



Original Research

SME Drivers and Constraints in Sustainable Waste Management Compliance: Insights from Zimbabwe

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Abstract: This study explores the drivers and constraints in small and medium enterprise (SME) compliance with the Zimbabwean municipal solid waste management (MSWM) regulations. A total of 220 respondents out of 230 samples were surveyed with questionnaires as a research instrument. Data were analyzed using descriptive analysis. The results illustrated that a majority of respondents were male (72%) aged between 31 and 60, primarily with secondary education. Perceptions of MSWM regulations revealed that while respondents acknowledged the positive aspects of the regulations, such as promoting waste minimization and being environmentally effective, there were reservations about the regulations being SME based and people friendly. Additionally, the clarity of roles and responsibilities within the regulations and their ability to address noncompliance raised concerns among the SMEs. Implementation challenges were prevalent, with many SMEs facing limited funds and budget constraints for equipment and updates related to MSWM regulations. The drivers for compliance were identified from the results as business and environmental benefits, such as increased profits and financial opportunities, reduced waste, and promoting a circular economy. On the contrary, the constraints include several aspects from both the SMEs' and the authorities' sides.

Keywords: Solid Waste Management, Municipal Waste, SMEs, Compliance, Zimbabwe

Introduction

Small and medium enterprises (SMEs) comprise the majority of industries and are the engines for survival in many countries. In the Organisation for Economic Cooperation and Development (OECD) countries, SMEs account for almost 99 percent of all business enterprises, yielding two-thirds of employment (Calogirou et al. 2010). In Sub-Saharan Africa, they constitute 97 percent to 99 percent of the sector (Gibson et al. 2013), while in Zimbabwe, SMEs constitute more than 70 percent of all businesses, employing over 60 percent of the country's workforce and contributing 50 percent to the country's GDP (Majukwa 2019). Despite being a source of economic growth, SMEs also contribute to environmental pollution. Although small businesses might send off minor effects, the potential of their effect aggregation is quite noticeable (OECD/ERIA 2018). For example, in Europe alone, 60 percent to 70 percent of industrial pollution is emitted by SMEs (OECD 2007). In Zimbabwe, the proliferation of SMEs has seen vast and enormous waste generated by small industries and has resulted in unintended environmental impacts, causing humans

to be exposed to many diseases and health calamities. This observation ignites several questions on the effectiveness of Zimbabwe's municipal solid waste management (MSWM) regulations and the sustainability of SMEs.

The central role of MSWM regulations is controlling, managing, and prescribing the best practices of waste management activities to prevent compromising environmental quality (Jerie 2013). The regulations have brought significant opportunities for SMEs. Small business drivers for SME compliance vary, particularly regarding solid competitive performance. Competitive performance relates to the ability to sustain profitability and productivity. This implies that companies can produce goods and services efficiently and compensate their workers by providing lucrative profits to the managers (Stewart 1992, cited in Iraldo, Testa, and Frey 2010). Competitiveness will help small businesses identify opportunities for better resource management and cost savings. Furthermore, implementing MSWM regulations promotes and improves a company's image, which will help it increase its sales and gain a significant market share (Starkey 1998). A better public image will also promote a prominent company placement in markets. A good reputation is necessary for SMEs to attract investment to fulfill Zimbabwe's open-for-business mantra.

However, regulations have been met with constraints from the SME sector, and these regulations have often been resisted due to the perceived impact on profits, ignorance of existing environmental policy, and inability to deduce its effects on them (Walker et al. 2008). Despite the enabling legislative environment in Zimbabwe, there are deficiencies in operationalization and enforcement (Nhubu et al. 2017). Literature shows policy and implementation deficiencies, with gaps between legal and institutional mandates. Although the laws state that anyone who generates waste must provide a method to revert or minimize the waste by treatment, reclamation, and recycling, this is not what happens with small businesses. Waste is usually randomly dumped, resulting in the occurrence of diseases like typhoid and cholera (Nhubu et al. 2017). The SMEs' low levels of awareness make it challenging to implement MSWM regulations because of the little knowledge of their impacts on the environment (McAllister 2015). The SME managers assert that the waste law implemented under the extended producer responsibility policy does not consider SME characteristics in its operations. The adverse conditions diminish the possibility of adopting a waste hierarchy in the different stages of the SME supply chain (Hirpe and Yeom 2021). From SMEs' point of view, complying is quite expensive. The compliance problem is worsened due to a lack of community involvement. SMEs lack voices in the regulation-making process (Gray and Shimshack 2011); hence, they resist adhering to the regulations. Besides, there is usually a gap between regulators and the community. SMEs lack knowledge of MSWM legal aspects and have low awareness and understanding of environmental impact, making it challenging to implement MSWM regulations (McAllister 2015).

Based on the literature review, this research, thus, seeks to investigate the drivers and constraints in SMEs' compliance with the MSWM regulations using Zimbabwe as a case

study. Understanding the drivers and constraints for MSWM compliance by SMEs will add more value to the knowledge base of SMEs. They will benefit by putting waste management systems in line with the regulatory framework and ensuring compliance with legislative requirements. The SMEs can continually improve environmental performance and, thus, offer themselves opportunities for long-term sustainability. The improvement will help them increase sales, gain significant market share, and obtain a better public image and a good reputation. The study findings will act as baseline data for the Environmental Management Agency (EMA) to formulate a waste management strategy and make better-informed decisions. Additionally, the government can use the study results to develop strategies to attain sustainable development goals, particularly SDG 3, which advocates for its citizens' well-being and healthy lives.

Methodology

Study Area

The study was carried out in Glenview Area 8, SiyasoMagaba, and Gazaland in Harare, Zimbabwe's capital. Harare is located in northeastern Zimbabwe, in the country's Mashonaland region and on the geographic coordinates Latitude 17°49'39" S and Longitude 31°03'12" E, and has an estimated population of 1.6 million (Masimba 2021). Harare is Zimbabwe's seat of government as well as its commercial and industrial center. The city lies on a watershed plateau between two major rivers, the Limpopo and the Zambezi. Harare is the country's cultural, industrial, commercial, and agricultural center, with plenty of companies producing a wide variety of products. The city has many diverse SMEs operating compared with other cities. The deregulation of industrial laws resulted in the sprouting of SMEs. The city has eight industrial areas for both heavy and light industries (Muswere and Rodić-Wiersma 2004).

The researchers utilized a purposive sampling technique in selecting the three SMEs. The selection was hinged on the fact that the said SMEs:

- i. were the largest three concentrations of SMEs in Harare, generating a lot of indiscriminately dumped wastes and being affected by waste management problems such as land, air, water, and noise pollution; rodents; foul odors; and the outbreak of diseases (Jerie 2013);
- ii. had become an eyesore, with uncollected waste being a common sight in open spaces and along streets. The areas have often been reported to have subjected people to unending environmental calamities, such as the outbreak of diseases and contamination of water sources (Zinyemba and Changamire 2014); and
- iii. were diverse in their operations, that is, they engaged in different productions, generating various types of waste.

Siyaso is the largest commercial complex, stretching from Mbare township to the Central Business District, with over 1,000 entrepreneurs who are engaged in welding, mechanical repairs, selling of building materials, catering, and laundry. These have resulted in waste generation (Zinyemba and Changamire 2014) and disease outbreaks. Indiscriminate waste dumping in Mbare (Siyaso) has resulted in groundwater pollution. Mbare has been an epicenter of cholera and typhoid epidemics since the 1990s. The major cholera outbreak was between 2008 and 2009, which resulted in deaths. Ever since, cholera and typhoid outbreaks were experienced in 2010, 2011, 2012, 2016, and 2017 (Takavada et al. 2022). As a result of diverse economic activity, groundwater sources have been impacted due to waste leachates (Misi, Gumindoga, and Hoko 2018). In Gazaland, the problem of odors and air pollution is due to burning wood shavings and tires.

Waste is illegally dumped in the Mukuvisi River, and the land is no longer appropriate for agricultural purposes due to ground and surface water pollution (Jerie 2013). In Glenview Area 8, waste is disposed of along roads, in illegal streams, open spaces, and drains. Groundwater pollution is experienced due to seepage. Figure 1 shows the study area.

Population and Sample Size

The study population comprised SMEs from Glenview Area 8, SiyasoMagaba, and Gazaland. Glenview Area 8 had the highest number of SMEs, followed by Siyaso and Gazaland. The total number of SMEs in the three areas was 6,268 (Ministry of Women Affairs, Community, Small and Medium Enterprises Development Officer, personal communication, June 13, 2023). Because the number of SMEs was large, a sample size of one hundred was drawn from each region (Bullen, n.d.), resulting in a total sample of 300. Additionally, purposive sampling was used to select twenty-one SME participants for interviews.

Sampling Method and Procedure

A stratified sampling technique and proportional representation were used to calculate the representative sample. The sample selection was based on the type of goods produced. The strata were as follows: Siyaso for building materials, household goods, farm implements, car parts, hairdressing, and Gazaland for engineering, welding, brick molding, motor mechanics, carpentry, and catering. The researchers used a simple random sampling technique to choose the respondents from each stratum. For Glenview Area 8, there was no stratification since they specialized in one product: furniture. For Siyaso and Gazaland, a simple random sampling technique was applied to the different strata to create samples. Stratified sampling was done to ensure comprehensive coverage. Convenience sampling was also used since the SMEs have no fixed timetable—they report to work any time and day.

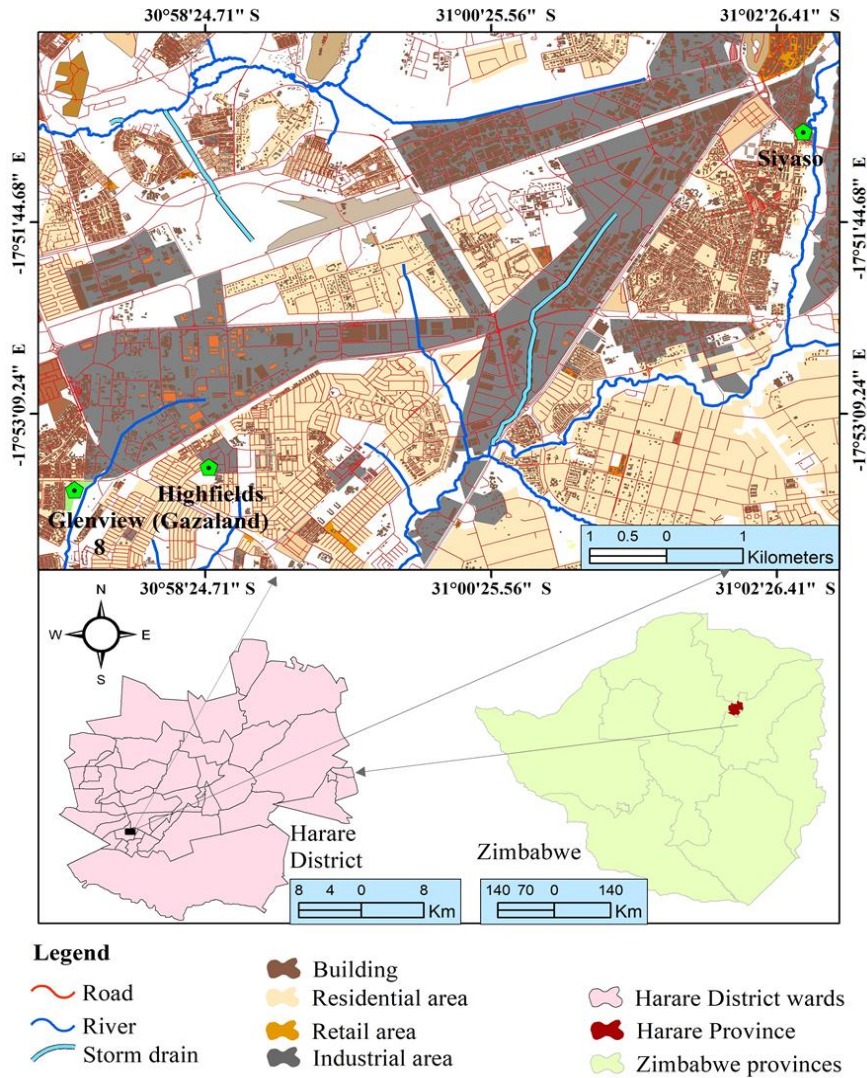


Figure 1: Map of the Study Area (Siyaso, Glenview Area 8, and Gazaland)

Research Instruments and Data Collection

Questionnaires were used as a research instrument. The structure of the questionnaires comprised four sections: the first two sections were about the respondents' background information and the SMEs, while the third section was to solicit the perceptions on various aspects of MSWM compliance with the use of Likert scale answers. Five levels of perception were asked, ranging from strongly disagree to strongly agree, with moderate in the middle scale. The last section was an open question to allow them to freely give suggestions on the topic.

The researchers also conducted face-to-face interviews with SME representatives with the help of semi-structured interviews. Questions for SMEs pertained to compliance and noncompliance with MSWM regulations, waste management activities, their perceptions of MSWM regulations, any use of cleaner production options, and their suggestions to ensure that MSWM regulations are sustainable.

Data Analysis

The principal statistical analysis was descriptive analysis to generate insights into the characteristics of the sample. The collected primary data were checked for error, entered into Excel, and transferred to the SPSS version 26 statistical package. The data were analyzed using descriptive statistics, cross-tabulation, charts, and bar graphs.

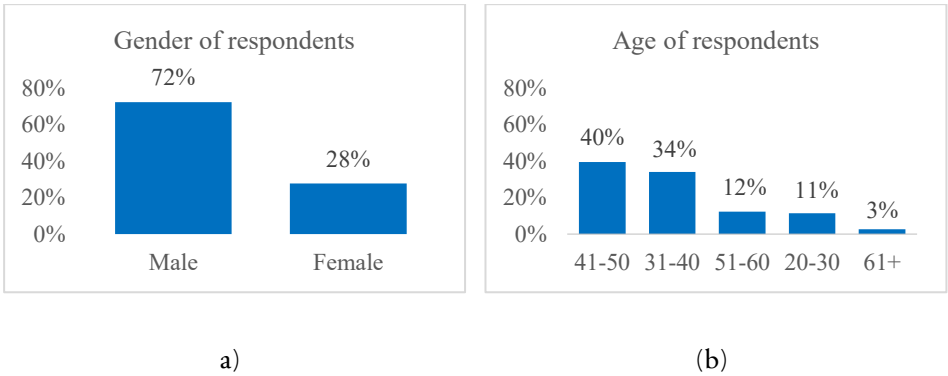
Results

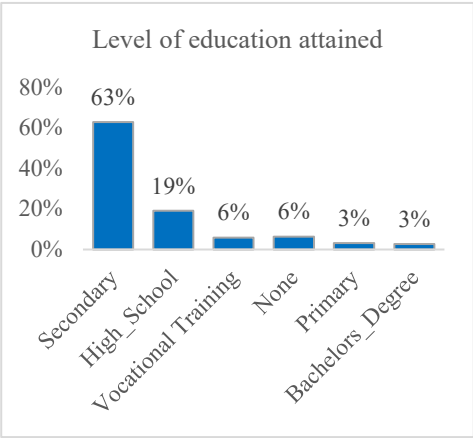
Descriptive Statistics of the SMEs

A total of 232 questionnaires were distributed to the targeted samples, SME workers, in Gazaland, Siyaso, and Glenview Area 8, and 220 questionnaires were completed, with a 95 percent response rate. The characteristics of the respondents and the businesses they represented are presented here.

Socio-Economic Data of the Respondents

Most respondents were males (72%) (Figure 2a). Their ages were between 31 and 60 (85.9%) (Figure 2b), which is considered the working age. Sixty-three percent attended secondary education, followed by those who attended high school (19%) (Figure 2c).



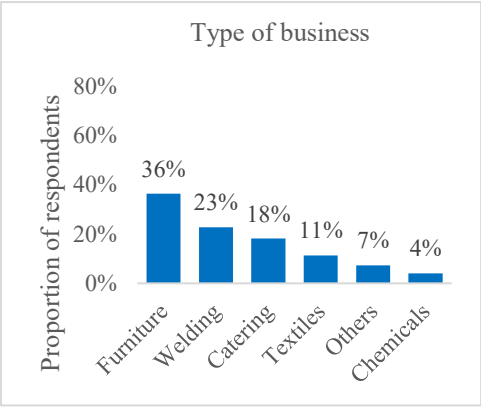


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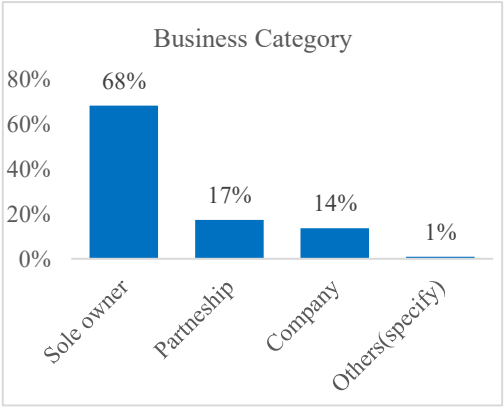
Figure 2: Descriptive Statistics of the SME Respondents

Characteristics of the SMEs

The respondents were engaged in various businesses: furniture making (36%), welding (23%), catering (18), chemicals (4%), and others (7%), which scrap dealing, tire mending, tombstone making, retailing, car mechanics, and engineering (Figure 3a). Sixty-eight percent were the sole owners of SMEs. Those in partnership constituted 17 percent, companies constituted 24 percent, and others 1 percent (Figure 3b).



(a)

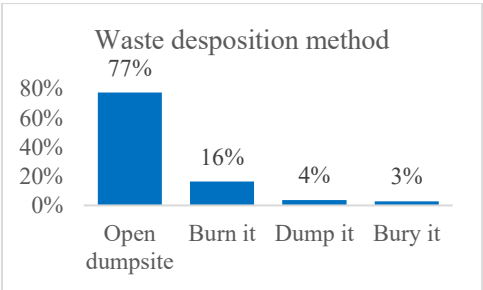


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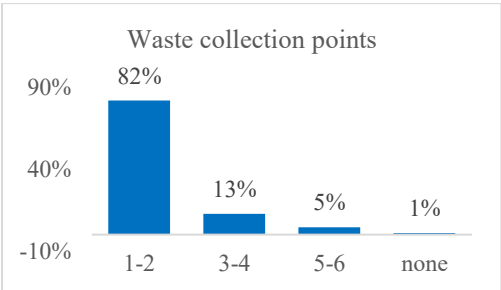
Figure 3: Characteristics of the SMEs

SME Waste Management

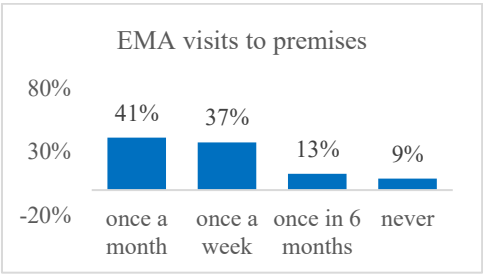
Most of the respondents (77%) disposed of their waste in open dumpsites, 16 percent burned it, 4 percent dumped it in the bush, and 3 percent buried it (Figure 4a). The finding concurs with studies by Jerie and Tevera (2014), who assert that 65 percent of respondents agreed that open dumping is the common disposal method, and the second is burning, with 22 percent. Thus, none had a hygienic way of disposing of waste. Most businesses (76%) had only one to two waste collection points, 12 percent had three to four points, 5 percent had five to six points, and 6 percent had none (Figure 4b). Forty-one percent stated that the EMA team visited their premises monthly, 37 percent once a week, 13 percent once every six months, and 9 percent were not visited (Figure 4c). They rated the waste management situation at their premises as bad (64%), worst (4%), better (23%), and good (9%). This negative response can be explained by the fact that most of their waste is dumped in open areas (Shabani and Jerie 2023) and there is an irregular collection. The respondents indicated that waste caused pollution on their premises (61%), diseases (11%), and others (3%); 25 percent stated that waste had no significant effects on their premises (Figure 4e). The study by Chireshe (2020) showed similar results, that is, poor waste disposal causes surface water pollution (94%), groundwater (90%), land pollution (70%), and air pollution (95%), while the study by Chikowore (2021) reported that 71 percent of respondents were concerned about mosquitoes, 56 percent cholera, and 57 percent rodents.



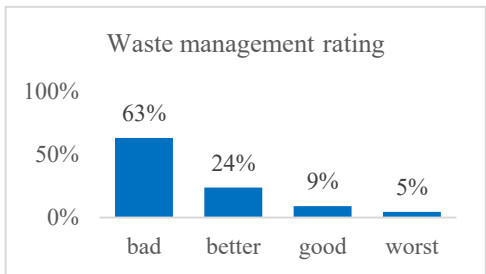
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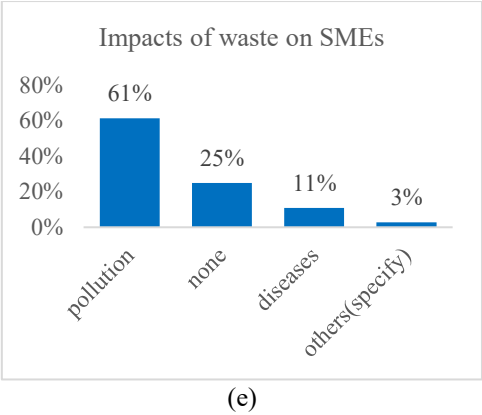


Figure 4: SME Waste Handling

The Perspective of SMEs on MSWM Regulation Compliance

In order to understand the drivers and constraints for the SMEs' compliance, the following information was sought: awareness of MSWM regulations, requirements for SMEs, compliance reasons, noncompliance reasons, actual practices (compliance) of waste management, monitoring and enforcement of MSWM regulations, effectiveness of MSWM regulations, and suggestions to improve the regulations.

Awareness of MSWM Regulations

To gain some insights into the level of awareness of MSWM regulations, the questions centered on respondents' awareness of MSWM regulations, whether or not they had been educated on MSWM regulations, their active participation in waste management activities, and their development and possession of annual waste management plans (Figure 5). The majority of respondents agreed that they were aware of the MSWM regulations (91%). Over half of the surveyed population had received education or information regarding MSWM regulations (63.2%). Nearly half of the respondents (42%) agreed that they actively participated in waste management activities. However, about one-third (33%) did not agree.

Most respondents (77%) indicated a disagreement that they had licenses for generating waste and pointed out that getting a license was very difficult and expensive. As a result, only 20.5 percent agreed that they had licenses for generating waste. A potential gap between waste management education and participation could, therefore, be due to the expensive licenses for generating waste. Furthermore, 70 percent of the respondents did not prepare yearly waste management plans. Again, the difference between education on waste management and practice in the form of annual plan preparation could be attributable to factors such as limited resources to develop the plans and perceived limited benefits of financial returns related to having the plans in the first place, as pointed out by Jerie (2013).

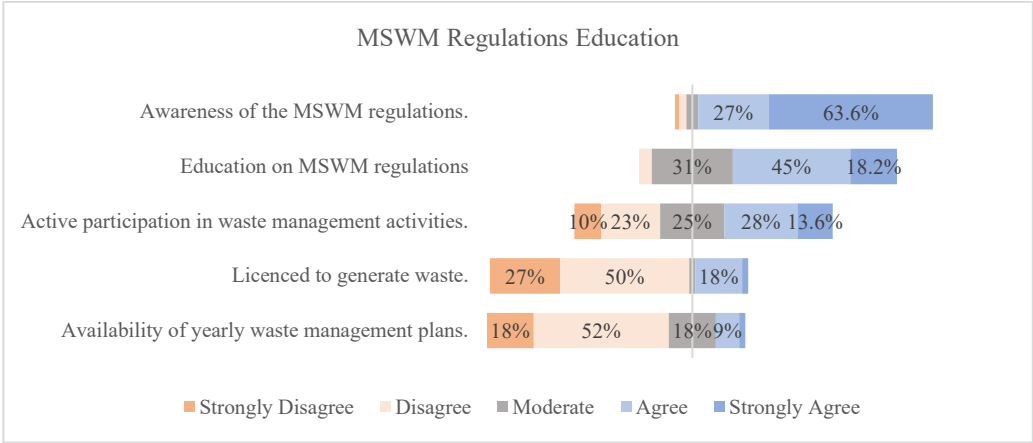


Figure 5: Awareness of MSWM Regulations

Requirements for SMEs and Support from the Authorities

The requirements for SMEs and support from the authorities may also facilitate SMEs’ compliance with waste management. Questions were then asked about the adequacy of refuse collection trucks, the adequacy of waste-minimizing facilities within the respondents’ business complex, and other related issues. Regarding the adequacy of support from the authorities, seven items were asked for the SMEs’ opinions. Overall, perceptions of these statements indicated the inadequacy of support from the authorities. For instance, 76 percent disagreed that there were enough standard waste bins (Figure 6). The same percentage also disagreed about having waste collected regularly, and 57 percent further disagreed that they were collected weekly. There also seemed to be insufficient trucks to collect waste, as 63 percent disagreed that authorities provided enough refuse trucks. This result is in line with a study by Tsiko and Togarepi (2012), who state that the Harare City Council is only able to collect about 54 percent, while Nhuhu et al. (2017) state that waste collection in Harare is about 60 percent. When asked whether they thought that waste was disposed of correctly, 64 percent disagreed. Moreover, 56 percent disagreed that penalties were sufficiently deterrent. This result agrees with the study by Makwara and Magudu (2013).

On the adequacy from the SMEs’ side, 62 percent of the respondents disagreed that the waste from their complex was in the appropriate place, and 71 percent disagreed that their complex had properly managed dumpsites, meaning that there were insufficient dumpsites to receive wastes from their premises. This result concurs with studies by Makwara and Magudu (2013), who reported that at least 70 percent of the collected waste is disposed of at open dumpsites, of which 90 percent do not meet the required standards. Seventy-one percent disagreed that they have suitable waste disposal sites, and 59 percent disagreed that they have methods of minimizing the waste. Almost equal percentages were expressed in the statement

about the SMEs paying penalties for noncompliance: 47 percent agreed, while 40 percent disagreed.

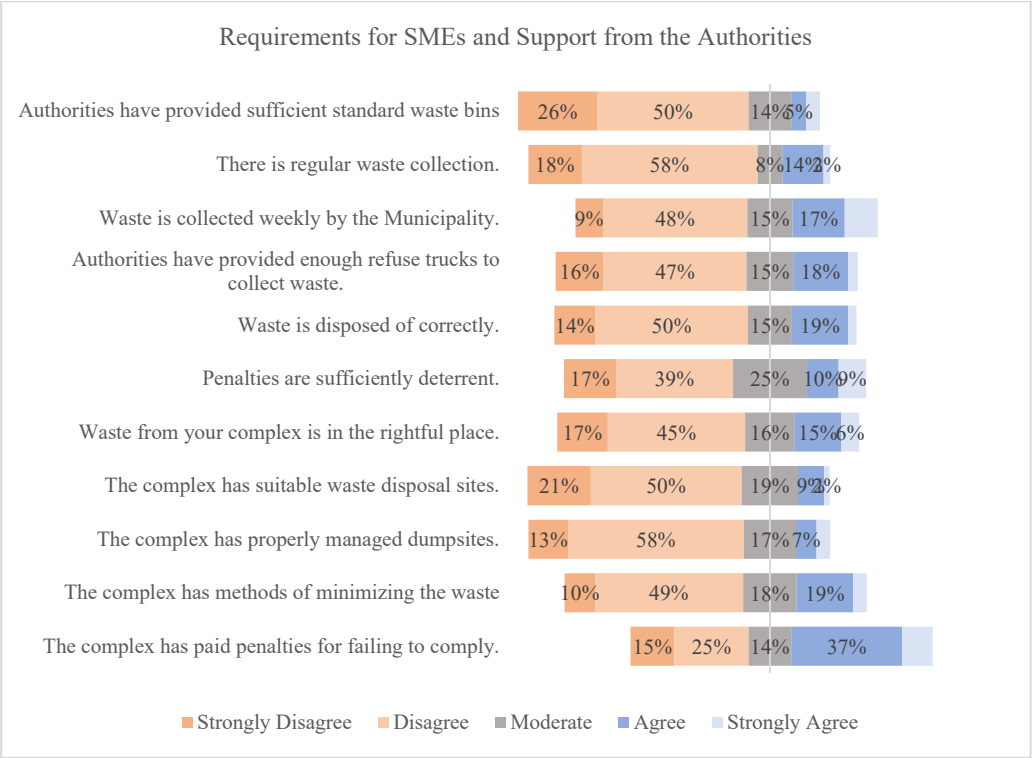


Figure 6: Requirements for SMEs and Support from the Authorities

Motivations for Compliance

Questions were asked for the SMEs’ opinions about motivations for MSWM compliance by SMEs. Respondents perceived that the reasons for compliance lay in greater profits resulting from increased business growth, performance, improved image, and various financial opportunities. Specifically, complying with MSWM regulations improved public image (84%), reduced wastes at their complex (74%), enhanced business performance (71%), brought extra income (67%), provided access to financial help (67%), reduced production cost (61%), helped get donor support (59%), increased the sales (58%), and promoted a circular economy (57%) (Figure 7). We do not find any work that can explain similar results, only Hirpe and Yeom (2021) who supported that improved business image was the complying reason for SMEs.

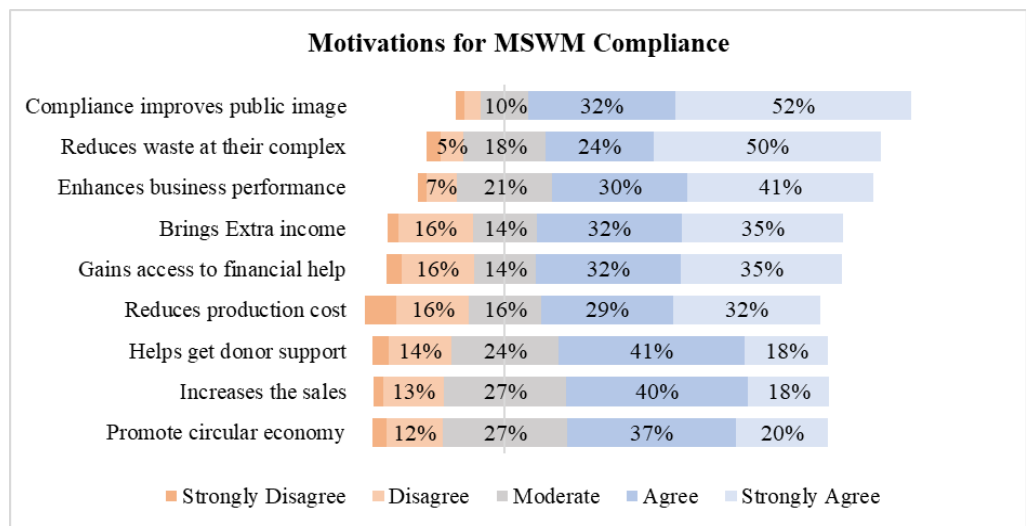


Figure 7: Motivations for Compliance

Reasons for NonCompliance

Noncompliance with MSWM regulations has been attributed to many reasons. In summary, noncompliance can be attributed to the lack of necessary inputs and the MSWM regulations themselves. The respondents agreed that they lacked significant inputs, including financial resources (82%), knowledge of the MSWM content (80%), time (68%), and competency (42%) in MSWM regulations (Figure 8). One study on similar aspects is by Magaisa and Matipira (2017), who found that 49 percent strongly agreed that they lacked capital and 79 percent lacked markets. The results that 80 percent thought that their personnel lacked knowledge may seem to contradict the earlier statement that they were aware of the regulations. This contradiction possibly shows that they knew some of the regulations, but did not know them in detail.

On the other hand, 68 percent of the respondents agreed that they were not involved in providing information for the MSWM regulations may contribute to noncompliance. Also, 64 percent agreed that some regulations were unclear on what should be done, and 39 percent agreed that the requirements of MSWM regulations were burdensome, similar to the findings of McAllister (2015).

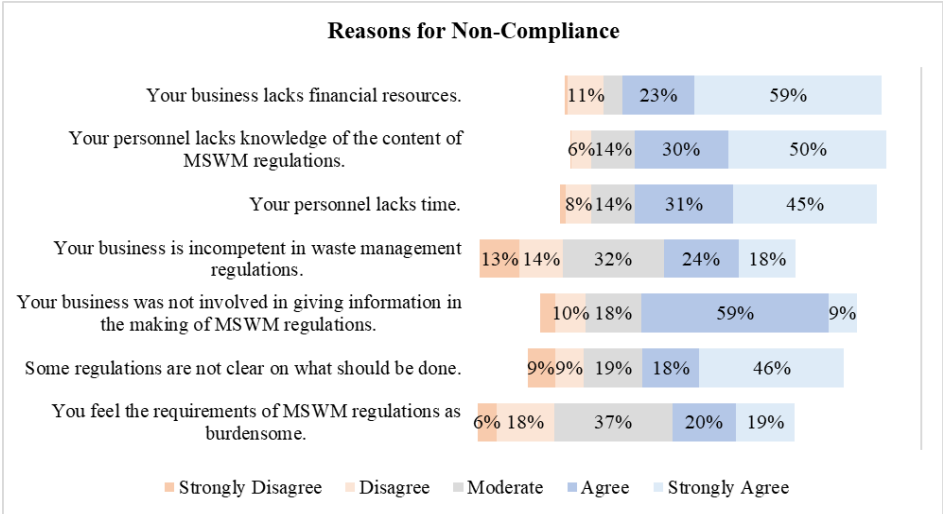


Figure 8: Reasons for Non-Compliance

Actual Practices of Waste Management

To gain insight into how the SMEs complied with the MSWM regulations, questions asked within this section focused on their general practices of waste management, ranging from supplying enough bins to paying fines.

The majority of respondents (71%) disagreed that their business provides enough bins despite them discarding waste in the bins (70%), as alluded to by Mafume et al. (2016). They agreed that their businesses emptied bins on time, resulting in 62 percent agreeing that their working areas were always kept clean and safe. They also agreed that when their businesses violated MSWM regulations, they paid fines to the city council or other regulatory bodies like the EMA. However, 85 percent disagreed that their nearby land was pollution free (Figure 9).

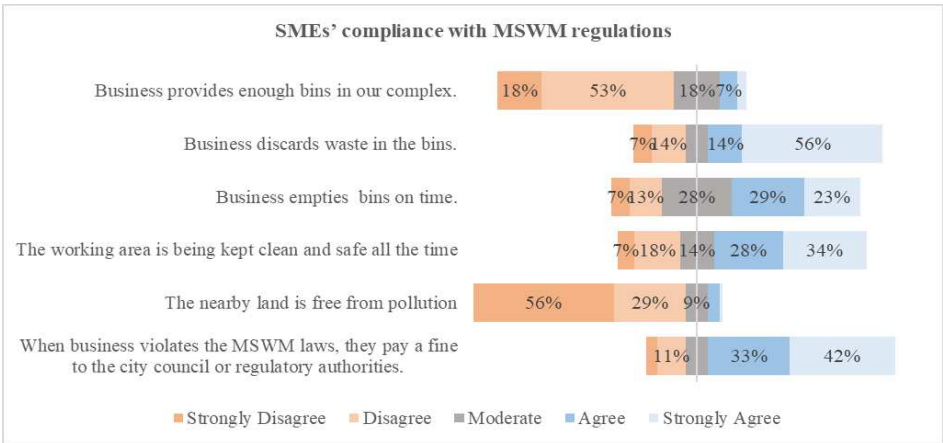


Figure 9: Compliance with MSWM Regulations

Monitoring and Enforcement of MSWM Regulations

Since monitoring might be a motivation for SMEs’ compliance with managing their waste properly, questions were asked about the frequency and nature of waste management monitoring, the monitoring effectiveness, and the penalties for any breaches. Approximately half of the respondents (51%) did not perceive frequent monitoring and checks by the city council (Figure 10), while 35 percent indicated a strong agreement and 15 percent moderately agreed. Regarding waste management inspection by the responsible authorities, most respondents (76%) agreed that regulatory bodies like the EMA inspected waste management in the area, while 19 percent moderately agreed and 9 percent strongly disagreed. Despite the waste inspection, only 34 percent agreed that monitoring and control of compliance with MSWM regulations were effective, while 28 percent moderately agreed and 39 percent disagreed. Almost equal percentages were expressed for the statement that penalties were given for noncompliance with waste management legislation: 44 percent agreed, 43 percent disagreed, and 14 percent moderately agreed.

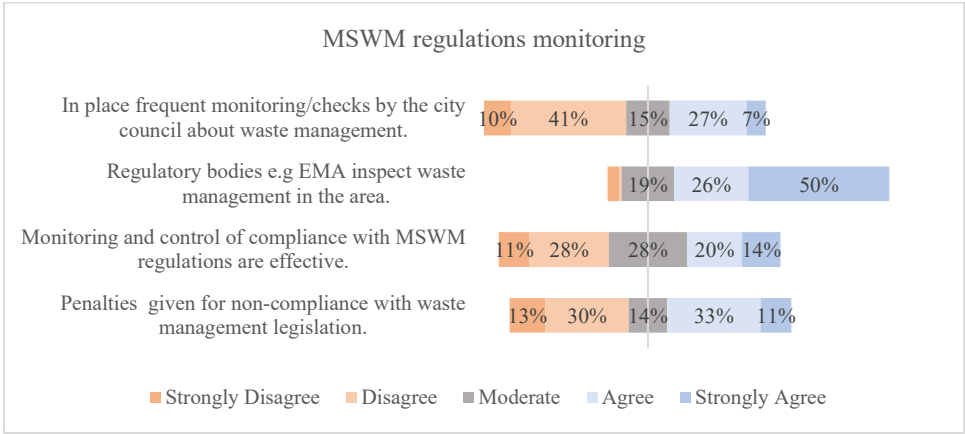


Figure 10: Monitoring and Enforcement of MSWM Regulations

Perceptions of MSWM Regulations and Their Effectiveness

An analysis of the SMEs’ opinions of the MSWM regulations was undertaken to investigate how they perceived the regulations and their effectiveness. The statements include both positive and negative. The top two statements that received the highest percentage on the agreement spectrum were about top-down regulations: minimal SME participation (94%) and made purely by authorities and environmental bodies (88%) (Figure 11). Another statement aligning with this attitude is that the regulations ignore other stakeholders, about which 73 percent of the respondents agreed. This is probably due to the fact that public education on the MSWM was low, as 72 percent agreed. When asked if the regulations were SME based and people friendly, only 57 percent agreed.

However, most respondents agreed that legal and policy framework approaches for MSWM regulations promoted waste minimization (82%) and were environmentally effective (65%) since the regulations advocated for waste reduction. They also agreed that the regulations were cost effective (71%) and that they got incentives for complying, although not often (68%). Despite that, 61 percent disagreed that MSWM regulations have clear roles and responsibilities, and 47 percent disagreed that the regulations are inclusive. There was a split opinion on whether the regulations take corrective action on noncompliance, as 36 percent agreed, 37 percent disagreed, and 27 percent moderately agreed. Similarly, 55 percent agreed that the MSWM regulations were inadequate, while 39 percent disagreed. However, they consistently expressed that the fines were not deterrent enough (71%). Notably, Jerie and Tevera's (2014) study presented that 25 percent of their respondents reported that the Gweru City Council lacked the will to enforce penalties.

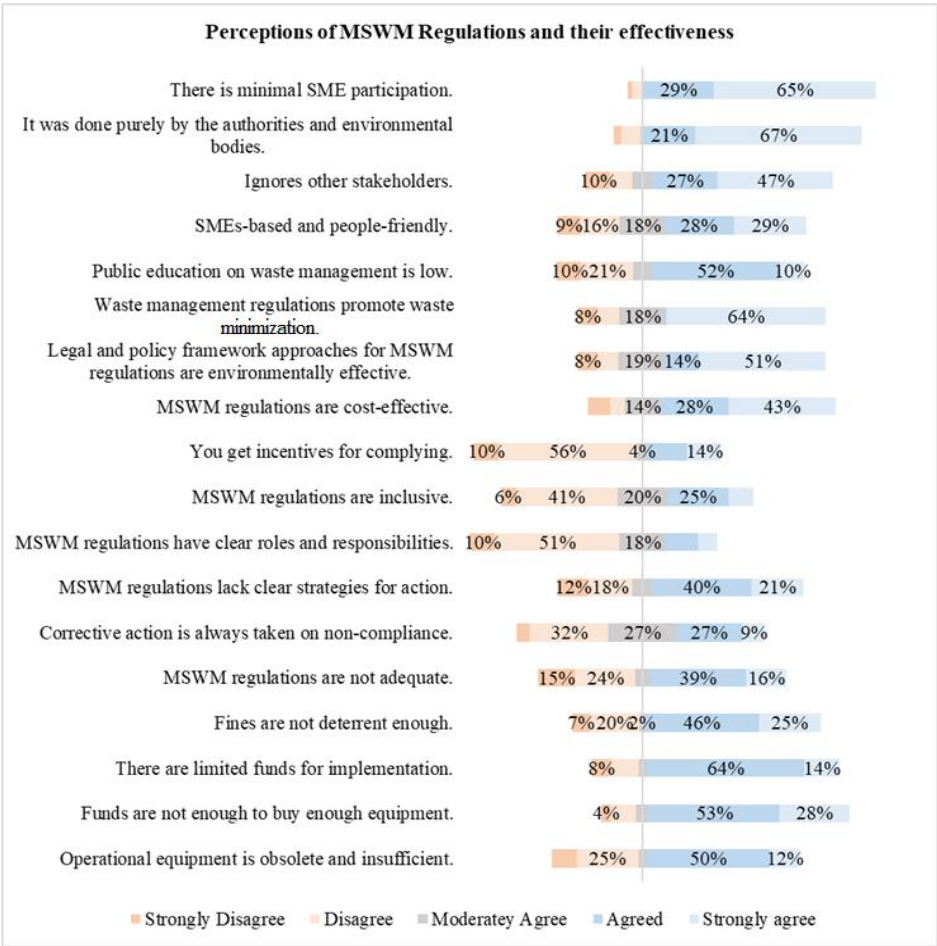


Figure 11: Perceptions of MSWM Regulations and Their Effectiveness

Perceptions on the implementation side revealed that a significant proportion of SMEs agreed that there were limited funds to implement the MSWM regulations (78%), insufficient budget to provide sufficient equipment (81%), or to update them (72%). This result is in agreement with studies by Makwara and Magudu (2013).

Suggestions to Improve MSWM Regulations

This section presents suggestions collected from the last question on the questionnaire, which was an open-ended one, during the survey of the SMEs to gather their opinions on the MSWM regulations. Various responses were made, which were compiled by the researchers as follows:

1. Increased education and awareness campaigns: A significant majority of the respondents (90%) believed that there was a need for increased education and awareness campaigns for SMEs and the general public about the MSWM regulations. “Yes, we are aware of them, but there is a need for regular and intensive awareness campaigns to curb ignorance and as a constant reminder to those who are not aware” (Respondent No. 54). Another respondent also said, “Education is best when it is given away” (Respondent No. 123). Some respondents complained that ever since they had started their business “five years ago,” they had not received any education (e.g., Respondents No. 98, 105, and 206). This recommendation is in agreement with the recommendation by Makwara and Magudu (2013).
2. Regulatory bodies should be stricter and designate clear responsibilities: About 30 percent of the respondents reiterated that some of the MSWM regulations were not clear to them, so they suggested that the regulatory bodies should help with the interpretation of the laws and ensure that environmental laws are adhered to since some of the SMEs no longer cared where they were disposing of their waste. This finding concurs with studies by Batista et al. (2021). More than half of the respondents suggested that regulations should emphasize waste minimization at the source. Manufacturers were supposed to be made responsible for their packaging, and their products should have designs that produce less waste. They cited examples of cereal products with more oversized and multiple packaging. One of the respondents reiterated, “It is the duty of EMA to ensure that regulations should be strictly implemented and these manufacturers should be taken to task pertaining to their packaging” (Respondent No. 75). SMEs blamed the regulatory bodies for being complacent.
3. Stronger penalties: About 80 percent of the respondents suggested that MSWM regulations should be punitive enough to deter poor waste management since the present penalties were too low to secure compliance. Some respondents pointed out, “To them, penalties do not matter since the penalty fees they pay are very meager;

hence, the uncaring attitude” (Respondents No. 49 and 79). Also, about 60 percent felt that the regulations should have provisions for prosecutions to ensure conformance since people are afraid of prosecutions.

4. Making recycling mandatory: More than 80 percent suggested that recycling should be intensified and made mandatory to ensure waste reduction since most waste is thrown away, causing health hazards. One respondent pointed out, “A lot of valuable material is being dumped...if companies could innovate and intensify recycling” (Respondent No. 124). “Yes, there are companies that do recycling, but it is not enough,” said another respondent (Respondent No. 43). About 20 percent also cited that the laws should have provisions on composting and other recovering methods of waste.
5. Restricting the number of workers on the work site: Some respondents (30%) suggested that the MSWM regulations should have provisions to regulate the numbers working at the different complexes, as they felt they were overcrowded, which was probably the primary reason why people were dumping waste everywhere. However, due to high levels of unemployment in the country, people had no other means of survival and, hence, resorted to work in those areas to earn a living. The more SMEs there are in a place, the more waste there is. This phenomenon will create problems in controlling and monitoring waste management.
6. Resource availability: About 85 percent suggested that resources be availed so that the SMEs can properly dispose of their waste. Resources to be available included staffing to carry their waste, enough trucks to collect the waste, more bins, and enough money to pay the workers since they were demotivated. Tsiko and Togarepi (2012) also spoke of this issue. They pointed out that the city council had very few personnel for waste collection, which they attributed to meager salaries. “How can one person be expected to do effective waste collection throughout the complex,” said one of the respondents (Respondent No. 176).
7. SME involvement in MSWM decision-making: About 92 percent of the respondents suggested that SMEs should be involved in decision-making pertaining to waste management since they are the ones producing and handling the waste. They indicated that they had not been involved in deciding waste management regulations (40%) and that it was a top-down approach.
8. More frequent inspections and monitoring: About 60 percent of the respondents suggested that the regulatory bodies, the EMA and the city council, should undertake frequent inspections to ensure compliance since most SMEs just dumped waste anywhere.
9. Regular waste collection: About 80 percent of the respondents proposed that the city council should regularly collect waste. Instead of weekly waste collections, the city council spent two months with no collections done. “This is disheartening,”

according to the respondents (Respondent No. 88). They suggested that there should be properly designated landfills for waste disposal. Some advocated for a timely review of the regulations in order to get in touch with the latest trends in waste management.

10. Incentives: Almost three-quarters of the respondents (75%) believed that the MSWM regulations should incentivize those abiding by the regulations to motivate others.

Discussion

This study explores SMEs' perception of compliance with MSWM regulations in Zimbabwe. The results of this study showed insights into what the SMEs have faced, and the analysis showed some factors that could be classified regarding the drivers and constraints associated with Zimbabwean municipalities' waste management regulations.

The survey and the follow-up interviews confirmed that waste management presents myriad challenges. The root of the matter is attributable to several causes: waste generation (throwing instead of recycling), inadequate waste receivers, irregular waste collection, incorrect waste disposal, and insufficient resources to handle these processes altogether. Adding to the complexity of this scenario is the diverse spectrum of businesses operating within this sector. From furniture crafting and welding to catering, chemical production, tire repair, tombstone crafting, and retail trade, the range of enterprises leads to a heterogeneous waste generation landscape. Thus, the challenge extends further when considering the need for specific disposal methods tailored to distinct waste categories, thus amplifying the intricacy of the waste management puzzle.

The result of the perception survey indicates a generally high awareness of MSWM regulations but reveals gaps in actual participation, licensing for waste generation, and the preparation of annual waste management plans. The survey also showed a range of challenges and inadequacies in both the requirements placed on SMEs and the support they receive from authorities in waste management related to infrastructure, waste minimization, waste collection services, and the effectiveness of penalties as a compliance tool.

SMEs reflected on noncompliance with MSWM regulations, including financial constraints, knowledge gaps, time limitations, regulatory clarity issues, and perceived burdensome requirements. However, they also stated their willingness to pay fines for regulatory violations such as failing to empty bins in a timely fashion. They also appeared to have varying perceptions of waste management monitoring and enforcement effectiveness. In short, SMEs held both positive and negative perceptions of MSWM regulations. While there was recognition of the environmental and cost-effective aspects of the regulations, there were concerns about top-down approaches, lack of clarity, and inadequate enforcement measures. Besides, financial constraints and budget limitations presented challenges in implementing these regulations.

Figure 12, thus, depicts the main factors promoting or hindering Zimbabwe SMEs’ waste management compliance. Factors promoting, or the drivers, will push the compliance up, while factors hindering, or the constraints, will keep pulling it down, as symbolized by the arrows and their pulling directions.

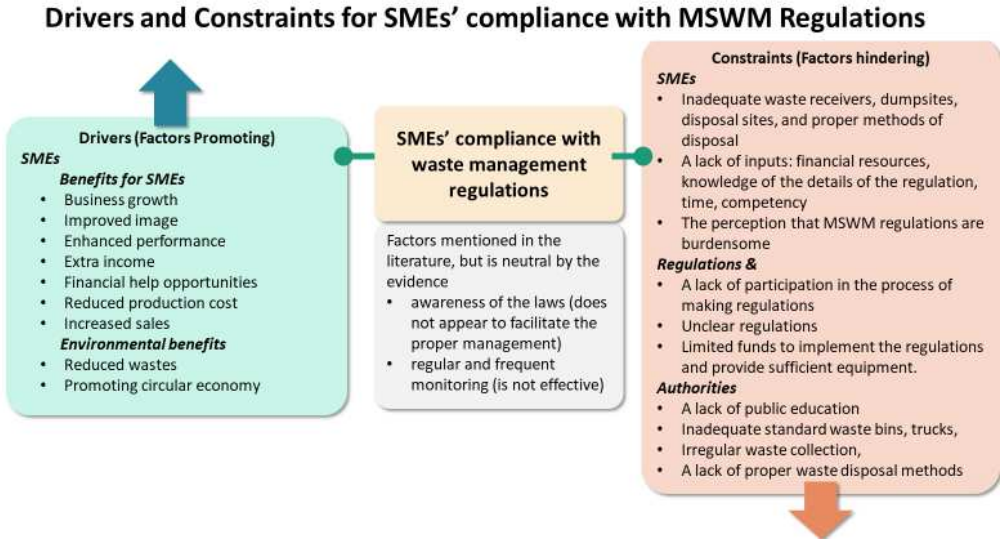


Figure 12: Drivers and Constraints for Zimbabwean SMEs’ Compliance with MSWM Regulations

Drivers for SMEs’ MSWM Compliance

The result sheds light on the motivations that drive SMEs to comply with MSWM regulations. SMEs identify various motivations for MSWM compliance but can be focused on two main elements: business profits and environmental benefits. Business profits include business growth, improved SME and public images, enhanced performance, and financial incentives, such as extra income, increased sales, reduced production cost, as well as increased financial opportunities in terms of access to financial help and donor support. The highlighted environmental benefits are reduced waste and contributions to a circular economy.

Literature also highlights similar benefits. Compliance with regulations promotes and improves a company’s image. Improving the public image will help a firm increase its sales and gain a significant market share (Starkey 1998). A better public image will also promote a prominent company placement in markets. For instance, Loudwater, a small company in the UK, boasted that it was winning customers because it was complying with environmental regulations (OECD 2007). Some SMEs have noticed improved relationships with the community and public sector, increasing their desire to enhance their ties with customers and suppliers (Purwandani and Michaud 2021).

Extra income is also obtained by SMEs when they implement MSWM regulations. There is a reduction in production costs and increased productivity. Implementing MSWM

regulations in small businesses helps improve economic resource extraction by decreasing the amount of money required for solid waste collection, treatment, and disposal and by creating markets for the recyclables (UNEP 2013). From a survey done in the UK on this issue, more than two-thirds of SMEs were satisfied with their returns on investments in resource efficiency and improvements, while a third experienced reductions in production costs (Hillary and Burr 2011, cited in Rizos et al. 2015). Although green business practices entail additional expenses, they frequently have observable advantages like decreased material prices and higher earnings (Čekanavičius, Bazytė, and Dičmonaitė 2014). SMEs can also get donor assistance with a competitive market advantage and excellent environmental profile (OECD 2007). Besides, SMEs can benefit from improving the environment by receiving tax cuts and government subsidies.

When SMEs implement regulations, waste will be reduced (World Bank 2018). It then lessens adverse impacts on the local environment. Due to competent MSWM regulations, several developed countries are witnessing reduced landfilled wastes (Njoku et al. 2015). They can enter circular economy activities such as remanufacturing, recycling, and energy production, and waste is no longer considered a threat but a source of future valuable resources (Bourguignon 2015). In Zimbabwe, MSWM regulations, if embraced by SMEs, would raise awareness of the advantages of resource efficiency and increased productivity and competitiveness due to the circular economy (OECD/ERIA 2018).

Constraints for the SMEs' MSWM Compliance

The pulling-down weight of constraints comes from three major elements: the SMEs, the regulations, and the authorities. On the SMEs' side, the lack of essential waste-related equipment, such as waste receivers, designated dumpsites, and disposal sites, constrains them from proper waste disposal. Additionally, a lack of inputs, like financial resources, knowledge of the regulation details, and the SMEs' competency in waste management methods, exacerbates the constraints. On top of that, the feeling that MSWM regulations are burdensome hinders their willingness to comply, leading to inefficient waste management.

The regulations themselves also prove to be constraining. MSWM regulations did not involve SMEs' participation and are also unclear about what to do precisely. More importantly, regulations do not enable fund provisions to implement the regulations, such as a budget for upgrading or purchasing sufficient equipment used in waste management. Thus, the authorities do not have enough budget to handle waste collection and disposal regularly and adequately. There is also a lack of technical support to update waste disposal methods and improve waste management technology.

The results agree with previous studies in many aspects. A survey revealed that SMEs lack the financial resources to establish and manage recycling schemes (Rademaekers, Asaad, and Berg 2011) because they require direct and indirect financial costs, such as time and human

resources, for environmental improvements (Klinkajon 2020). The indirect costs challenge implementing regulations (Iraldo, Testa, and Frey 2010). The lack of resources is worsened by the high demand for documentation, which demotivates the employees as they spend most of their time on documentation instead of production. So, to them, regulations are a cost without any benefits.

SMEs' lack of knowledge of MSWM legal aspects, coupled with low awareness and understanding of environmental impact, makes it challenging to implement MSWM regulations (McAllister 2015). SMEs are also affected by their incompetence: a lack of skills and ability to implement regulation approaches (OECD 2007). Calogirou et al. (2010) also mentioned that the lack of expertise and capacity to comply with the requirement causes them to rely on external consultants, resulting in a high extra cost. Environmental programs rely on the massive participation of employees, but it becomes problematic when they lack the knowledge to participate (Pinkse and Dommisse 2009). Also, because they consider enhancing resource efficiency as expensive for their business, SMEs that are unaware of the circular economy benefits may overlook the financial gains from doing so (Rademaekers, Asaad, and Berg 2011). OECD (2007) listed another challenge as the lack of funds to invest in technical solutions to help them run more environmentally sustainable operations.

The top-down approach, common in Russia as well, creates considerable resentment among the target audience and seriously undermines compliance levels. In Europe, SMEs illustrate the lack of incentives in waste legislation to stimulate environmental behavior (Majukwa 2019). In India, it is labeled a hindrance that requires unity, with SMEs struggling to understand regulatory norms (Majukwa 2019). The prime strategy can be modeled after the EU's directives on reducing landfills and waste.

Environmental programs rely on the massive participation of employees, but it becomes problematic when they lack the knowledge to participate (Pinkse and Dommisse 2009). Being knowledgeable of the rules and being able to abide by them is a determining factor when considering compliance (Winter and May 2001). The regulations, enforcement agencies, and prosecutors will shape one's actions and mindset in their behavior (Mtema 2014). SMEs and communities alike should be educated with ongoing educational campaigns.

Guidelines for Improvement

Based on the suggestions provided by SMEs, the researchers propose practical and concise guidelines to improve MSWM regulations, as illustrated in Table 1.

Clarity and Responsibility

Clear regulations and waste management standards can dissolve ambiguous and confusing regulations, extending a guiding hand to SMEs. This clarity can foster comprehensive understanding and, consequently, help bring about compliance with waste management laws. This clarification can also extend to cover the responsibility of SMEs and manufacturers

to emphasize waste minimization at its very source and are responsible for embracing the mantle of eco-friendly packaging and the clever design of their products.

Strengthening Penalties: Waste management's efficacy relies heavily on the weight of substantial penalties that are sufficiently deterrent to prevent negligent waste management practices. The regulations should, thus, be revised to claim heavy demand for penalties and the relentless enforcement of legal provisions to establish indisputable compliance.

SME Involvement in Decision-Making

There needs to be a transformational process of practice, moving away from the traditional, top-down paradigm and into an era where stakeholders are key active informants to provide practical inputs. Before issuing any laws and regulations, participation from actual stakeholders should be sought, or their situations and concerns should be considered. The call resonates with the response made by SMEs to be an integral part of the decision-making processes that govern waste management. Their insights as evocative inputs should be considered to make the regulations more compliant.

Frequent Inspections and Monitoring

The pursuit of constant compliance demands the continuous inspection and monitoring by regulatory bodies embodied by the EMA and the city councils. There needs to be more frequent and consistent inspection and monitoring observation to steadfastly keep polluters on guard and not dispose of waste in a manner that can harm the environment from their disposal malpractices.

Incentives for Compliance

Businesses are most concerned with their cost and profits. While proper waste management incurs costs to SMEs, financial incentives for compliance can invoke the motivation for conformity by incentivizing businesses to adhere to MSWM regulations. The reward for compliant SMEs can also encourage the adoption of appropriate waste management practices and technology.

Promoting Recycling

To further facilitate a reduction in waste amount, the regulations should endorse the mandatory practice of recycling. Not only that, reusing, recovering, restoring, composting, and other waste recovery methods should be featured prominently to create a vibrant SME ecosystem that is ecologically and environmentally friendly.

The researchers also propose guidelines for the authorities dealing with waste management in Zimbabwe to assume the following roles:

Campaign for Education and Awareness

Ongoing educational campaigns to raise awareness of the MSWM regulations and other cleaner production and consumption should be rendered for SMEs and the general public. The responsible authorities should tailor the programs to suit the needs of different groups in society so that they are fully aware of the regulations and the impacts of noncompliance.

Providing Sufficient Resources for Waste Management

To expect efficient waste management, budgetary allocations for the management must receive a high priority. The staffing, the waste collection trucks, the waste-receiving bins, and the designated waste receptor place are inevitable factors for effective waste administration unless the practice of a circular economy has become a regular part of their production, which does not seem to be practical in the Zimbabwean context at the moment.

Regular Waste Collection

At the heart of appropriate waste management also lies reliable and punctual waste collection. This practice requires an uncompromising commitment from the authorities' part. Furthermore, adequately designated landfills, which are still the epicenters of waste disposal, should be allocated to receive waste sufficiently so that minimum residual waste will be left to create micro-environmental pollution at the disposal sites.

Table 1 recaptures the essential guidelines for significant stakeholders to move forward with the MSW regulations and management. Although these guidelines are designed for Zimbabwe, they can transcend the borders of the studied country, offering applicability to other nations in the region that share similar contextual characteristics. The guidelines for the policymakers and the EMA will benefit from bridging the knowledge gap, as presented in this study, and identifying ways that help to increase public awareness and intensifying awareness campaigns. The EMA will be able to make informed decisions and implement effective measures to ensure the well-being of residents.

Furthermore, the study's results and guidelines will assist the government in coming up with all-inclusive policies and programs to ensure sustainable SME waste management. Zimbabwe will benefit in that there will be a promotion of economic growth by reducing the costs of waste disposal and enhancing recovery and recycling.

Table 1: Proposed Guidelines for Major Stakeholders to Improve MSWM Regulations and Management

<i>Guidelines for the Zimbabwean Government</i>		
<ul style="list-style-type: none">▪ Clarity and Responsibility:<ul style="list-style-type: none">○ Clarify ambiguous regulations to help SMEs understand and adhere to environmental laws.○ Emphasize waste minimization at the source and hold manufacturers responsible for eco-friendly packaging and product design.▪ Strengthen Penalties:<ul style="list-style-type: none">○ Implement punitive penalties that are substantial enough to deter poor waste management practices.○ Enforce provisions for prosecutions to ensure compliance.▪ SME Involvement in Decision-Making:<ul style="list-style-type: none">○ Involve SMEs in decision-making processes related to waste management since they are key stakeholders. Shift from a top-down approach to a more collaborative approach that includes SME input.▪ Frequent Inspections and Monitoring:<ul style="list-style-type: none">○ Conduct regular inspections through regulatory bodies like the EMA and city councils to ensure compliance.○ Increase monitoring to prevent haphazard waste disposal.▪ Incentives for Compliance:<ul style="list-style-type: none">○ Incentivize businesses that adhere to MSWM regulations to motivate others to comply.○ Reward compliant SMEs to encourage good waste management practices.▪ Promote Recycling:<ul style="list-style-type: none">○ Make recycling mandatory to reduce waste.○ Promote and provide for composting and other waste recovery methods in the regulations.		
<i>Guidelines for Zimbabwe's Relevant Authorities</i>		
The EMA	The Government	The Harare City Council
<p>Campaign for Education and Awareness:</p> <ul style="list-style-type: none">▪ Create regular and intensive awareness campaigns to educate SMEs and the general public about MSWM regulations.▪ Provide businesses with ongoing education to prevent ignorance and raise awareness.	<p>Provide Sufficient Resources for Waste Management:</p> <ul style="list-style-type: none">• Increase the budget for waste management.• Administer and manage resources for proper waste disposal, including staff, waste collection trucks and bins.	<p>Regular Waste Collection:</p> <ul style="list-style-type: none">▪ Collect waste consistently and timely.▪ Designate proper landfills for waste disposal.

Conclusion

This study delved into how SMEs in Zimbabwe perceive and navigate the complex compliance landscape with MSWM regulations. By doing so, we gained insight into the challenges faced by SMEs in meeting these regulations and uncovered the factors that shape waste management practices in Zimbabwe.

Waste management in Zimbabwe is far from straightforward, with several factors contributing to its complexity. These include the sheer volume of waste generated, insufficient infrastructure, irregular waste collection routines, improper disposal practices, and limited resources allocated to manage these processes. Adding to this complexity is the diverse range of businesses in the country, spanning from furniture crafting to catering. Each of these enterprises necessitates tailored waste disposal methods, further complicating the waste management puzzle. Our findings reveal that SMEs in Zimbabwe are well aware of MSWM regulations but often fall short when it comes to actual compliance. Challenges arise in securing licenses for waste generation, preparing annual waste management plans, and meeting regulatory requirements.

SMEs' perceptions of noncompliance with MSWM regulations stem from various factors, including financial limitations, knowledge gaps, time constraints, regulatory ambiguities, and perceived regulatory burdens. However, despite these challenges, there is a willingness among SMEs to pay fines for violations and to have their waste collected promptly. Their views on waste management monitoring and enforcement effectiveness vary, reflecting a mixture of positive and negative perspectives on MSWM regulations. While recognizing the environmental and cost-saving aspects of these regulations, the SMEs expressed concerns about top-down approaches, regulatory clarity, and the adequacy of enforcement measures, all of which are exacerbated by budget constraints.

What drives SMEs toward compliance with MSWM regulations? The main motivations revolve around business profits and environmental benefits. Compliance is closely associated with business growth, an enhanced public image, improved performance, and financial incentives, such as increased sales and reduced production costs. SMEs also acknowledge the environmental advantages, which include reducing waste and contributing to a circular economy. These findings align with existing literature, where compliance with regulations is seen as a means to enhance a company's image, improve public relations, and gain a stronger foothold in the market. For SMEs, this can translate into additional income, reduced production costs, and access to financial support and donor assistance through environmentally friendly initiatives.

However, constraints on SMEs' compliance with MSWM regulations stem from multiple sources. These include a lack of essential waste-related equipment, limited financial resources, confusion over regulatory details, and a lack of expertise in waste management practices. The regulations themselves lack sufficient SME involvement, clarity, and budget provisions for necessary equipment and staff. Moreover, authorities face their own budget limitations, lack

technical support, and have limited funding available for waste collection and disposal. These constraints align with prior studies highlighting SMEs' financial, knowledge, and capacity challenges in complying with waste management regulations.

Although this study has been conducted in Zimbabwe, its findings hold relevance and applicability not only for this specific country but also for other nations within the region. We suggest that future studies examine the environmental and economic aspects of SMEs' compliance in any country in the region. Furthermore, research on behavioral economics and how to incentivize compliance will also be helpful.

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Informed Consent

The author has obtained informed consent from all participants.

Conflict of Interest

The author declares that there is no conflict of interest.

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