

Article

Sustainable Design Orientation in Furniture-Manufacturing SMEs in Zimbabwe

Walter Chipambwa ^{1,*}, Richie Moalosi ², Yaone Rapitsenyane ² and Olefile Bethuel Molwane ²¹ School of Art and Design, Chinhoyi University of Technology, Chinhoyi Private Bag 7724, Zimbabwe² Faculty of Engineering and Technology, University of Botswana, Gaborone Private Bag 0061, Botswana; walter01@gmail.com (R.M.); rapitsenyane@ub.ac.bw (Y.R.); molwaneob@ub.ac.bw (O.B.M.)

* Correspondence: wchipambwa@cut.ac.zw

Abstract: Small and Medium Enterprises (SMEs) have become the backbone of many nations as they contribute immensely to the growth of their economies. In Zimbabwe, they have filled in the gap left by the big companies after the economic crisis of the early 2000s. The impact of SMEs is small when we look at their environmental, economic, and social impact, but when grouped, it becomes a considerable contribution. Evidence from the literature shows that SMEs have a short lifespan. Therefore, sustainability in manufacturing SMEs in emerging economies and their survival strategy have been discussed. This study aimed to examine sustainability in the context of design in furniture-manufacturing SMEs in Zimbabwe. The qualitative study used a purposively selected sample of ten SMEs where the owner and/or manager and designer were the main participants. Observations were also conducted on-site in all ten cases where evidence was noted for analysis. The study reveals that SMEs in emerging economies face many challenges, such as a lack of finance, skilled human resources, and management commitment that hamper their capacity to adopt sustainable design in their practices. Sustainability adoption in these SMEs is more of adherent to the regulatory framework, especially considering the environmental aspect. The study concludes by recommending that policy makers in government should create tax rebate incentives that should be awarded to those SMEs that score highly in all three pillars of sustainability.

Keywords: sustainability; manufacturing; SMEs; design; environment; furniture

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1. Introduction

For good reason, sustainability has become a buzzword in business. With the increasing concern for the environment and the need to use resources responsibly, businesses are being pushed to look at how they can use sustainability for competitive advantage. Small and Medium Enterprises (SMEs) in emerging economies are no exception, as they operate in the same business environment as large businesses [1]. These businesses face unique challenges when it comes to sustainability in manufacturing. Like large businesses, small businesses must also participate in proffering solutions to reduce the consequences of environmental damage. Improvements in sustainability have been demonstrated to be very effective at slowing and limiting environmental damage [1,2]. Calogirou et al. [3] highlight that SMEs collectively cause environmental harm and generate more waste than all prominent organizations. This is because globally, SMEs constitute 90% of businesses and employ more than 50% of the global workforce [2]. Due to a lack of resources and limited influence over their supply chains, SMEs are less likely than more significant firms to implement transformational changes, being innovative and sustainable to remain competitive [3,4]. Studies by Cote [5] and Klewitz [6] concur that it is challenging to engage SMEs on issues to do with environmental management; hence, more work needs to be conducted in the area with SMEs [7].

Economically affluent countries tend to be home to most sustainability proponents. In contrast, business is not doing well in emerging economies as SMEs face uncertain

futures [8]. SMEs in developed countries tend to pay greater attention to global elements of climate change in their economic activities, such as lowering carbon emissions as they internationalize, unlike their counterparts in emerging economies [9]. Coldwell [8] states that sustainability in emerging economies typically focuses on localized contextual elements that prioritize local political, legal, and economic factors, including profit, employment, and rapid economic growth. Starting an SME in a developed economy is more of choice to contribute to economic growth and, recently, a passion for achieving global sustainability targets. However, in developing economies such as Zimbabwe, there is more focus on seeking to earn a living, as the entrepreneurs seek to create wealth for survival [10].

Since most consumers are hesitant to pay more for environmentally friendly goods and services, it is challenging for SME managers to justify investments in social and environmental management from an economic and competitiveness point of view [11]. Environmentally friendly goods and services are good business, especially in consumer contexts where sustainability has become part of their choices for consumption. SMEs ignore their social responsibility, yet research indicates that socially conscious businesses outperform rivals in the short and long term. Additionally, the study findings indicate that SMEs' aspirations for sustainable development differ significantly from those of large businesses because of the constraints that limit them [12]. Manufacturing SMEs in emerging economies face several challenges when it comes to sustainability. Among these challenges is the need for more resources and infrastructure to support sustainable practices [6–8]. Many businesses operate in areas with limited access to renewable energy sources or recycling facilities.

Additionally, implementing sustainable practices can be prohibitive for SMEs with limited financial resources. Another challenge is the lack of awareness and education about sustainable practices. Many SMEs in emerging economies may not fully understand their manufacturing processes' impact on the environment or may be unaware of alternatives or more sustainable methods. This lack of knowledge can make it difficult for these businesses to make informed decisions about sustainability. SMEs start as an idea from an individual who dreams of the enterprise growing into a large company one day but often result in a poorly developed sustainability model [13]. The core business strategy often lacks a focus on sustainable practices to be adopted by the SME, as most of the operations are conducted informally [14].

Although the significance of SMEs has been widely discussed, the question of what an SME is still stands. Since there are differences across nations and sectors, there is no universally accepted definition of an SME [15,16]. The concept of SMEs differs from industry to industry and from one nation to another, since there are several definitions of SMEs that come from varied views among academia, organizations, and governments. The SME Act (24:12) of Zimbabwe defines an SME as a business that employs 6 to 75 employees, with an asset base of USD 250,000 to USD 2 million and an annual turnover of USD 500,000 to USD 3 million. Most scholars have looked at the sustainability of SMEs in developing economies from the dimension of their survival skills, as it is usually challenging for them to survive beyond five years in business [17,18]. Majukwa et al. [19] conclude that four factors, namely, quality, employee skills level, dedication and passion of owners, and customer satisfaction, affect the sustainability and development of SMEs in Zimbabwe. Other scholars, such as Dzingirai et al. [18], tackle the sustainability of SMEs in Zimbabwe in the context of their survival post the COVID-19 pandemic. SMEs in Zimbabwe are family run and non-family run. They contribute about 50% of the nation's GDP and 60% of its active workforce [19,20]. Masocha [1] considers sustainability from the social aspect in a typical developing economy and concludes that social sustainability and SME performance directly affect one another. Few studies attempt to explore sustainability from the lenses of a manufacturing SME in developing economies. This study tries to understand sustainability in developing economies in the context of Zimbabwe as one nation that has witnessed the importance of SMEs at a time most large companies closed their doors. The study explores sustainability in the furniture manufacturing sector, as design has played a crucial role in

the growth of this SME sub-sector. The study considers sustainable design as a strategy to achieve sustainability in the furniture-manufacturing SMEs in Zimbabwe. The following research questions guided the study.

- What are your current sustainable design practices and goals?
- What are your biggest challenges in implementing sustainable design practices?
- What are some of the most innovative sustainable practices you have implemented?
- How do you engage employees in sustainability initiatives?

This research aims to add to the body of knowledge on sustainability in manufacturing SMEs in emerging economies where design is crucial to the manufacture of products. Sustainable design has become increasingly important in recent years, as businesses worldwide look for ways to reduce their environmental impact. In Zimbabwe, furniture-manufacturing SMEs are beginning to take notice of this trend and are starting to incorporate sustainable design practices into their operations. This paper explores the current state of sustainable design orientation in furniture-manufacturing SMEs in Zimbabwe and identifies areas where further improvements can be made. The study's contribution is valuable to the government, manufacturing SMEs, and policymakers as it provides insights into policy formulation, which is critical to environmental preservation. Thus, the research aims to assess, develop, and make recommendations to assist manufacturing SMEs in developing their operations to ensure their design and manufacturing processes conform to sustainable design principles.

Conceptual Framework

Drawing on empirical perspectives of sustainable design in SMEs, the study presents a conceptual framework depicting design competencies and resource availability. As shown in Figure 1, the conceptual framework explains that SMEs have to look at the three pillars of sustainability to achieve positive results. The design aspect is essential as it is determined by the competencies of staff who are employed by the SME and also the level of equipment and technological investment.

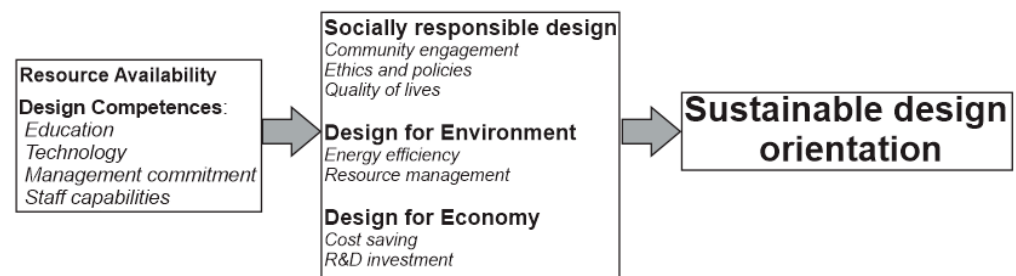


Figure 1. Conceptual framework for sustainable design orientation in SMEs.

2. Literature Review

2.1. SMEs and Sustainability

Sustainability is an interdisciplinary idea that focuses on what must be done to ensure that humans coexist peacefully with nature while also considering the needs of future generations. As reported by [21,22], implementing sustainable practices moves at a slow speed for many SMEs. SMEs have become the economic backbone of many nations, especially in emerging economies. They are crucial for reducing unemployment and act as primary raw materials and other resource consumers. An urgent need is arising to make them accountable for their carbon footprint so that these SMEs act responsibly in their environments. Many large firms have embraced sustainability initiatives to address social and corporate image, but sustainability is still poorly recognized within manufacturing SMEs [23]. Johnson [24] estimates that about 60–70% of the world's total pollution is due to SMEs. Behjati [25] further supports this by stating that SMEs in the manufacturing sector account for 64% of air pollution.

Regardless of the SME's size, it can participate in sustainable practices. However, it should be noted that SMEs have limitations, given the common challenges with SMEs [26]. SMEs do play a significant role both in emerging economies and developed economies. Thus, they need to engage in issues of sustainable development [27]. Despite the extra costs incurred, refs. [28,29] concur that SMEs benefit if they engage in sustainable practices, which might boost their competitive advantage. Sustainability, as viewed from the triple bottom line (TBL), can be defined as the combination of economic, social, and environmental concepts as critical variables that control the decision-making process in business [30]. In the case of SMEs, they need more encouragement to invest in sustainable practices [31] through evidence from other successful cases. Broccardo [32] acknowledges that the management system used in an organization determines sustainable performance. Similarly, Stawinska [27] reports that SMEs that are keen to incorporate sustainability or have done so are very few. This is attributed to the problems synonymous with SMEs, such as "Limited financial and human resources and a lack of awareness, competence, and access to appropriate tools for corporate sustainability" [26,32].

Compared to larger organizations, SMEs are more adaptable and closer to client expectations. Thus, they are expected to respond better to environmental aspects concerning their manufacturing activities [33,34]. However, this is different from the situation on the ground, as reported by [35–37]. Several factors are cited as the key challenges to environmental issues from the SME perspective. These include less knowledge or exposure to environmental issues, lack of a clear organizational role concerning the environment, and lack of customer-driven demand for environmental improvement [36]. The question is, to what extent do the customers dictate the environmental issues vis-a-vis the products they buy from the SMEs involved in manufacturing? Can these customer concerns be incorporated within the organization? If so, to what extent? Due to their size and flexibility, it is then expected that SMEs can embrace and play their role in preserving the environment for future generations. SMEs' incentive to engage in environmental problems can come from internal and external factors, though [38] posits that external influences far outweigh internal ones.

2.2. Sustainability-Oriented Innovation in SMEs

SMEs embrace eco-innovation to integrate sustainability into their business practices. Although "eco-innovation" and "sustainability-oriented innovation" are frequently used interchangeably, the former refers only to innovation's environmental and economic elements. At the same time, the latter also includes societal factors [39]. Over time, eco-innovation has expanded to cover a broader range of topics, typically linked with inventions focused on sustainability [6]. Using eco-design, design for the environment, and sustainability, Sustainability-Oriented Innovation (SOI) could be achieved by creating ecologically beneficial products, as they lower and remove hazardous materials and limit waste [38]. Eco-innovation refers to inventions that create ecological changes to support a sustainable ecosystem. It entails creating, using, or investigating new business or client organizational or management techniques [39]. Stakeholders or environmental regulations are the primary sources of motivation for SMEs to implement environmental initiatives [40]. Management commitment to adopting sustainable practices in SMEs is vital, as this drives the company's employees towards achieving one goal. In their study on SMEs in Egypt, the authors of [41] argue that the SMEs' internal capabilities affect the eco-innovation type they implement. On the contrary, ref. [42] argues that there is a dearth of studies on sustainable leadership practices in SMEs, making it difficult for these SMEs to implement sustainability in their operation.

This, therefore, implies that top management, employee dedication, or managerial attitude and motives become key in SOI. Applying practices that are motivated by sustainability can help SMEs become more competitive while also promoting sustainable development [43]. SMEs that use sustainable process innovation techniques alter how they use resources and increase their operations' overall eco-efficiency [44]. Sustainable process

innovation techniques improve SMEs' overall inventive capacity and ability to adapt and meet sustainability criteria. Even though Mangla et al. [45] report that there is scant literature on SMEs that have adopted the concept of circular economy in developing countries, their study on Mexican SMEs [46] argues that the adoption of the circular economy in SMEs in emerging countries can bring positive effects to their operations.

2.3. Sustainable Design in Manufacturing SMEs

Sustainable design aims to achieve the following: produce a product with less effect or harm to the environment, produce a product that will bring profit to the organization, and produce a product that will positively impact consumers for some time. The European Commission [47] reports that the effect of a product on the environment is established in the early phases of product creation. According to [48,49], designers determine this stage. Every stage of the design process may include sustainability considerations, and several tools have been created and used to help with this effort [50]. A sustainable manufacturing system comprises three key elements: research, development, and commercialization [51]. Sustainable orientation in SMEs and collaboration capabilities are powerful determinants of green innovation adoption and mediate the effect of absorptive capacity on green innovation adoption [52]. The authors [52] further argue that organizations should design a reward system that considers environmental contributions to facilitate the environmental transition in SMEs.

Therefore, manufacturing SMEs must structure their operations in a way that will allow all three elements to be accomplished as they promote the development of sustainable economies. This is because they can produce high-caliber jobs that give residents access to better living circumstances and the opportunity to offer value to society by providing answers to market requirements and challenges not currently addressed by other businesses. There are several methods used when designing for sustainability, and these include the triple bottom line [49], the eco-design approach [53], and the product development approach [54]. Therefore, designers working for various manufacturing companies have more influence on the sustainable design aspects of the products they design during the development phase to determine the product's cost, materials, aesthetics, quality performance, maintenance, and durability. In furniture manufacturing, the eco-design approach to the design process places sustainability at the center of all design activities.

Howarth [55] argues that product designers lack awareness and consideration for the products' environment as they concentrate more on the product's technical, visual, and ergonomic aspects. For designers to develop sustainable ideas in their designs, they have to appreciate and understand their role along the sustainability chain, as they can change customer behavior. The cradle-to-cradle framework and biomimicry in design are possible pathways designers can take to achieve sustainability [56]. Given their challenges, the question is whether SMEs are ready to take such a trajectory, especially in emerging economies.

3. Materials and Methods

This study is hinged on the interpretivist research paradigm. This paradigm assumes that knowledge is subjective, as multiple realities exist [57]. The interpretive paradigm seeks a deeper understanding of participants' lived experiences, and their interaction with the researcher results in new knowledge. According to Yin [58], multiple case study research is more of an experiment where external validity is achieved through replication. The study adopted a multiple case study. Qualitative multiple case study methodology offers a way to comprehend phenomena that have received little attention from researchers [59]. The target population was furniture-manufacturing SMEs in Zimbabwe. According to the official records from the parent government ministry, 157 are registered and have been in operation for ten years or more. The chosen SMEs were selected based on the information obtained from the parent ministry and to have meaningful contributions; only those that have existed for at least ten years were chosen. Each furniture-manufacturing SME in this study

serves as a case study compared to the others for replication and differentiation reasons, assuming that many case studies yield the same or different outcomes [60]. Therefore, the study adopted a multiple case study to unpack the sustainable orientation of the furniture-manufacturing SMEs in Zimbabwe. The exploratory study sought to achieve a high level of interaction with participants from various SMEs through open-ended questions and non-probabilistic purposive sampling. Some of the questions put to the SMEs include the following:

- What does sustainable design mean to you? How do you incorporate sustainability into your business practices?
- What are some of the biggest challenges you face when it comes to sustainability and sustainable design?
- What are some of the most innovative sustainable design practices you have implemented?
- How do you measure the success of your sustainability initiatives?

This research aimed to present empirical evidence on sustainability orientation in SMEs manufacturing furniture in an emerging economy, not to draw statistical generalizations from the findings.

3.1. Data Collection

This study used a relativist ontological approach and a social constructionist epistemological stance to explore the sustainability orientation in SMEs from the viewpoints of managers and designers. From a relativist standpoint, the subjective perception of reality and reality itself are indistinguishable [61]. The key participants were the SME owner or manager and the designer within that company. Data triangulation was sought through the on-site direct observations made during the design and manufacturing processes [62]. All participants were contacted before the date of the interview and gave their informed consent to participate in the study; their identities were not revealed to maintain anonymity. The study included ten furniture-manufacturing SMEs from two major cities (Harare and Bulawayo) in Zimbabwe in June 2022, as shown in Table 1. Harare is the capital city of Zimbabwe and has the highest concentration of furniture-manufacturing SMEs in the country. Bulawayo is the second largest city and boasts of being close to Lupane, where sawmills supply timber from the mukwa, rosewood, and teak. Both phases took ten days; phase one was conducted over five days, and the same for phase two. Each case was allocated a day for the two interviews and observation exercises.

Table 1. Data collection.

Phase 1-SMEs in Harare 5 SMEs (6 to 10 June 2022)	5 SME Managers—In-depth Interviews 5 SME Designers—In-depth Interviews 5 On-site Observations
Phase 2-SMEs in Bulawayo 5 SMEs (20 to 24 June 2022)	5 SME Managers—In-depth Interviews 5 SME Designers—In-depth Interviews 5 On-site Observations

3.2. Individual in-Depth Interviews

Twenty in-depth interviews were conducted with the furniture-manufacturing SMEs that were purposively sampled. The interviews were guided by open-ended questions that sought to explore sustainability issues from the lenses of the SME manager/owner or designer. In Zimbabwe, research into SMEs has ballooned, as they face several challenges due to their different demographic profiles, calling for the researcher to conduct a pilot study to ensure that participants understand the questions and how they respond before the study is conducted at full scale [63]. According to [64], a pilot study is “a smaller version of the main study used to test whether the components of the main study can all work together”. Thus, it seeks to test the reliability and validity of the instruments in relation to the research thrust. The literature review provided a guideline for the interview questions,

refined after a telephonic pilot study with one furniture-manufacturing SME that was not part of the main full-scale study. Every interview occurred inside each organization's premises, often in the interviewee's office. With the interviewees' consent, tape recordings of the interviews were made, and the whole audio recording was transcribed. In all the interviews, the participants only got to know the questions in the room to avoid predefined answers [60]. The interview questions provided a basis for discussing sustainability issues within the manufacturing SMEs and allowed further probing to reach data saturation. Various probing questions were also used to gather further information on emergent themes following the standard qualitative research methodology [65].

3.3. On-Site Observations

Observation is a complicated research method. It frequently calls for the researcher to assume many roles and employ various tactics, including using all five of their senses to gather data [66]. Observational strategies change depending on the conceptual underpinnings of the study and the position the researchers take on the continuum from observer to participant [67]. The naturalistic observation method was employed in all ten SMEs. The lead researcher observed how design and manufacturing activities were carried out in the context of sustainability in these SMEs. After obtaining consent to make the observations from the senior management for each SME case, notes were taken by the researcher for analysis. Though video recording of the observations provides an easier and faster route for data collection and analysis [67], nearly all the SMEs were uncomfortable with having videos or images taken on-site; hence, note taking was adopted in all ten cases. Yin [60] opines that one weakness of the observation method is that the researcher can understand phenomena by observing only, without asking questions. In this study, prolonged periods of observations were applied whenever needed, and notes were taken in such cases.

3.4. Summary Design Matrix Tool

The matrix shown in Table 2 was adopted to summarize the interview results. The matrix looked at sustainability considerations against the triple bottom line. The matrix elements were taken from Vicente, Moreira, and Frazao [68], inspired by the SeeD Matrix.

Table 2. Sustainable design matrix.

	Social	Economy	Environment
Materials			
Production process			
Design process			
Waste disposal			
Management commitment			
End of life			

4. Findings

All ten SMEs who participated in this study have been in operation for the previous ten years. Their annual gross sales are given in Table 3, and it was revealed that most were profitable in their operations. Annual gross sales were approximate, obtained from the interview with the SME's manager and/or owner. Six SMEs had owner-managers as respondents, three had managers as respondents, and one had the owner as the respondent. This study also revealed that only six of ten SMEs have a research and development section or department.

Table 3. Attributes of the SMEs.

	H1	H2	H3	H4	H5	B1	B2	B3	B4	B5
No of employees	12	16	23	14	29	10	8	17	11	20
Gross sales annual (USD) '000	USD 150	USD 100	USD 50	USD 80	USD 200	USD 90	USD 100	USD 150	USD 60	USD 80
Management Interviewed	Owner/ manager	Owner/ manager	Manager	Owner/ manager	Owner/ manager	Manager	Owner/ anager	Owner/ manager	Owner	Manager
Availability of Research and Development Section	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	No
Employed designer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The findings show a relationship between Research and Development (R&D) efforts and the annual gross sales of the SME. In furniture manufacturing, offering consumers new innovative or creative solutions is vital. Four out of ten SMEs had no research and development section or department. Given the size of these SMEs, investing in research and development is viewed as an extra cost that cannot be absorbed through the revenue that is going to be generated. In one case, the manager responded by saying:

“We cannot afford to employ an individual or team for R&D that will increase our expenditure immediately as the company’s survival today is much more important than tomorrow; we rather eat what we kill today since there is too much competition” (Respondent Manager-M03).

4.1. Design Orientation

The design aspect of the the furniture manufacturing industry is critical even in SMEs, as they seek to develop new designs that can increase their business. Table 3 shows that all the SMEs have a designer responsible for generating new ideas that will be converted into actual products by the SMEs. In Table 4, the sustainable design practices in various SMEs are also shown. In all cases, the designers had a knowledgeable, sound background in sustainability. The least qualified designer had a national diploma, whilst the highest qualified had a degree in industrial design. In the interviews with designers, they stated that knowledge about sustainability and sustainable design was part of their curriculum.

Table 4. Sustainable practices in SMEs.

Principle	Sustainable Practice
Materials	<ul style="list-style-type: none"> - Use durable timber - Pre-inspection of all raw materials - Recycle waste - Reduce materials used - Upcycle waste
Production process	<ul style="list-style-type: none"> - Latest machine/equipment - Use of Computer Numerical Control machines (CNC) - Solar backup for key sections - Energy-efficient equipment - Cleanliness of the working area - Personal protective equipment for employees
Design process	<ul style="list-style-type: none"> - Minimalistic in design (<i>less is more</i>) - Use of durable timber - Qualified designer - Research and development section/office - Computer-Aided Design (CAD) - R&D use offcuts and sawdust for prototype

Table 4. Cont.

Principle	Sustainable Practice
Waste disposal	- Selling sawdust or donating to the community - Reuse the offcuts in R&D
Management commitment	- Health insurance for employees - Invest in technologically advanced equipment - Participating in national tree planting day annually - Clean-up campaigns in the community
End of life	- Lifecycle assessment - Repair and recycle - Upcycle

They highlighted the major challenge in designing sustainable SME products as budgetary allocations to research and development. The design aspect of SMEs is also a contentious issue, as some SMEs are accused of copying or imitating other people's designs. In this study, one designer interviewee states,

"In design, we can be inspired by the same things found in nature and thereby end up with similar products, and the customers fail to differentiate our products and end up assuming the design is the same" (Respondent Designer-D05).

The interviewee stated that designers always try to provide fresh design concepts and avoid exposing their companies to litigation through intellectual property infringement of a design. Additionally, given their export orientation, designers in these SMEs try by all means to be innovative and creative to keep supplying the export market with new ideas. In cases where R&D is active, one designer said they emphasize using timber offcuts in the R&D room and the sawdust when molding the prototypes before making the actual product. The results also reveal that the curriculum for higher education has managed to impart sustainability concepts to design students employed by SMEs. Though these designers have design knowledge, one major obstacle they cite is the lack of support from management in implementing sustainable ideas. In one case, the designer cited that

"My manager will sit down with me in a meeting to ask for ideas, and you give input or insights about sustainability from the three dimensions, but he always argues to say it is of no use in the immediate future and, therefore, cannot be implemented" (Respondent Designer-D02).

In another case where the designer stated that he uses minimalism as a method to achieve sustainable design,

"Concept of minimalism can be mistaken for laziness on the part of the designer. At first, my superior used to send the ideas I had sketched to his traditional customers. It is these customers who gave positive feedback on the designs. Otherwise, it was difficult to convince him on my own" (Respondent Designer-D07).

4.2. Environmental Orientation

The interview findings revealed a lack of knowledge and experience of managing environmental issues. The concept of taking care of the environment was raised in the case of how effluent is discharged through the storm drains, where chemicals such as paints and solvents are discarded if they are no longer needed. Because the environmental management agency (EMA) monitors effluent discharge, it was revealed that most SMEs try to ensure they are on the right side of the law by treating their waste so that it does not affect aquatic life. The findings indicate that SMEs tend to follow environmental procedures, as this is required and expected by law; otherwise, given an option, they would not bother. The observations carried out in various SMEs revealed that no clear waste disposal guidelines were followed by all the SMEs. Once something is classified as waste, employees carry it to the garbage area. In all the cases of the SMEs observed, there was no

separation of the types of waste as employees cleaned or cleared the working area. In the interviews, it was highlighted that some SMEs try to use the offcuts to develop prototypes of new designs. The decision to implement sustainable design in SMEs was mainly the owner's or manager's responsibility. The designers who participated in the interviews cited that they can only advise how design can be used to promote sustainability. The unwillingness of SME managers and/or owners to implement sustainable practices was evident in this study. For example,

"Resources limit us; therefore, spending our time and money in such activities as sustainability will distract us from our efforts to make more profits and ensure the company survives as we want to remain operational." (Owner-Manager-H05).

This makes it very difficult to convince SMEs to take sustainability issues seriously, especially in an emerging market context where they face many other challenges that threaten survival. The summary of sustainable practices in furniture-manufacturing SMEs is given in Table 4. Issues concerning the end of life are not very familiar among SMEs. The moment a customer purchases a product, the attention focuses on what else they can sell to the customer.

5. Discussion

Despite the challenges of adopting sustainability practices in the furniture manufacturing sector, there are many benefits to adopting such practices in manufacturing SMEs in emerging economies. One of the most significant benefits is cost savings, as they reduce waste through efficient use of resources, thus saving money on materials and energy costs. Additionally, adopting sustainable practices can help businesses attract customers who are increasingly concerned about the environment and want to support businesses that share their values. Another benefit is an improved reputation and brand image. By demonstrating a commitment to sustainability, SMEs can distinguish themselves from competitors and build a positive reputation among customers and stakeholders. This can lead to increased loyalty and trust, which translates into increased sales and revenue and the ultimate growth of the SME into a large company.

Eco-design practices in SMEs could be a good starting point for SMEs to transform their operations into more sustainable ones. However, this should be based on leveraging traditional design criteria where they exist. Where they do not exist, introducing eco-design practices could be an added advantage, as retrofitting is unnecessary. The critical aspect of assessing the environmental performance of products through qualitative tools and performing quantitative life cycle assessments (LCAs) constitute key activities in engaging SMEs with eco-design. This engagement could support decision making regarding material selection, and product life cycle considerations, especially end-of-life considerations for disposal, reuse, remanufacturing, or recycling.

Using wooden offcut pieces for prototyping is an encouraging initiative by SMEs. The initiative should be extended to upcycling old furniture or furniture that has reached the end of its life. This can provide a niche sustainability area for furniture manufacturers because it offers an alternative to sustainable consumption by taking disposed products into a new production and value-creation cycle. The challenge is for SME designers to leverage their creative potential, upcycling used furniture materials in innovative ways to reduce and manage waste. Such an approach will disrupt the current linear economic growth model of extract, make, use, and waste, which is detached from environmental challenges. It is flawed and has resulted in environmental challenges such as pollution, climate change, and many other factors [69]. This approach will shift SME manufacturing practices to a culture that nurtures sustainability to keep the earth's productive ecosystem intact to support current lives and future generations. Oladoja [70] argues that upcycling is a promising means of reducing material and energy use and engenders sustainable production and consumption. The circular economy seeks to redefine waste not as trash but as a valuable resource with the potential for a new value creation chain in its lifecycle. Therefore, this can be a significant SME contribution to the circular economy which advocates for

minimizing waste and pollution, keeping products and materials in use for a longer time, and regenerating natural systems [71].

As awareness about sustainability continues to grow, more and more manufacturing SMEs in emerging economies will likely adopt sustainable practices to transit to the circular economy. Governments and organizations are also taking steps to support these businesses by providing funding and resources for sustainability initiatives. Fonseca and Domingues [67] argue that SMEs can also implement the environmental management system ISO 14001:2015, as they envisage that it can improve sustainable practices within SMEs. However, much work must be carried out to overcome the SMEs' challenges. The government can implement tax rebate incentives based on an organization's sustainable activities over the space of a year to encourage manufacturing SMEs to be sustainable.

6. Theoretical and Practical Implications

This paper has investigated sustainable design orientation in furniture-manufacturing SMEs in Zimbabwe. The paper revealed that SMEs implement sustainable design principles more as a formality to avert contravening environmental laws. There needs to be more international motivation for their actions as it becomes more of a regulatory obligation. SMEs prefer quick business returns; thus, sustainability benefits are unclear. The furniture-manufacturing sector in Zimbabwe boasts of an abundant timber supply source; thus, the cost price of the critical raw material is low for SMEs. Given such a setup, motivation to save on material becomes a secondary issue. The study also highlights the vital roles designers play in these SMEs, as they have become champions of promoting sustainability through minimalism and upcycling in design. SMEs need to employ knowledgeable or competent staff within their operations, as they are critical in providing the much-needed skills to differentiate them from their competitors. Sustainability is everyone's responsibility, from the SME owner-manager to employees and the customers who buy from them. SMEs in emerging economies are expected to find methods of gradual implementation of sustainable practices, as these can determine their survival. The study, therefore, provides empirical evidence of sustainable practices within the context of manufacturing SMEs in Zimbabwe. This study's practical implications lie in identifying sustainable practices.

7. Conclusions

The findings of this study may be used as a roadmap by SME manufacturers as they implement sustainable design practices into their manufacturing systems so that sustainability becomes part of their procedures and plans to improve competitiveness and benefit stakeholders and the environment. Moreover, policymakers may use the research findings to create and execute environmental policies that support the owners and managers of manufacturing SMEs in Zimbabwe and other emerging economies to adapt to practices that promote sustainability, as supported by [1,6,11]. Additionally, when creating environmental regulations, it is essential to consider the characteristics of manufacturing SMEs to protect their competitive advantages and improve their sustainability, a view also shared by [48,49]. Furniture-manufacturing SMEs have opportunities to implement upcycling or promote a circular economy through their activities, and such engagements can help these SMEs to generate more income whilst promoting sustainability. In conclusion, sustainability is vital for manufacturing SMEs in emerging economies. While there are challenges to adopting sustainable practices, many benefits can help these businesses thrive in a changing business landscape. As awareness about sustainability continues to grow, we will likely see more and more SMEs adopting sustainable practices and contributing to a more sustainable future, thus transitioning to the circular economy.

8. Limitations and Further Research

The study's primary flaw was the absence of more recent data on Zimbabwe's overall number of manufacturing SMEs, as most shun registration with relevant authorities. There are many areas of future research in sustainable design in SMEs. Some of these include

developing new sustainable materials and technologies, integrating sustainable design into business models and supply chains, and developing new metrics for measuring the sustainability of products and services. Future research on sustainability in SMEs should also focus on customer expectations to explain how they view or inform the design activities for sustainability to be achieved.

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