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Dynamics of Food Safety Management Strategies on Sustainability of Selected Manufacturing Small to Medium Size (SMEs) in Harare Metropolitan Province, Zimbabwe

By

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Abstract

International Standard defines what an organization needs to do in order to demonstrate its ability to control food safety hazards and ensure that food products are safe for consumption. The study sought to to analyse the effect of implementation of food safety management systems on performance of selected manufacturing small to medium enterprises (SMEs) in Zimbabwe. The study was guided by Positivism research Philosophy in a cross-sectional research design. The population of this research were all registered or licenced SMEs in Harare Metropolitan Province. There are 5000 registered or licenced manufacturing SMEs operating in Harare Metropolitan Province (Finscope, 2016). This research used 500 SMEs in Harare Metropolitan Province. This sample size is calculated from the 10% of the population basing on the basic Rule of the Thump. Probability sampling was used to determine respondents for the quantitative data. The research used semi structured questionnaires to collect quantitative data. Cronbach's alpha coefficient of reliability was used in this study to test validity and reliability of data instruments. The data in this study was analysed using Statistical Package for Social Sciences (SPSS) version 21.0. The tests were done using non-parametric chi-square test of independence, Friedman Rank test and descriptive statistics for testing the association of categorical variable relationships. Results showed that food safety management systems positively influence performance (Return on Investment), food safety management systems positively performance (Return on Assets) and food safety management systems positively influence performance (service quality) of manufacturing SMEs. The study focused on manufacturing SMEs in Harare only. This poses challenges when it comes to generalizability of the findings. As such, it is recommended that future research be done in other cities and provinces in Zimbabwe in order to make meaningful generalizations.

Key Words: Food management, Performance, SMEs, Zimbabwe

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Introduction and Background of the Study

Safety and quality are important for the food industry. The Hazard Analysis Critical Control Point (HACCP) is a proven mechanism for controlling food safety. The HACCP approach is internationally recognized as essential for ensuring the safety and suitability of food for human consumption (Bas et al., 2016; Pierson and Corlett, 2017; Ramirez and Fernandez, 2018). Due to the main concern of consumers on the safety of food (Kidd, 2020) more and more countries require satisfactory food control programmes to ensure the safety, quality and availability of food supplies.

The characteristic of food safety is the absence of foodborne hazards at the point of consumption. These hazards can occur at different stages of the food chain, therefore adequate controls throughout the network are essential. Food safety is ensured through the combined efforts of all the parties participating in the food chain, from feed producers and primary producers to food manufacturers, transport and storage operators and subcontractors, right through to retail and food service outlets. These work together with related organizations such as producers of equipment, packaging materials, cleaning agents, additives and ingredients, as well as service providers. ISO 22000:2018, Food safety management systems – Requirements for any organization in the food chain, is recognized internationally as the most relevant document supporting the development of a food safety management system (FSMS). The International Standard defines what an organization needs to do in order to demonstrate its ability to control food safety hazards and ensure that food products are safe for consumption. This enables organizations to deliver food-related products and services with confidence throughout the supply chain. Authored by experts from SC 17, Management systems for food safety, a subcommittee of ISO's technical committee ISO/TC 34, Food products, this standard encapsulates the latest knowledge of food chain safety to support organizations in developing an effective FSMS.

Over the past years implementation and certification of quality and food safety management systems in the food packaging industry just as in all other manufacturing industries have tremendously increased, reflecting the importance these standards have assumed in various sectors (Teixeira & Sampaio, 2012). Companies have been attaining this goal through adoption of the relevant and applicable standards established by the International Organization for Standardization (ISO). With globalization they are increasingly more demand for players in the manufacturing sector to guarantee quality and safety of their products and associated services so as to gain the trust and confidence of customers (Ahmudi, et al., 2018). To increase efficiency, competitiveness and customer satisfaction, many companies are adopting Quality Management System (QMS). QMS is widely developed through the ISO 9001 standard certification (Ahmudi, et al., 2018). On the other hand, to manage the growing concern over food safety by consumers manufacturers have utilized the ISO22000 standard (Teixeira & Sampaio, 2011).

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Now that ISO 22000:2018, Food safety management systems standard follows the same High-Level Structure (HLS) as the widely applied ISO 9001:2015 standard the two standards have been found to be complimentary and are in practice often integrated and implemented together by companies in the food manufacturing value chain (SILVA, et al., 2016). For players in food packaging manufacturing, quality and food safety management systems implementation will increase the chance for businesses to be competitive and grant the capability to integrate into the more liberalized regional and global value chain (Ahmudi, et al., 2018).

The contamination problems have also faced many other African countries. In South Africa several studies have discussed the issues related to food borne diseases in the community. Most causes involve the hygienic practices that fail to control contamination in the food establishments. Kubheka, Mosupye, and Von Holy (2001) indicate high risk of hazard is due to management practices such as poor food preparation and lack of hygiene practices. For example, when food was cut, and mixed with dirty utensils, then left uncovered at the table, this promoted food contamination. Likewise, food was left at the ambient temperature that can cause bacteria growth. Von Holy and Makhoane (2006) in South Africa report the same case but describes the need for training on food hygiene practices for food handlers. The research in Nigeria reports that most of the food problems are also caused by hygiene practices and facilities. Some areas lack toilet facilities, adequate water supply, and proper drainage systems. The purchase of raw materials and ingredients in the open markets has contributed to contamination. This problem has caused several deaths in Nigeria; an outbreak of food poisoning in Ibadan resulted in 20 deaths from salmonella typhimurium and a case of food poisoning for three families in Kano was caused by yam flour consumption. The investigation indicated that the use of lethal substances for preserving the yam flour may be the cause (Omemu &Aderoju, 2008).

In Zimbabwe the Standards Association of Zimbabwe (SAZ) has been the one playing a leading role in development, implementation and certification of both quality and food safety management systems, driving them as tool for attaining business excellence and capacity to integrate into the global market. A significant number of the Zimbabwean food packaging manufacturing industry especially in the flexible packaging category are Small to Medium Enterprises (SMEs). Studies done have shown that for Zimbabwe the contribution of the SMEs sector to the economy is vital for the achievement of the broader development objectives such as poverty alleviation, creation of employment opportunities and increasing indigenous ownership of resources in the economy (Karedza, et al., 2014). It's important to highlight that SMEs are a vulnerable category of business often struggling because of limited access and cost of finance, lack of marketing skills and market knowledge inadequate management and entrepreneurial skills, lack of access to infrastructure, inaccessible to land, lack of information and prone to a hostile regulatory environment (Karedza, et al., 2014). Generally, because of these challenges in the market place players in the SME category inherently do not have the capacity to face competition from multinational firms offering similar products or services. The vulnerability of SMEs means they bound struggle in implementing effective food safety and quality management systems which over the years have slowly become a requirement for trade.

Due to weak quality and food safety management systems most of food packaging manufacturing SMEs will find it difficult to compete, survive and grow their business portfolios as well as integrate into regional and global value chains. For instance, to meet the requirements or supplier selection criteria of large and multinational food companies

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operating in Zimbabwe, the region and the globe the SME company will need to have either a certified food safety management system or quality management system if not both. Thus, it is of a strategic impact to study and promote implementation and certification of food safety and quality management systems among SMEs in the food manufacturing value chain. In more detail this research through a fact-based approach aim to give more insights on issues such as motivation and perceived benefits for implementation of the ISO standards, the barriers and challenges faced during implementation and finally the benefits actually realized from implementation and certification of quality and food safety management systems.

So far in the context of Zimbabwe scholars have not explored fully the implementation of ISO quality and food safety management systems in all industries. Literature review exposed a research gap of scholarly work in unpacking quality and food safety management systems in the Zimbabwean manufacturing SMEs category. Some of the published studies around implementation of these systems focused on the service industry. In one of such studies the focus was on exploring implementation of quality management principles in the institutions of higher learning through a case study of Zimbabwe Open University (Nyuke & Gasva, 2015). Also with focus on the service industry other related studies published which included SMEs focused on evaluating ISO 22000 Food Safety Standards awareness and implementation in Zimbabwean branded fast food outlets (Chivandi & Maziriri, 2017). As far as the manufacturing sector is concerned from the literature reviewed they was no study with a focus on Zimbabwe which explored the Zimbabwean SMEs in the manufacturing sector. In one published research (Chikuku, et al., 2012) focus was on evaluating the impact of implementation of the ISO standards on performance, however the particular study was only a post system implementation evaluation which excluded important aspects such as evaluation of the motivations and the implementation process phase. In an almost similar study which explored implementation of quality management systems in the manufacturing industry a case study of a textiles manufacturing company has been published with a focused-on challenges faced by manufacturing companies in sustaining conformance to ISO9001:2008 in Zimbabwe (Goriwondo, et al., 2012).

In practice in the manufacturing industry quality and food safety standards are not implemented in separately but rather because of their common high-level structure (HLS) are integrated and merged together as one system to simplify implementation and maintenance of the systems. However already published research when evaluating practices of these standards in industry still study the systems separately in most of the cases and this will not give the best picture. They is need to take a practical approach and study implementation of these systems in industry as integrated, alternative and complimentary systems. Also, it's key to note that all the related previous studies done in Zimbabwe such as the one by Goriwondo, et al., 2012 all others which were reviewed are based on the outdated old versions of the standards. For quality management systems the studies were done using ISO9001:2008 of which we now have a new standard ISO9001:2015, then for food safety management studies were based on the ISO22000:2005 and now we have the ISO22000:2018 fresh standard. This research incorporated changes in the standards such as change of philosophy of the quality management system from a reactive to a risk-based approach. However, this study focused on manufacturing SMEs in the context of Zimbabwe.

Statement of the Problem

Food safety management practices within the food industries of Zimbabwe has caused contamination and this has led to substantial illness for consumers. Studies indicate that most

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food contaminations are due to food mishandling and a lack of safety management practices. These include inadequacy of well-planned facilities, a lack of sanitary conditions, management, and training; it also includes misuse of government regulations and laws (food codes) in the food industries. Owing to their importance and benefits at a global level a lot of academic research has been done on the implementation of food safety and quality management systems. However, there is dearth of information focusing on manufacturing SMEs in Zimbabwe. SMEs in the food packaging manufacturing value chain can only achieve the desired level of market penetration, regional and global integration if they meet the market expectations in terms of food safety and quality standards. To achieve this implementation of ISO22000:2018 and ISO9001:2015 among other applicable standards becomes vital to develop competitive SMEs in Zimbabwe. Considering this scenario, SMEs may need effective support to access and comprehend what is necessary to implement a QMS to enhance competitiveness in the Zimbabwe context which this study sought to establish.

Research Objectives

1. To assess the effect of implementation of food safety management systems on performance of selected manufacturing SMES in Zimbabwe

Research Hypotheses

H_1: Food safety management systems positively improves Return On Investment (ROI) of manufacturing SMEs in Zimbabwe.

H_2: Food safety management systems positively improves Return On Asset (ROA) of manufacturing SMEs in Zimbabwe

H_3: Food safety management systems positively improves innovation of manufacturing SMEs in Zimbabwe.

Methodology

The study was guided by Positivism research Philosophy in a cross-sectional research design. The population of this research were all registered or licenced SMEs in Harare Metropolitan Province. There are 5000 registered or licenced manufacturing SMEs operating in Harare Metropolitan Province (Finscope, 2016). This research used 500 SMEs in Harare Metropolitan Province. This sample size is calculated from the 10% of the population basing on the basic Rule of the Thump. Probability sampling was used to determine respondents for the quantitative data. The research used semi structured questionnaires to collect quantitative data. Cronbach's alpha coefficient of reliability was used in this study to test validity and reliability of data instruments. The data in this study was analysed using Statistical Package for Social Sciences (SPSS) version 21.0. The tests were done using non-parametric chi-square test of independence and descriptive statistics for testing the association of categorical variable relationships.

Theoretical Framework

The study was guided by Administrative Theory. Administrative management theory attempts to find a rational way to design an organisation as a whole. The theory calls for a formalised administrative structure, a clear division of labour and delegation of power and authority to administrators relevant to their areas of responsibilities (Vincent, 2014). Administrative theory relates to accomplishment of tasks and includes principles and functions of

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management. Garcia-Berna and Ramirez-Aleson (2015) asserted that Administrative theory also focuses on improving the efficiency of management so that the processes can be standardised at the operational level. The individual employees are made to learn the changes and implement those in their routine jobs so as to improve on performance. Waal (2013) argue that the administrative theory focuses more on the issue of internal optimisation than external adaptability thus omitting variables such as culture and technology in terms of managing employees.

Review of Related Literature

1. The effect of implementation of food safety management systems on performance of selected manufacturing SMES in Zimbabwe.

The benefits of the implementation of the standard for an organization include, among others, a valid basis for taking decisions, systematic management of PRPs, increased. due diligence, saving resources by reducing overlapping system audits, more efficient and dynamic control of food safety hazards, optimization of resources, improved documentation, better planning and less post-process verifications (Færgemand, 2008). Other important issue are benefits derived from FSMS certification. It is obvious that HACCP system does not have to undergo the certification process in opposite to the ISO 22000 standard, but the benefits for both ways are similar. Benefits of the FSMS system certification process can be divided into external and internal. External benefits include items such as improving the image of company, the possibility of using certificates as part of a marketing strategy and a willingness to meet the expectations of increasingly demanding consumers. An important advantage of the FSMS system certification is the opportunity to confirm the company's competence in the area of food safety, which may be a prerequisite for cooperation with major customers and markets or retail chains. Internal benefits are those that can be observed internally, and which improve the processes. In the case of certification of HACCP, it seems that more important are the benefits of a properly functioning system than the confirmation of this fact by an independent certification body. That kind of benefits can include in particular a high level of products food safety produced by the company.

The adoption of HACCP by food companies may have many clear benefits. An awareness of these benefits is important in order to implement the system effectively. In the literature there is a substantial number of studies that have publicised the benefits and drivers of the adoption of HACCP by the food industry. In a survey of food companies' perception, in Greece, Semos and Kontogeorgos (2007) reported that the benefits derived from HACCP implementation are due to three factors: clientele benefits, product improvements, and improvements in production procedures. Studies revealed that implementation of HACCP can help trade between countries and increase export sales (Cato, 2018; Maldonado et.al., 2019; Panisello and Quantick, 2020; Taylor, 2020). As stated by Jensen and Unnevehr (2020) the implementation of the system helped companies in the USA to access international markets.

Other benefits of food safety systems as stated in the literature include; an improved relationship between food companies and regulatory authorities; better use of resources and continuous inspection; compatibility to other management systems; reduction of microbial counts in products; increase in food handlers' awareness of the HACCP and food safety; reduced waste and downtime (such as Gorman et.al. 2012; Griffith et.al., 2013; Soriano et.al.,

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2014; Tuominen et.al., 2016; Van Schothorst, 2018). More specifically, according to the Public Health Services of the Ministry of Health in Cyprus all food enterprises are obligated to apply and observe permanent procedures that are developed and implemented according to the principles of HACCP system for food safety. Complexity of the implementation of the system is related to the nature and the size of the enterprise.

Accordingly, Quidal (2017) asserted that SMEs are demonstrating a lack of motivation in relation to food safety (particularly with self-regulatory issues). The level of knowledge and understanding of legislation and food safety principles within SMEs directly affect the level of motivation that SMEs had in dealing with requirements. For example, if an SME did not understand that they handled high-risk foods, they are less motivated to implement temperature controls and hazard analysis requirements because they felt these were irrelevant to the business operation. Quidal (2017) pointed that over two-thirds of SMEs in Bungalow had a reactive attitude towards food safety. This was seen throughout the compliance process, particularly identification, and interpretation of regulations and deciding the way in which to comply. SMEs were totally dependent upon external agencies to do this for them. The predominant source of information was the EHP during formal inspections or informal advisory visits. Other information sources used included trade associations, environmental health consultants and the FSA. Responsibility for identifying non-compliance within the business was seen as part of the EHPs role during inspections. Marineand Sedal (2020) alluded that SMEs tended react to non-compliance identified by the EHP at this point in Bugalow, rather than deal with problems as and when they became aware of them. Part of this attitude stemmed from the perception that these issues were irrelevant to the SMEs food safety. The majority of SMEs saw that implementing legal requirements would not improve their food safety.

Results and Discussion

Response Rate Analysis

A total of 500 questionnaires were administered to owners and managers of SMEs in Chitungwiza. Of the total questionnaires that were distributed, 450 were properly completed and returned translating to an 90% response rate. Saunders et al. (2007) consider a response rate of 50% to be adequate, 60% is regarded as good while that of 70% is considered very good. In light of this argument, the response rate of 83.3% was good and hence results from such a threshold were not only credible but formed a sound basis for drawing conclusions.

Demographic characteristics

Level of Education

In Figure 1.1 it is evident that the majority of respondents had attained a tertiary level of education that is from diploma level to doctoral studies. This includes a total of 41% respondents having attained a Bachelor's degree, followed by a significant number of respondents 29% who had a Master's degree whilst 16.4% had Diplomas and 4.5% had attained Doctoral degree. The results also indicated that 2.7% had O level with 4.5% having attained A level while only 1.8% had attained just a primary level of education.

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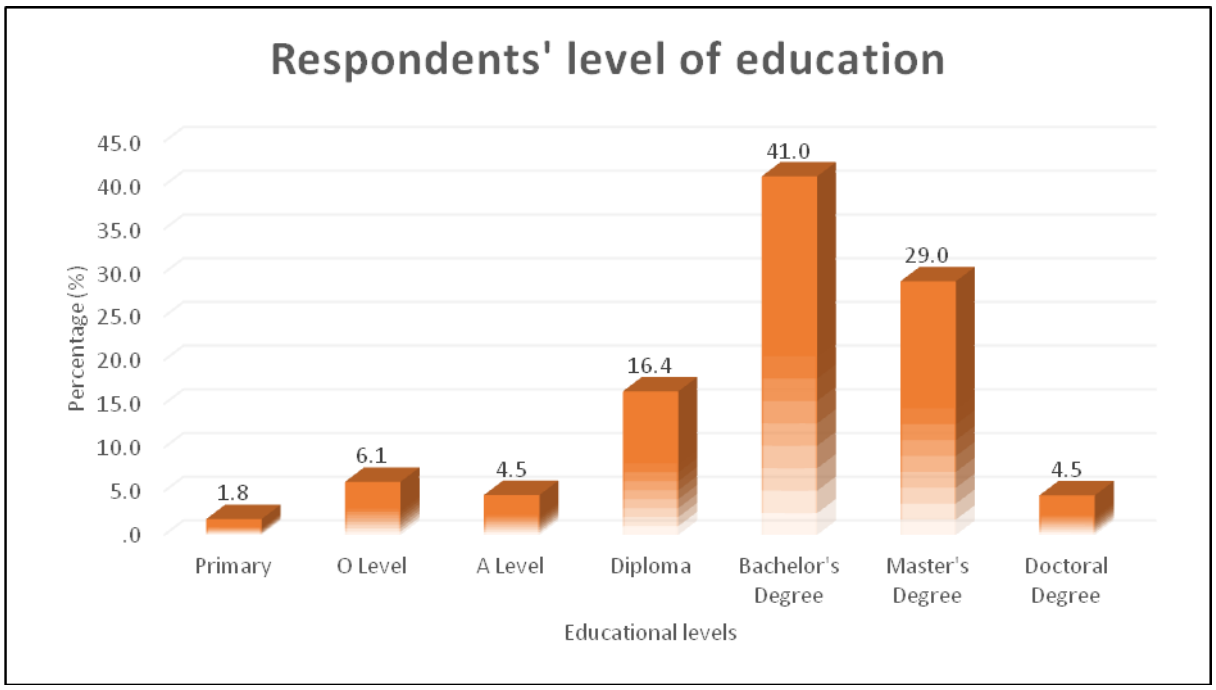

Figure 1.1: Respondents' level of education

Source: Survey data (2021)

Figure 1.1 shows that most business owners or managers had at least attained a diploma. Very few owners and managers, represented by a total of 12% had attained a primary, ordinary and advanced level of education. These findings indicate that the ones starting up or managing SMEs in Zimbabwe are well educated and may imply that they have strategies to sustain their businesses. The results also imply that due to high levels of unemployment prevalent in Zimbabwe a lot of highly educated people have decided to establish their own firms and employ the knowledge they acquired to manage their businesses. It can be interpreted those unemployed graduates in Zimbabwe, have heeded to the call of entrepreneurship and are not waiting to be employed by large firms. The results are supported by the (ZimStat Agency, 2012) which noted that the literacy rate of Zimbabwe is very high above 90%. In addition, the majority of Zimbabweans consider education as highest priority.

Exploratory Factor Analysis

EFA was executed with the intention of understanding the structure of a set of variables and also determine which items actually measured the underlying constructs in the questionnaire.

4.4.1 Sampling Adequacy

Before executing EFA the sustainability of data for factor analysis was assessed using Kaiser Meyer Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity using SPSS Version 20. The results attained are presented in Table 4.1 (KMO = 0.720, Approx Chi-square = 10826.491, Degrees of freedom [DF] = 1583; $p < 0.001$) meant the sample was acceptable and therefore allowed exploratory factor analysis to be performed (Field, 2009). EFA was also performed with the intention of refining and decreasing the large number of related variables to a more significant and manageable number before using them for further analyses. Zikmund and Babin (2016) described factor rotation as a mathematical method of

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simplifying factor results for better interpretation. Varimax method was used in order to simplify the analysis of factors. The method was selected due to the fact that it tries to make the most of the distribution of loadings within factors which result in clusters of factors that can be easily interpreted (Field, 2009).

Table 1. 1: KMO and Bartlett's Test of Sphericity

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.720
Bartlett's Test of Sphericity	Approx. Chi-Square	10601.396
	df	1485
	Sig.	.000

Source: Survey (2021)

Table 1.1 presents factor loadings for every factor. Factor loadings of less than 0.4 were suppressed as suggested by Steven that only factor loadings above 0.4 should be interpreted in order to make interpretation considerably easier (Field, 2005). The following items BEN5 and SQ5 were excluded due to poor factor loadings (Field, 2009).Therefore results in Table 4.2 show that all factor loadings were above 0.6 which is the minimum cut-off point for factor loadings (Bagozzi and Yi,1988; Lewis-Beck, 1994).

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Table 1. 2: Constructs, Items, Factor Loadings

Construct	Items	Factor Loadings
Benefits for manufacturing SMEs in implementing food safety management systems in Zimbabwe	BEN1	0.756
	BEN2	0.903
	BEN3	0.870
	BEN4	0.822
	BEN5	0.799
	BEN6	0.842
Challenges faced by manufacturing SMEs during implementation of ISO 9001:2015 and ISO 22000:2018	CHA1	0.657
	CHA2	0.749
	CHA3	0.651
	CHA4	0.669
Relationship between Food Safety Management systems and Performance of manufacturing SMEs in Zimbabwe	FSMP1	0.783
	FSMP2	0.816
	FSMP3	0.803
	FSMP4	0.964
Food Safety Management Systems	FSMS1	0.891
	FSMS3	0.818
	FSMS4	0.724
Economic variables and markets	ROA1	0.870
	ROA2	0.857
	ROA3	0.765
	ROA4	0.749
Return On Investment	ROI1	0.758
	ROI2	0.787
	ROI3	0.783
	ROI4	0.806
Service Quality	SQ1	
	SQ2	
	SQ3	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 6 iterations.
Based on Eigenvalues > 1.00
Total variance explained = 74.072%
Loadings of less than 0.4 were suppressed

Source: Survey (2021)

As shown in Table 1.2, rotation converged in 6 iterations and the total variance explained by the data was 74.07% which is above the acceptable limit of 60% (Atalay et al., 2013). As expected, the results presented in Table 1.2 show that the rotated component matrix solution gave 7 components, namely CHA, BEN, SQ, ROI, ROA, FSMP1 and FSMS.

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Descriptive Statistics

This section presents results on descriptive statistics which includes arithmetic means (M), and standard deviations (SD) on all the seven factors, namely benefits for implementing food management systems, challenges faced by manufacturing SMEs during implementation of ISO 9001:2015 and ISO 22000:2018 to enhance performance in Zimbabwe, Food safety management systems, relationship between food safety systems and performance of manufacturing SMEs in Zimbabwe, Return On Investment, Return On Assets and Service Quality. The SD speak of the extent to which responses are consistent in other words the distribution of the responses around the mean. There is an improved understanding of the data if mean and SD are used together. The scale used in the study had the following response points: 1 strongly disagree, 2 disagree, 3 Neutral, 4 agree, 5 strongly agree.

Descriptive Statistics for Benefits for manufacturing SMEs in implementing food safety management systems in Zimbabwe

Table 1.3 presents the mean scores and the standard deviations of items that were employed to measure the benefits for manufacturing SMEs in implementing food safety management systems in Zimbabwe.

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Table 1.3: Descriptive Statistics for Benefits for Manufacturing SMEs in implementing food safety management systems in Zimbabwe

Item Code	Item Description	Mean score	Mean response	SD
BEN1	Implementation of Food safety management systems gives us a valid basis for taking decisions.	4.85	Strongly Agree	0.995
BEN2	Implementation of Food safety management systems increases due diligence	4.24	Agree	0.898
BEN3	Implementation of Food safety management systems saves resources by reducing overlapping system audits.	4.06	Agree	0.830
BEN4	There is more efficient and dynamic control of food safety hazards because of implementation of Food safety management systems.	4.32	Agree	0.913
BEN5	There is systematic management of PRPs through implementation of Food safety management systems.	4.28	Agree	0.745
BEN6	There is improved documentation, better planning and less post-process verifications through implementation of Food safety management systems.	4.98	Agree	0.854
	Overall	4.37	Agree	0.909

Source: Survey (2021)

Results in Table 1.3 show that the mean responses ranged between 4.06, SD = 0.830 (item EI3) and 4.85, SD = 0.995 (item EI1). The mean total was calculated and it averaged (overall mean = 4.37; SD = 0.891) agree out of a possible score of 5 (strongly agree). This suggests that the respondents agreed that implementing food safety management systems was of great value to SMEs.

Descriptive Statistics for challenges faced by manufacturing SMEs during implementation of ISO 9001:2015 and ISO 22000:2018

Table 1.4 presents the mean scores and the standard deviations of items that were employed to measure the Challenges faced by manufacturing SMEs during implementation of ISO 9001:2015 and ISO 22000:2018.

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Table 1.4: Descriptive Statistics for challenges faced by manufacturing SMEs during implementation of ISO 9001:2015 and ISO 22000:2018

Item Code	Item Description	Mean score	Mean response	SD
CHA2	There is financial limitation in implementing Food safety management systems.	3.59	Agree	0.765
CHA3	There is difficulty in getting the right infrastructural capacity to plan and implement the processes needed for validating control measures, and verifying the effectiveness of the system developed.	3.48	Neither Agree nor Disagree	0.690
CHA3	There are low level of education which do not match the standards related to food safety management systems.	3.46	Disagree	0.608
CHA4	The costs associated with training of employees in relation to food safety management systems are too much for SMEs.	3.82	Agree	0.714
	Overall	3.58	Agree	0.694

Source: Survey (2021)

Results in Table 1.4 indicate that the mean responses ranged between 3.46, SD = 0.608 (item CHA3) and 3.82, SD = 0.714 (item CHA4). The mean total was computed and it averaged (overall mean = 3.23; SD = 0.694) agree out of a possible score of 5 (strongly agree). This implies that firm owners concurred to the fact that challenges faced by manufacturing SMEs during implementation of ISO 9001:2015 and ISO 22000:2018 are affecting the food safety management systems.

Descriptive Statistics for the relationship between food safety management systems and performance of manufacturing SMEs in Zimbabwe

Table 1.5 presents the mean scores and the standard deviations of items that were employed to measure the effect of the relationship between food safety management systems and performance of manufacturing SMEs in Zimbabwe.

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Table 1.5: Descriptive Statistics for the relationship between food safety management systems and performance of manufacturing SMEs in Zimbabwe

Item Code	Item Description	Mean score	Mean response	SD
FSMP1	There is an improved relationship between food companies and regulatory authorities.	3.94	Agree	0.935
FSMP2	There is better use of resources and continuous inspection.	4.64	Strongly Agree	0.960
FSMP3	There is compatibility to other management systems.	4.96	Strongly Agree	0.988
FSMP4	There is reduction of microbial counts in products	4.87	Strongly Agree	0.976
FSMP5	There is an increase in food handlers' awareness of the HACCP	3.89	Agree	0.896
FSMP6	There is food safety and reduced waste and downtime	4.45	Agree	0.765
	Overall	4.60	Strongly Agree	0.948

Source: Survey (2021)

According to the findings shown in Table 1.5 the mean responses ranged between 3.94, SD = 0.935 (item FSMP1) and 4.96, SD = 0.988 (item FSMP3). The mean score was computed and it averaged (overall mean = 4.60; SD = 0.948) strongly agree out of a possible score of 5 (strongly agree). This suggests that the respondents strongly agreed that there is a strong relationship between food safety management system and performance.

Statistical significance of the regression model

Table 1.6: Regression Model Validity

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig
1 Regression	78.885	4	25.544	27.146	0.000[b]
Residual	284.825	212	.845		
Total	364.458	216			

a. Dependent Variable: Performance (ROI, ROA, Service Quality)
b. Predictors: (Constant), food safety management systems.
Source: Survey (2021)

Findings indicate that data fit the model very well, i.e. the model is statistically significant (F ratio = 27.146, significant at p <0.001). It is given then that the independent variables were statistically significant in predicting the dependent variable, F=27.146, p < .05 p=0.000). Therefore, the regression model was a good fit for analysing the effect of food safety management systems on performance of manufacturing SMEs.

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Table 1.7 Regression analysis results

Model	Unstandardized coefficients		Standardized coefficients	t	Sig	Collinearity Statistics	
	B	St. Error	Beta (β)			tolerance	VIF
(Constant)	3.241	.439		6.124	.000		
Return On Investment	.163	0.75	.106	2.104	0.02	0.935	1.023
Return On Assets	**.140**	**.083**	**.101**	**2.226**	**.003**	**0.932**	**1.015**
Service Quality	.123	0.87	.105	2.114	0.02	0.925	1.032

a. Predictors: (Constant), Food Safety Management, Systems.
b. Dependent Variable: Performance, (ROI, ROA, Service Quality)
Source: Survey (2021)

As highlighted in Table 1.7, performance is the dependent variable and Food management systems is the predictor (independent variables). More so, the tolerance and valence inflation factor (VIF) statistics (tolerance ranges between 0.925 and 0.935, whereas VIF ranges between 1.015 and 1.074), this signify that the model is free from collinearity problems. This follows the recommendations of Saunders et al. (2009) that a very small tolerance value (0.10 or below) or a large VIF value (10 or above) indicates high collinearity.

Table 1.7 shows that food safety management systems significantly predict performance (Return On Investment), this means that Performance (Return On Investment) of an organization is dependent on food safety management systems (β = 0.106, t = 2.104, significant at p = 0.043). A positive standardised beta coefficient (β = 0.106) illustrates that a significant relationship exists between food safety management systems and Performance (Return On Investment) among manufacturing SMEs. Hence **H1 supported**.

Findings from Table 1.7 indicates that Food safety management systems positively predicts performance (Return On Assets) of manufacturing SMEs in Zimbabwe. The findings thus, imply that Food safety management systems positively predicts performance (Return On Assets) of manufacturing SMEs in Zimbabwe. The results imply that among manufacturing SMEs (β = 0.101, t = 2.226, significant at p = 0.03). A significant standardised beta coefficient (β = 0.101) indicates that, Food safety management systems has a significant effect on performance (Return On Assets) of manufacturing SMEs in Zimbabwe. As such, **H2 is supported**.

Table 1.7 illustrates that Food safety management systems positively predicts performance (Service Quality), this implies that service quality performance of manufacturing SMEs is dependent on Food safety management systems (β = 0.105, t = 2.114, significant at p = 0.03). A positive standardised beta coefficient (β = 0.105) illustrates that a significant relationship exists between Food safety management systems and performance among manufacturing SMEs. Hence **H3 supported**

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Conclusions and Recommendations

The study found that Implementation of Food safety management systems has several benefits to the manufacturing SMEs, which includes giving firms a valid basis for taking decisions, increasing due diligence, saving resources through reducing overlapping system audits, bringing more efficient and dynamic control of food safety hazards, there is systematic management of PRPs and improved documentation, better planning and less post-process verifications. The results mean that the implementation of food safety management systems by manufacturing results in positive substantial outcomes to a firm's operations. The related hypotheses of the study were tested using multi variate regression analysis. The results attained showed that food safety management systems positively influence performance (Return On Investment), food safety management systems positively performance (Return On Assets) and food safety management systems positively influence performance (service quality) of manufacturing SMEs.

It is recommended that manufacturing SMEs in Zimbabwe continually upgrade themselves in terms of their capacity, operations, machinery, human resources and capital base since this has a bearing on food safety management systems. As such manufacturing SMEs are commended to have sufficient resources required to educate and train its workforce, a vibrant internal research and development, and a vibrant human capital that matches the requirements of food safety management systems. It is commended those owners or managers of the manufacturing SMEs put more emphasis on their processes, systems and asset resource that is aligned to food safety management systems.

The role of the government through the Ministry of SMECD should come up with initiative to increase awareness of how SMEs can increase their performance and quality through engaging in food safety management systems and thus can be assisted through trainings, workshops and also be assisted financially without huge collateral requirements. These initiatives should be based on promoting, training, and development of proper institutional board that deals with issues related specifically to promoting SMEs with appropriate knowledge and skills.

Standards Association of Zimbabwe (SAZ) and other relevant stakeholders like government agencies must develop national standards that promote the use for socio-economic development. More so players in the industry should also focus on the benefits and challenges of food safety management systems so as to incorporate them into a portfolio of learnings and a framework of reference for effective implementation of ISO standards. Manufacturing SMEs that lack experience in implementing ISO standards should invest in implementation and consultation workshops prior to implementation as they can be of great assistance to them in implementing food safety management systems. Additionally, the government is recommended to provide a favorable and conducive business environment for SMEs through enforcement of policies that promote manufacturing SMEs' performance through food safety management systems. The study focused on manufacturing SMEs in Harare only. This poses challenges when it comes to generalizability of the findings. As such, it is recommended that future research be done in other cities and provinces in Zimbabwe in order to make meaningful generalizations.

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