makamba) were supported by their clients in terms of capacity building. This shows that those at the grassroots can get the support of a wide variety of actors, as opposed to the previous conception, which puts emphasis on the state and development projects (Gutberlet et al. 2016; Huisman, Breukelman, and Keesman 2016). In addition, the social enterprises studied supported upstream linkages through, for instance, training waste pickers to become entrepreneurs and supplying them with basic equipment and tools that made them loyal to them. Basically, having a strong and reliable supply chain is one of an enterprise's survival strategies (Hansen et al. 2018). This is indeed a unique strategy of waste collection and recycling enterprises in Dar es Salaam, given that most enterprises of their size are still weak in terms of value chain development (Charles 2014). In this case, therefore, it appears that while social enterprises involved in SWM apply several business and entrepreneurial strategies to survive, they have some strategies to overcome resource and sustainability challenges.

Theoretically, this article combines the traditional entrepreneurship and socio-environmental entrepreneurship literature to explain the nature, survival and sustainability of the social enterprises involved in collecting and recycling waste in Tanzania. It indicates that while social enterprises have a social goal, their sustainability is driven by entrepreneurial competencies and skills propounded by the entrepreneurship theory. However, in the course of searching for a survival strategy, socio-environmental enterprises apply unique strategies to supplement their social goals. Although core principles of entrepreneurship and innovation are seen as in the mainstream business context, some key differences relating to motivation and how problems and needs are conceptualised are observed. This indicates that business entities taking advantage of social and environmental opportunities have the potential to contribute to the well-being of society through various strategies. In line with this, we argue that the waste collection and recycling initiatives which start as business entities can become social enterprises as long as they mainstream the social goal in their agenda and have a social impact. It shows that a wide variety of organisations can be typified as social enterprises involved in waste management with widely differing characteristics.

Practically, while the government plays a relatively small role in collecting and recycling waste and the private sector plays a major role, it is clear that those involved in collecting and recycling waste have the ability to reduce the social problem of solid

waste. Thus, the private sector should be given incentives to enter the SWM system, which could be done through recognising and supporting enterprises to access resources. Accordingly, it is argued that local governments should try to encourage social enterprises to enter the SWM system by giving them an incentive. In order to create an effective social waste collection system, local governments need to partner with those at the grassroots taking the initiative and support them to start, survive and grow. On the other hand, those at the grassroots need to learn from typical business entities and develop strategic networks with other businesses, the government, educational institutions or other waste management companies, which will help them access financial resources, networks, technologies, work space and markets for their products and services. Finally, instead of the private sector complaining about the failure of institutions and the state to address serious waste problems, they should develop businesses to resolve those problems, which will make a profit and care for the welfare of society.

Limitations and areas for further studies

While this article makes an important contribution on the establishment and sustainability of social enterprises involved in collecting and recycling waste, it has some limitations. First, our analysis focussed on a specific sector (solid waste management), expanding the scope of the study to include other social enterprises dealing with environmental conservation, health, or education, etc., would make the findings more rigorous. Second, because the study was qualitative in nature and based on a single country, the results cannot be generalised to other countries. More studies are therefore encouraged to investigate the collaboration between various actors with the potential to promote effective waste management services in developing countries. An analysis of the SWM value chains and mapping of the role of social enterprises at each stage would help to ascertain the sustainability of SWM activities. In addition, exploring and comparing public-private partnership models/arrangements across developing countries would help to develop the best model of collaboration between the state and the private sector. Finally, because the social enterprises studied had started to apply some simple technologies to develop their products, further analysis of waste value addition and product development would expand our knowledge of SWM.

Note

1. Accessed on http://worldpopulationreview.com on 15th January 2019.

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