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Research Article

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The Effect of Innovation on the Performance of SMEs in Zimbabwe: A Case Study of Manufacturing Companies in Harare

Joshua Simuka

Postgraduate Unit of Strategy and Innovation, School of Business and Management Sciences, Harare Institute of Technology, Zimbabwe

***Corresponding author**
Joshua Simuka, Postgraduate Unit of Strategy and Innovation, School of Business and Management Sciences, Harare Institute of Technology, Zimbabwe.

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ABSTRACT

Technological Innovation has become an indispensable tool for organizations to gain competitive advantage, increase performance, venture into new markets and survive in such a competitive atmosphere. A plethora of research has found that technological innovation is a critical factor that improves organizational performance. The study focused on investigating the effects of technological innovation on the performance of SMEs in the manufacturing industry. The study objectives were to establish the factors that influence technological innovativeness among manufacturing SMEs in Zimbabwe, determine the effect of product innovation on the performance of manufacturing SMEs, to ascertain the effect of process innovation on the performance of manufacturing SMEs in Zimbabwe and to establish the challenges faced by SMEs in the manufacturing sector adopting technological innovation in Zimbabwe. A quantitative research approach was adopted. The researcher used simple random sampling in this study and every member in the sample size has an equal opportunity to be selected. A total sample size of 66 respondents was selected randomly. A structured questionnaire was distributed to respondents and the response rate was approximately 76%. Data was processed on excel which was later uploaded on the SPSS and SmartPLS version 3.2.1 softwares. Cronbach Alpha of 0.886 was obtained and this indicated the strong reliability and validity of the study results. Composite and Average variance extracted was also used to assessed the validity of the study. It was discovered that experienced human capital, leadership, access to funding, competition, and organisation mission and culture are important in influencing innovation in SMEs. In addition, the study revealed that product and process innovation had an impact on manufacturing SMEs' organizational performance that was statistically significant. It emerged that product and process innovation improves a number of financial performance indicators for a business, including sales growth, market expansion, rising customer happiness, and rising profit margins. Therefore, in line with the findings, the study recommends that the government must develop and implement a wide range of innovation policies that encourage best practices and support company growth and should support the creation and ongoing operation of innovative businesses through partnerships. Future studies should expand the study's scope and sample size and other factors related to product and process innovations. In addition, future research has to take into account the creation of national and regional government policies that encourage innovation among SMEs.

Introduction

Small and medium-sized Enterprises (SMEs) are crucial to global economic expansion and sustainable development. In both developing and developed countries, they have made a major contribution to Gross Domestic Product (GDP), employment creation, income production, and the reduction of poverty [1-3]. As a result, SMEs have become "engines for economic development" in numerous nations, including Zimbabwe [4]. Due to the nature of the business environment, which is global, organizations are now faced with a greater level of global rivalry, in which businesses must contend with both domestic and foreign competitors. Trade liberalization, fierce rivalry, quick technological advancements, and shorter product and technology life cycles are all results of globalization [5]. For firms to obtain a competitive edge, enter new markets, and survive in such a competitive environment, technological innovation has become an essential instrument [6,7]. This chapter looks into the background to the study, problem statement, research objectives, research questions, significance of the study, assumptions to the study, delimitation, limitations and organization of the study.

Technological Innovation has become an indispensable tool for organizations to gain competitive advantage, increase performance, venture into new markets and survive in such a competitive atmosphere [6]. A plethora of research has found that technological innovation is a critical factor that improves organizational performance [8]. With investments in fixed assets, exports, and the promotion of technology integration, SMEs were crucial in industrialized economies for fostering economic growth. It has been noted that SMEs have had a significant influence on industrial production tactics as well as export revenues in various newly industrialized nations, including Taiwan, Malaysia, South Korea, and Singapore. Significantly, SMEs serve as the engines of production for these nations' large-scale businesses, and as noted by Adeleke, SMEs spur faster economic development and expansion. Nevertheless, Zimbabwe has not yet achieved the much-anticipated increased pace of economic development through SME [9].

The Zimbabwean government has chosen to support SMEs' growth in domestic industrial operations in an effort to increase

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their economic impact and to ensure balanced industrial development. This aims to reposition the industry for global competitiveness as well as to make it a source of export revenue. In order to achieve this, innovative technology and involvement in R&D-related activities might further increase the productivity of SMEs. However, depending on their industry, size, goals, resources, locations, and the chances afforded by the business environment in which they operate, SMEs' technical innovation capacity greatly differs. Instead of that, the purpose of this study is to determine the strength and direction of the relationship between company performance and technical innovation in Zimbabwe's manufacturing sector.

The Zimbabwean government has a vision of becoming an upper middle income economy by the year 2030 and manufacturing sector is being considered as a key sector in realising this vision. The government has recently focused on the development of manufacturing sector so as to build indigenous capacities. Despite the governmental efforts on this sector, the contribution of the sector to GDP is still relatively low when compared to other Sub-Saharan African countries (average of 30%). Additionally, SMEs make up a sizable majority of businesses in Zimbabwe's manufacturing sector, and research on how to use technical advancements to boost SMEs' performance in this industry are few. By analyzing the technological advancements as well as performance of Zimbabwean SMEs in the sector of manufacturing, this study aims to close this gap in the literature.

Furthermore, several studies have been conducted to determine factors that influence innovation [6,10]. However, fewer studies have focused on SMEs, especially in developing countries [4]. Hence this study focuses on SMEs in manufacturing sector in a developing country perspective.

Despite the significance of innovation in major businesses, there is a paucity of sufficient empirical data on the impact of technological innovation and the factors influencing it in SMEs, particularly in developing nations like Zimbabwe [11,12]. There is a scarcity of study on the effects of technological innovation among SMEs in developing nations, despite the fact that few studies have focused on the role of innovation among SMEs in emerging markets. SMEs in poor nations exhibit little or perhaps no technological innovation [4].

It is important to note that assessing the effect of technical innovation on the performance of SMEs' in Zimbabwe's manufacturing sector is necessary to close this knowledge gap. This study advances knowledge of how technological innovation affects manufacturing SMEs performance and the variables that affect technological innovativeness. This adds to the corpus of knowledge already available on technical innovation and the performance of SMEs. Due to the slow adoption of technological innovation by SMEs over time, this study is particularly significant in Zimbabwe and other developing nations. More importantly, SMEs in Zimbabwe have been notorious for poor performance and low chances of survival, especially in the manufacturing sector [13,14]. Moreover, SMEs are vulnerable and face many challenges different from large firms. As a result, most of them fail to survive more than 5 years [10]. Njanike underscored the lack of innovativeness as one of the main causes of SMEs' premature death [15]. Thus, a sound understanding of the impact of technological innovation is likely to be useful in designing strategies that can be adopted to increase the performance of SMEs' in the manufacturing sector.

Problem Statement

There is slow adoption of innovation by SMEs which is affecting negatively organizational performance. As a result, most of SMEs fail to survive more than 5 years [10]. Njanike underscored the lack of innovativeness as one of the main causes of SMEs' premature death [15]. Empirical evidence on the role of technological innovation in the performance of SMEs is not only scarce but inconclusive, particularly in developing countries such as Zimbabwe [11,12]. There are few studies focusing on the impact of technological innovation on the performance of SMEs in developing and emerging markets. Research on the variables influencing technical innovation among SMEs in developing countries, particularly in the manufacturing sector is lacking. It has been highlighted that SMEs in poor nations rarely innovate technologically [4]. Due to SMEs' mostly informal nature, it is doubtful if innovation is appropriate for and effectively applied in them [12]. To close this information gap, it is necessary to identify the factors that influence the innovativeness of SMEs in Zimbabwe's manufacturing sector as well as the effects of technical innovation on SMEs' performance.

Research Objectives

The broad objective of this study is to investigate the effects of technological innovation on the performance of SMEs in the manufacturing industry and the specific objectives are;

1. To establish the factors that influence technological innovativeness among manufacturing SMEs in Zimbabwe
2. To determine the effect of product innovation on the performance of manufacturing SMEs in Zimbabwe
3. To ascertain the effect of process innovation on the performance of manufacturing SMEs in Zimbabwe
4. To establish the challenges faced by SMEs in the manufacturing sector adopting technological innovation in Zimbabwe

Literature Review

Innovation in Small and Medium Enterprises

The Latin verb innovare, which means "into new," is where the word innovation originates. The simplest definition of an innovation is doing something novel. According to Costello and Prohaska, the word "innovation" is widely used in the corporate sector to describe risky, expensive, and time-consuming activities. Innovation can also be described as a novel idea, thing, technology, or object. It is a manner of thinking that involves seeing beyond the present to the future. This study adopts a definition of innovation by Baregheh, Rowley & Sambrook who brought a complete definition of innovation as "the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace". Innovations are crucial for businesses, and when properly applied, they can serve as a method, strategy, or management tool. Technology advances and innovation are frequently linked, and both are important to the global economy. Finding the most economical solutions to social challenges is helped by innovation, which is a primary driver of productivity and long-term growth [16]. Innovation in small and medium-

sized businesses (SMEs) is the cornerstone of initiatives for equitable growth. Because they can pay their employees higher compensation and provide better working conditions, more productive SMEs can reduce disparities by doing so. Additionally, recent developments in business and technology provide SMEs new opportunities for innovation and growth. As a result of digitization, which is accelerating the transfer of knowledge and enabling firms to develop quickly and frequently with few employees, physical assets, or a geographic presence, new business models are emerging [17].

Organizational Performance

The performance of an organisation is a broad notion that is, nevertheless, fairly imprecisely defined. Numerous factors unique to each organisation have an effect on the construct; yet, there is no widely agreed definition of organisational effectiveness. There are about as many definitions for the word organisational performance as there are studies that have used it in their study. Economic performance is quantified through financial and market outcomes such as profit margins and sales growth, as well as shareholder return on investment, whereas operational performance is quantified through visible indicators such as customer satisfaction and loyalty, the firm's social capital, and the firm's competitive advantage derived from capabilities and resources. The concept of performance, as it appears defined by Barringer and Bluedorn as idea of outcome, achieved goal, quality, and less the economic aspects of efficiency and effectiveness. Performance is a good result obtained by someone in a sporting contest; a special achievement in a field of activity; the best result obtained by a technical system. Organizational performance is the expansion of a company in terms of accomplishments like meeting specific performance goals within the allotted time frame and realizing effectiveness or efficiency. Organizational performance can also be defined in terms of a company's profitability, market share, and product and service quality in comparison to other businesses operating in the same industry. Similar to that, it is a reflection of an organization's productivity as measured by revenue, market share, profit, growth, development, and organization-wide expansion. Additionally, Gibson et al. noted that improvements in finances, the accomplishments of employees, and even employee satisfaction may all be used to gauge an organization's performance. This claim was strengthened by Delaney et al. who stated that goal achievement efficiency and effectiveness can be used to gauge performance. According to Delaney et al. "performance of the company can be measured by margin on sales, utilization of capacity, satisfaction with clients, Return on investment (ROI), and product quality". Green et al. affirmed this and stated that "measures such as ROI, sales and market growth, and profit are parameters significant in organizational performance evaluation."

Innovation and SME Performance

For enterprises to acquire a competitive advantage, boost profitability, enter new markets, and survive in such a competitive environment, innovation has become an essential instrument [6]. Several studies have revealed the importance of innovation in raising organizational performance [7]. SMEs were essential in industrialized economies for promoting economic growth because of their investments in fixed assets, exports, and the promotion of technology integration.

All modern businesses need to innovate if they want to survive in a competitive, technologically advanced, and often crisis-ridden environment. Innovation is the use of new technology or management strategies within a company to achieve a particular operational improvement. Innovation, from the perspective of SME's, is often defined as new products or processes that profitably and more effectively satisfy consumer wants than do existing ones. In this study, we define "innovation" as the successful application of novel approaches to problems faced by SMEs. This includes the successful application of novel concepts relating to an organization's goods, services, or operational procedures; novel marketing strategies; or novel administrative procedures for improving productivity and performance.

The fundamental driver of innovation in business is the desire to be rewarded for better performance. Therefore, according to Curristine the concept of innovation is the creation of specific modifications to an organization's procedures in order to boost performance. Performance in this study is described as meeting the institution's goals for sales, profitability, competition, market share, and any other strategic objectives based on the literature. Researchers also defined performance as the achievement of a group of anticipated outcomes resulting from the execution of the marketing objectives. According to Yldz et al. a company's performance is determined by how well it completes its tasks, which results in the accomplishment of its stated objectives. According to Mahmudova and Kovács, achieving high performance levels is a sign that an enterprise is successful. Assessing the performance of the business helps to highlight its strengths and gives room for corrective action to solve its flaws.

A substantial body of research supports the significant positive relationship between innovation and SME performance. Innovation capabilities have a positive impact on SME success, according to published studies [18]. Zulu-Chisanga et al. assert that efforts to create numerous innovations are mostly to blame for the improvement in SMEs' financial statistics. A significant correlation between SMEs' performance and their ability for innovation was also found in earlier studies [18]. Freeman asserts that the effective application of innovations contributes to the performance of specific SMEs. According to Lin and Chen, management innovation has a bigger impact on SME income than technological innovation. The conclusion of this study is that, regardless of the situation, SME innovation can improve business performance.

In poor nations like Zimbabwe, there is not only a lack of empirical data on the subject but also conflicting results [11,12]. The performance of SMEs in emerging and developing nations has received little attention from studies. Research on the variables influencing technical innovation among SMEs in nations that are developing, particularly in the industrial sector, is especially lacking. It has been highlighted that SMEs in poor nations exhibit little innovation [4]. Being mostly informal, SMEs raise questions about the applicability and implementation of innovation [12]. To close this information gap, it is necessary to identify the elements that influence the innovativeness of SMEs in Zimbabwe's manufacturing sector as well as the effects of innovation on SMEs' performance.

Organizational Resources as an Enabler that Influence Technological Innovativeness Among SMEs in the Manufacturing Sector

Organizational resources as an enabler that influence technological innovativeness among SMEs According to Barney, the resource-based theory approach has developed from a fledgling, unproven viewpoint into one of the most well-known and potent theories for outlining, delineating, and forecasting organizational linkages. Many researchers have employed the resource-based view (RBV) of the firm as one of their study methodologies when assessing effect of resources on innovation. The resource-based view, in its original formulation, placed more emphasis on the firm's internal resources as the source of performance.

A study was carried out in South Africa by Akin-Adetoro and Kabanda to look into the variables affecting SMEs' adoption of innovation [4]. The study discovered that an organization's resources have a beneficial influence on its innovation. Aiello et al. looked into how money affected the likelihood that European SMEs will innovate [19]. It was discovered that internal funding boosts innovation potential more than borrowing money does. This shows that businesses are more likely to succeed in investing in innovation when they create their own internal resources than when they raise such resources from other sources. According to research by Tran et al. the availability of financial resources facilitates investments in cutting-edge innovations that can increase production [10]. Kaur and Kaur carried out a study in India to look at the factors that influence innovation in micro-SMEs [6]. It was discovered that having access to capital fosters innovation. According to Barasa et al. a firm's resources have a favorable impact on its creativity [20]. Kamboj et al. confirmed in a study of a similar nature that resources have a beneficial impact on the innovativeness of the organization.

Product Innovation and SMEs Performance

Product innovation is concerned with introducing new goods/services or improving existing ones to attract new customers and compete in the market [17]. Significant improvements of the product could be in its features, intended use, user-friendliness or components [21]. The firm is viewed from a resource-based perspective as a dynamic collection of all resources and capabilities. The size of the company and the firm's use of technology become key determinants of product innovation. According to Lee et al. the firm's technology moderates the effect of product innovation on the success of the company.

Pure research and development efforts have a good and considerable impact on businesses' ability to produce new products or services, according to empirical research by Jha and Bose. Investments in research and development are utilized by businesses to gain a competitive edge, fuel long-term growth, and advance technology. Product innovation enhances a variety of financial performance indicators for a company, including sales growth, market expansion, rising customer happiness, and rising profit margins. The company's research and development efforts might result in new items and expand the market, which will improve the performance of the business [2]. Low-tech businesses typically concentrate on non-research and development operations and have weak value chains that exhibit little internal innovation.

Process Innovation and SMEs Performance

Process innovation is the use of new or significantly improved production or delivery techniques, including significant system, equipment, and/or software changes [17]. Process innovation improves the ways that goods or services are produced or delivered. The procedure can be brand-new or vastly enhanced from the current design. According to Schumpeter's theory of creative destruction, innovative enterprises have a competitive advantage that enables them to supplant non-innovative ones. A sustainable pathway for promoting business performance and economic progress has been identified as innovation. Theoretically, innovation should make it easier to improve the financial performance of businesses. However, actual findings have not always supported this notion; for example, a number of studies have suggested that improvements in performance are not always brought about by innovations. According to certain studies, process innovation has a better impact than its product-based counterpart. According to Hall et al. the firm size and R&D expenditure are what drive product and process innovations for Italian small and medium-sized businesses (SMEs) [23]. The researchers found that both product and process innovations have a favorable impact on SMEs' productivity, but the latter is more notable. Moreover, Hall et al. discovered that larger and older organizations have a weaker correlation between innovation and productivity. Similar research was conducted by Waheed with a sample of businesses from Bangladesh and Pakistan, and the results showed that process innovation has a greater impact on productivity than its product counterpart [24]. According to Tuan et al. process innovation appears to have a more significant influence on the innovative performance of enterprises in the supporting industry than product innovation does [25]. Hall evaluated the empirical data demonstrating the relationship between productivity and innovation [23]. The author discovered solid evidence on the positive effect of product innovation on revenue, however process innovation indicates a hazier effect. In 2013, Rosli and Sidek looked at a sample of about 300 businesses from Malaysia's various industries. They discovered a favorable correlation between product and process innovation and firm performance, with the former having a higher influence. Tuan found that gender, product innovation, and company reputation have a favorable impact on the growth of manufacturing SMEs using a sample of 353 Vietnamese manufacturing SMEs [23]. On the other hand, several research have concluded that product innovation is superior to process innovation. According to Fagerberg the introduction of new products could have a significant and beneficial effect on the growth of income and employment, but process innovation exhibits a more contentious effect likely because this innovation type is more likely to result in cost reductions [26].

Challenges Faced by SMEs in the Manufacturing Sector in Adopting Technological Innovation

Understanding the difficulties SMEs have in implementing innovation is made easier by the Diffusion of Innovation Theory (DOI). The DOI approach's components include innovativeness, complexity, compatibility, and relative advantage [27]. The primary focus of the Diffusion of Innovation Theory (DOI) methodology is on how prospective adopters view an innovation in terms of relative advantages and disadvantages. Additionally, companies that use a certain technology substantially are typically ideal candidates for early adoption of the following

generation of that technology. Understanding the diffusion of innovations technique employed in this study is necessary to comprehend the dynamics involved in the adoption and utilization of technological developments in SMEs.

Lack of Government Support

Government support is one of the reasons listed in existing literature as preventing the development of SME technology. Government assistance is examined in both financial and nonfinancial terms. The government's financial aid was used to examine its financial support. The focus of this research is on non-financial government help, such as instruction in the use of innovative equipment and support for such equipment that is supplied by the government. SMEs are anticipated to receive attention from the government, particularly the local government. One of the barriers to the use of innovation in business is a lack of government support. Absence of government backing will also affect SMEs' technological knowledge, abilities, and skills. This is because the government has a vital role in making related policies.

Lack of Sufficient Capital

Lack of sufficient capital is another important impediment. When money is allocated inequitably, the high cost of technical innovation is frequently out of proportion. In reality, it has always been the reason why integrating technical innovation has been challenging. One of the criteria used to describe the degree of technological innovation present in a corporation is the cost of innovation. The ability of technical innovation is impacted by the cost of innovation to the extent that it supports the business's innovation strategy [28]. Due to the lack of a value for the collateral, financial institutions might be reluctant to lend money for such ventures. This deters financial support for innovation. As a result of a lack of financial resources, innovation will be limited.

High Cost of Capital (High Interest Rates)

The interest rates are another barrier to innovation for SMEs since excessively high interest rates are very difficult to overcome. Businesses with limited resources typically don't invest in innovation. This is due to the fact that they are impacted by persistent macroeconomic uncertainty and the challenge of obtaining cutting-edge and helpful equipment. Yet, economic ambiguity frequently pushes businesses to innovate in order to stay viable and competitive.

Lack of Knowledge and Skills

According to a study by Strobel and Kratzer, businesses also faced external challenges related to poor customer demand because of their customers' limited spending capacity as a result of the unstable economy. A low understanding of labor and business owners will thwart ideas to innovate in business, thus it is crucial for business owners to have sufficient levels of knowledge and skills for SME innovation. This can be attained through hiring a qualified staff and by educating and training both employees and business owners. Highly educated workers can adopt new technology more quickly and effectively. Also, they are better equipped to recognize and take advantage of emerging technical opportunities that support the capability of the company. According to Agarwal et al. findings, the SME workforce needs training in enhancing technological innovation. A corporation will employ more innovative technology if its workforce is more skilled.

Limited Resources

The lack of comprehension of concepts, insufficient resources, and non-inventive labor are the main obstacles that prohibit SMEs from attaining innovation. Najda-Janoszka and Kopera defended a similar thesis in the context of the Polish industry, contending that human resources specifically, inadequate skills, low formal competencies and qualifications, and low motivation to participate in the innovation process are the main causes of barriers to innovation. According to certain other research, low-quality human resources in businesses are a major obstacle to innovation [29]. Innovation is hampered by deficiencies in technology knowledge, market knowledge, and consumer responsiveness. An effective network of communication with business partners may enhance performance and encourage the application of human resources to technological innovation. Business partners should also have a broad network of contacts that can spur technical innovation. Increasing market competition can also be achieved by working with business partners. Hence, strong business partner ties can help overcome the enormous costs associated with innovation and technology. Additionally, evidence suggests that a lack of networking opportunities with local businesses has a negative impact on corporate technical innovation.

Methodology

Research methodology, according to Valunaite, Oleskeviciene, and Sliogeriene, is a systematic and structured inquiry whose models and philosophies should harmonize all the aspects of a particular research project. The study utilized a quantitative research approach, guided by its objectives. The meticulous investigation of phenomena through the gathering of numerical data and the use of mathematical, statistical, or computational approaches is known as quantitative research [30]. The foundation of quantitative research is the positivism paradigm, which supports statistical breakdown-based methodologies and incorporates additional techniques like inference statistics, hypothesis testing, structured protocols, and questionnaires with a constrained range of prearranged responses. In order to adequately achieve the research aims and objectives, a descriptive survey was used. The similar design was taken and advised by other researchers in the same disciplines. Descriptive study helped to describe the impact of technological innovation on SMEs performance. The use of surveys helped the researcher to collect standardized data that facilitated easier comparison and explanation. In addition, surveys enable the researcher to possess some degree of control over the research process. The target population was made up of 6 SMEs that were conveniently selected in Harare with 68 respondents (Owners, senior and middle managers) from these selected firms. Mugove et al. made use of the same sample size when they studied SMEs performance in Zimbabwe. The target population was selected in Harare where most manufacturing SMEs dominate. The manufacturing industry was selected due to its major contribution to GDP, export revenue, as well as employment [31]. Since the primary objective of quantitative research designs is inferential, sampling techniques and sample sizes are crucial components of any quantitative study. This study has employed the widely used and respected Krejcie and Morgan formula, or tables derived

from the formula, as a method for assessing sample size. In order to calculate population proportions or percentages at a specified probability and level of precision, this formula is used to choose samples.

The sample has been calculated in line with Krejcie and Morgan table of sample size determination. In this particular study, the researcher largely used primary data. Primary data is information that is originally retrieved from its original source. The main sources of data were the research informants in the quantitatively chosen samples. Primary data was preferred by the researcher over secondary data since it is more recent and particularly addresses the questions of the current study. It was referred to as "real time data" by Ajayi. Primary data was collected using the questionnaire with closed ended questions. The researcher also made use of secondary data in this research such as journal articles. The secondary data was helpful as it provided the necessary background as well as guidelines to the study. Previous empirical studies on the impact of innovation on SMEs profitability were reviewed and research gaps were highlighted.

To ensure accurate data collection, one of the key jobs in research is instrument creation. The researcher developed a questionnaire which was used to collect the quantitative data. The questionnaire was developed with closed-ended questions which were meant to collect quantitative data. The questionnaire was developed using a five-point Likert scale with range from strongly agree, agree, neutral, disagree and strongly disagree. The questionnaire's length was kept to a minimum to slow down respondents' development and decrease their likelihood of withdrawing. Section A of the questionnaire included the general demographic information about the respondents while section B focused on the research objectives of the study.

Online administration of the questionnaire was used. The first step was to set up the survey in a Google Survey format that allowed respondents to softly check a box on a computer or mobile device screen. The goal of this was to boost response rates through simplification. Additionally, the questionnairewas distributed via email and WhatsApp platform with an aim to increase the response rate. Prior communication was done in order to inform each selected respondent and obtain informed consent before the questionnaire was issued. Because distributing the questionnaire required a lot of data, the respondents' concerns about economic sustainability were sparked by the use of the internet-based method. Data handling was done electronically, and it was rapidly entered into SPSS and SmartPLS for analysis. To avoid data loss, SmartPLS files were uploaded to the researcher's Google Drive. The instrument underwent a reliability test using Cronbach's Alpha, and a reliability criterion of 0.6+ was considered tolerable. For the building of the index, only constructions that passed the reliability test were taken into consideration [32]. Using SPSS's factor analysis, construct validity, internal validity, and external validity were assessed. Using hypothesis testing, quantifiable data were analyzed. Tables, cross tabulations with relationships displayed, pie charts, and bar graphs were used to convey quantitative data. Data were summarized using measures of central tendency, particularly the mean. In addition, the study results were discussed in line with existing literature.

Validity and Reliability

In order to address validity and reliability of the study, a pilot study was carried out. According to Woken, a pilot study is a scaled-down form of a research project. It was seen as a pre-study for the major study by Malmqvist et al. With pilot study, the researcher has the chance to assess the validity and reliability of the instruments. After performing a pilot study, the researcher can also assess the research design and data gathering techniques, among other advantages. With all these advantages, the researcher conducted a pilot study to evaluate the effectiveness of the research design and methodologies in the real research setting. Five (5) participants were chosen for the pilot study. To enhance the questionnaire's face validity and content, the researcher reworded it and sought the advice of innovation experts. The pilot study reduced the research's process defects and enhanced the study's flow.

The most commonly advised Cronbach's Alpha coefficient for Likert scales was utilized by the researcher. According to Zishan, Sheth, and Sharma, the researcher accepted coefficients of 0.6 and above and excluded constructs that scored lower. Furthermore, each research must address validity issues, according to Creswell. The extent to which the data collected sufficiently covers the subject of the research is referred to as validity. It guarantees that the researcher collects the data necessary for the research project in question. Validity, according to Kumar, is a crucial factor for assessing the level of quality and credibility of research.

The study also addressed construct validity. According to Taherdoost, construct validity describes how a modified notion or idea is transformed into a working reality. Convergent and discriminant validity tests were carried out. Convergent validity shows that constructs that must be connected are in fact related, while discriminant validity tests shows that constructs that must not be related are in fact unrelated.

Results and Discussion

Response Rate

A total of 50 responses were submitted in response to the 66 questionnaires that were distributed to participants. The self-administration of the questionnaire and frequent visits to the respondents for data collection are credited by the researcher as the reasons for the high response rate. According to Saunders et al. a questionnaire survey with a response rate of more than 60% is thought to be a good representation of the entire population. The response rate for this study was higher than the minimum advised response rate. Table 1 below contains computations of the response rate in detail.

Table 1: Response Rate

Category of Respondents	Total Sample	Return	Return %age
SMEs respondents	66	50	76%

Respondent Demographics

In terms of demography, the characteristics of the respondents varied substantially. In this section, the study presents respondents' individual data, such as gender, age ranges, educational backgrounds, and length of employment within a selected manufacturing company.

Gender of Respondents

The study collected demographic data about the gender of respondents. The distribution of the respondents by gender is shown in Table 2 below.

Table 2: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	35	70	70	70
	Female	15	30	30	100.0
	Total	50	100.0	100.0	

Men account for over 70% of responses, according to Table 2 above, while women account for roughly 30%. This lends credence to a study by Bose, who found that men make up a larger portion of the manufacturing industry than women, making the study's findings applicable and appropriate for use in scientific research.

Qualification of Respondents

The study collected information about the qualifications of the respondents. Figure 1 below shows the qualification of the respondents.

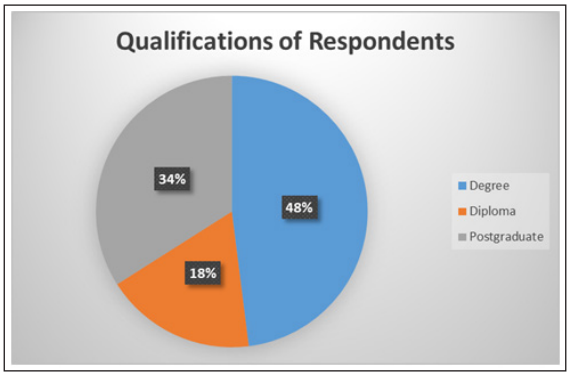

Figure 1: Qualifications of Respondents

Figure 1 shows that 48 percent of respondents had degrees, 34 percent had master's degrees, and 18 percent had diplomas. Given their capacity to answer to the research questions, this would imply that the respondents were knowledgeable.

In order to create acceptable results, the study collected demographic data about the age groups of the respondents as shown in figure 2 below.

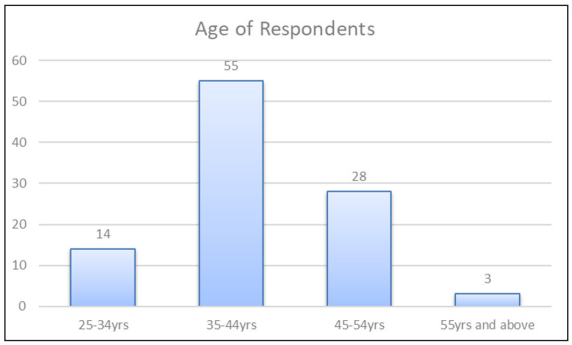

Figure 2: Age of Respondents in Percentage

The age distribution shown in Figure 2 above is normal, with the dominant age group being 35 to 44 years old (55%), followed by the relatively older generation of 45 to 54 years (28%), the younger generation of 25 to 34 years (14%), and the 55 and older age group (3%). This profile reveals that the age range of the respondents who made up the majority was between 35 and 44.

Cronbach Alpha Reliability Test

Table 3: Reliability Statistics

Cronbach's Alpha	N of Items
.886	19

The researcher used the reliability test Cronbach's Alpha to determine the validity of the study's findings. The value of Alpha might be between 0 and 1. It shows that the scale's internal coherence is higher the closer it gets near 1. In general, values of at least 0.7 are regarded as acceptable by Drucker-Godard et al. According to the Cronbach's Alpha test score of 0.886, the Likert scale items had a high level of internal consistency and reliability.

Composite Reliability and Average Variance Extracted (AVE)

Table 4: Composite reliability and Average Variance Extracted (AVE)

Latent Variable	Composite Reliability	Average Variance Extracted (AVE)
Organisation Performance	0.808	0.584
Product Innovation	0.808	0.678
Process Innovation	1.000	1.000
Technological Innovativeness Factors	0.839	0.723

When evaluating composite reliability, high numbers fundamentally indicate high levels of reliability, according to Hair et al. In light of this, reliability levels between 0.6 and 0.7 are deemed to be "acceptable" in exploratory research, and values between 0.70 and 0.90 are deemed to be "satisfactory to good." The majority of the values in this study fall into the satisfactory and good categories, which improves the study's validity and reliability.

Convergent Validity

Convergent validity was demonstrated by the AVE tests. Convergent validity describes a model's ability to take the indicators' variance into account. According to Baggozi and Yi, a signal with convergent validity has an AVE threshold of 0.5. According to Hair et al. 8, "this means the construct describes at least 50% of the variance of its items." Measures of all four reflecting constructs show excellent levels of convergent validity, as seen in Table 4 above.

Factors that influence technological innovativeness among SMEs in the manufacturing sector

The first objective of the study focused on determining the factors that influence technological innovativeness among SMEs in manufacturing sector. Several factors were identified as shown in table 5 below.

Table 5: Factors that influence Technological Innovativeness in SMES

Ranking of factors that influence technological innovativeness among SMEs in the manufacturing sector		
Component	N	Mean
Access to funding	50	3.55
Experienced human capital	50	3.76
Organisation mission and culture	50	2.52
Leadership	50	3.66
Competition	50	2.66
Valid N (listwise)	50	

Table 5 above indicates the order of importance factors that influence technological innovativeness among SMEs The results shows that experienced human capital is the most outstanding component with a mean of 3.76. This is followed by leadership, access to funding, competition, and lastly organisation mission and culture in that order. Moreover, the results shows that all variables have mean above 2.5 which indicates that somehow all these factors are important in relation to their influence on technological innovativeness among SMEs in the manufacturing sector. These results are in line with a study by Akin-Adetoro and Kabanda, who investigated factors influencing the adoption of innovation by SMEs in South Africa and discovered that an organization's resources (human capital, leadership, culture, finance) have a beneficial impact on its innovation [4]. Internal funding enhances the propensity to innovate more than the use of borrowed funds, according to Aiello et al., while Kaur and Kaur, who looked at the drivers of innovation among micro SMEs, discovered that access to finance had a favorable impact on innovation [6,19].

Product Innovation and the Performance of SMEs in the Manufacturing Sector

One objective of the study was to find out the effect of product innovation on the performance of SMEs in the manufacturing sector in Zimbabwe. The findings are presented as shown in the tables below;

Table 6: Effect of product innovation on organisational performance

	N	Mean	Std. Deviation
Attracts new customers	50	3.10	.635
Expands the market	50	4.05	.775
Improves profitability	50	2.95	.815
Leads to firm's competitive advantage	50	2.89	.773
Valid N (listwise)	50		

From table 6 above, it shows how product innovation affect organizational performance of manufacturing SMEs. From the survey results, market expansion was rated high with a mean of 4.05, followed by new customer attraction rated 3.10, improvement in profitability rated 2.95, and attainment of competitive advantage rated 2.89. This results indicate that product innovation improves performance of manufacturing SMEs in terms of market expansion, new customer attraction, attainment of a firm competitive advantage thus resulting in improved organizational performance.

Effect of process innovation on the performance of SMEs in the manufacturing sector in Zimbabwe

One objective of the study was to determine the effect of process innovation on organisational performance of SMEs. The study findings are presented in the table 7 below;

Table 7: Effect of process innovation on organisational performance

	N	Mean	Std. Deviation
New processes emerge	50	2.30	.715
New channels of distribution	50	2.00	.725
Greater impact on productivity	50	2.90	.744
Reduce cost	50	3.05	.818
Valid N (listwise)	50		

Table 7 reveals how process innovation influence manufacturing SMEs performance. The findings reveal that the reduction of cost is rated high with a mean of 3.05, followed by greater impact of productivity rated with a mean of 2.90, followed by new processes and systems of doing business, rated with average means of 2.30 and lastly new distribution channels with an average mean of 2.00. The findings indicate that cost reduction is the main benefit of process innovation within a manufacturing SME. Once cost is reduced, this will result in the lowering of production cost thereby resulting in increased profitability of a manufacturing SME. These results are in line with a study by Fagerberg, who found that new product introductions could have a significant and positive impact on the growth of income and employment [26]. However, process innovation shows a more contentious effect, probably because this innovation type is more likely to lead to cost reductions in manufacturing firms. Waheed carried out a study of a similar nature with a sample of companies from Bangladesh and Pakistan; the findings revealed that process innovation has a stronger influence on productivity, supporting the conclusions of the current study [24].

Low average means for new distributions, systems, and processes could be an indication of the effects of process innovation being modest. The study's findings concur with those of Mulky, who stated that some manufacturers contact directly with their clients, and thus distribution channels may not lead to innovation especially direct distribution is being done. Additionally, the costs of maintaining a distribution channel are high, which raises the cost of distribution.

Challenges faced by SMEs in the manufacturing sector in adopting technological innovation

One of the study objectives was to determine the challenges faced by SMEs in the manufacturing sector in adopting technological innovation. The table 8 below shows the challenges faced by manufacturing SMEs.

Table 8: Challenges faced by SMEs in the manufacturing sector

	N	Mean	Std. Deviation
Lack of government support	50	2.20	.886
Lack of sufficient capital	50	2.55	.841
High interest rates	50	2.61	.749
Lack of knowledge and skills	50	2.05	.829
Limited resources	50	3.10	.767
Valid N (listwise)	50		

Table 8 above shows the challenges faced by SMEs in the manufacturing sector. With reference to table 8 above, limited organizational resources is rated high with an average mean of 3.10. This is followed by high cost of capital, lack of sufficient capital, lack of government support and limited knowledge and skills with means of 2.61, 2.55, 2.20, and 2.05 respectively. Overall, the study shows that manufacturing firms in Harare pointed out the problem of scarce organizational resources as a factor restricting their performance. This conclusion is reinforced by a study by Olander et al. who found that the primary obstacles preventing SMEs from achieving innovation are a lack of conceptual understanding, a lack of resources, and non-innovative workforce. Furthermore, Najda-Janoszka and Kopera defended a related viewpoint in the context of the Polish industry, arguing that human resources specifically, insufficient skills, low formal competencies and qualifications, and low motivation to participate in the innovation process are the primary causes of barriers to innovation. This is further supported by Gazem et al. who found that poor human resources in organizations constitute a significant barrier to innovation. Moreover, there was a surprising result that lack of sufficient capital showed a neutral result which mean that it neither nor affect innovation in manufacturing firms.

Furthermore, it emerged from the study that lack of government support and limited knowledge and skills were weak factors in relation to their effect on SMEs in the manufacturing sector in Zimbabwe. This is in support of Crucianu who indicated that investment in innovation through subsidies and research grants by the government has resulted in an increased number of patents granted each year [33]. This is the same case in Zimbabwe where government support has increased by setting up innovation hubs and industrial parks in promoting innovation in SMEs in the manufacturing sector.

Hypothesis Testing: Statistical Significance

The figure below shows the results of the PLS-SEM. The model shows that product and process innovation signifcanlty influences organisational performance (OP).

Product innovation exhibited a statistically significant influence ($t=2.406$, $p<0.05$) on organisation performance of manufacturing SMEs. In addition, process innovation also indicates a statistically significant influence ($t=1.826$, $p<0.05$), on organisational performance.

Table 9: Summary of significance testing results of the structural model path coefficients

Hypothesis	Path	T Statistics (|O/STDEV|)	P Values	Decision
H_1	Product Innovation -> OP	2.406	0.000*	Accept
H_2	Process Innovation -> OP	1.826	0.000*	Accept

*OP=Organisational Perfomance. *P accepted where P<0.05

Product innovation exhibited a statistically significant influence ($t=2.406$, $p<0.000$) on organisation performance of manufacturing SMEs

The study found that product innovation had an impact on manufacturing SMEs' organizational performance that was statistically significant ($t=2.406$, $p<0.05$). These findings are in line with research by Dehning et al. who claimed that product innovation improves a number of financial performance indicators for a business, including sales growth, market expansion, rising customer happiness, and rising profit margins. Another study also found that the company's R&D activities might provide new products and widen the market, both of which would boost the company's performance.

Process innovation also indicates a statistically significant influence ($t=1.826$, $p<0.000$), on organizational performance

The study found that process innovation has a statistically significant impact ($t=1.826$, p0.05) on the performance of manufacturing SMEs. Manual came to the conclusion that process innovation enhances how goods or services are produced or provided, which supports the aforementioned premise on the relationship between process innovation and organizational performance. This supports the conclusions of Schumpeter, who suggested that innovative businesses had a competitive edge that enables them to supersede non-innovative ones in his theory of creative destruction. Process innovation has been highlighted as a viable strategy for fostering company success and economic advancement. Waheed carried out a study of a similar nature with a sample of companies from Bangladesh and Pakistan; the findings revealed that process innovation had a stronger effect on productivity [24]. The results are surprising in that, according to Tuan et al. process innovation appears to have a greater impact than product innovation on the inventive performance of businesses in the supporting industry [25].

Conclusions

The study draws conclusions that follow as guided by the research objectives.

This study sought to determine factors that influence technological innovativeness among manufacturing SMEs. It emerged from the study that experienced human, leadership, access to funding, competition, and organisation mission and culture influences technological innovativeness among SMEs in the manufacturing sector.

With regards to effect of product innovation on the performance of SMEs in the manufacturing sector in Zimbabwe, this study has revealed that product innovation had an impact on manufacturing SMEs' organizational performance that was statistically significant. It emerged that product innovation improves a number of financial performance indicators for a business, including sales growth, market expansion, rising customer happiness, and rising profit margins.

In terms of the effect of process innovation on the performance of SMEs in the manufacturing sector in Zimbabwe, it emerged from the study that process innovation has a statistically significant impact on the performance of manufacturing SMEs. The study reveals that process innovation enhances how goods or services are produced or provided, which supports the aforementioned premise on the relationship between process innovation and organizational performance.

It emerged from the study that limited organizational resources and high cost of capital were the major challenges faced by SMEs in the manufacturing sector in adopting technological innovation. It was also discovered that lack of government support and limited knowledge and skills with had netral responses with regards to challenges that manufacturing SMEs encounter.

Recommendations

In line with the study objectives, the following recommendations are made out of this study:

- In order for manufacturing SMEs to achieve high product and process innovation, the government and management for SMEs must foster an environment that supports innovation, entrepreneurship and enterprise creation and gives innovative firms the opportunity to expand their product innovation.
- The government must also develop and implement a wide range of innovation policies that encourage best practices and support company growth.
- The government must support the creation and ongoing operation of innovative businesses through partnerships.
- The government and firm managers should encourage product development alliances and luring similar players to the fore to foster a favorable environment for product and process innovation.
- The government must increase SME understanding of and familiarity with all components of the system of intellectual property through increased communication between Zimbabwe Intellectual Property Offices, and organizations that help small and medium-sized businesses. Improving the understanding of intellectual property support innovation in SMEs.
- SMEs must put more of an emphasis on developing their core competencies in order to improve process innovation.
- SMEs must work with outside partners to make up for other skills and resources, particularly when developing new products.

Implications for Future Research

Future studies should expand the study's scope and sample size and other factors related to product and process innovations. In addition, future research has to take into account the creation of national and regional government policies that encourage innovation among SMEs. The current study has mostly depended on quantitative data; as a result, it has not been complemented by qualitative data, which would have allowed it to provide a more in-depth understanding of the subject. Therefore, in order to support complementarity and triangulation, a hybrid technique must be adopted in the future.

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