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Quality certification trends in the Zimbabwean food industry.

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ABSTRACT

Concerns have been raised by regulatory authorities about the low levels of certification for international standards in the Zimbabwean manufacturing sector. The purpose of this study was to determine trends in Quality **M**anagement Systems certification and the constraints encountered in achieving certification in the Zimbabwean food processing industry. Information on company status regarding quality, food safety and environmental management certification and associated costs was gathered from fifteen large, eight media, five small and ten micro scale food manufacturing enterprises through questionnaire surveys and oral interviews. Participants were based in the Southern city of Bulawayo and the Midlands cities of Gweru and Kwekwe, Zimbabwe. Only the large-scale manufacturing enterprises were certified for Quality and Food Safety Management Systems, with a certification rate of 60% amongst large concerns for at least one standard, 40% for ISO 9001, 27% for ISO 22000, 27% for the Hazard Analysis Critical Control Point System, 20% for ISO 14001, and 20% for the Standards Association of Zimbabwe (SAZ) Quality Mark. None of the micro or small scale enterprises had any intention for certification due to perceived high cost, lack of staff with adequate quality management system implementation skills and failure of premises to meet statutory requirements for food production facilities.

Key words: Food Safety Management, Quality Management Systems, ISO Certification, Food Processing Industry, Zimbabwe.

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1. INTRODUCTION

The processed food and beverage sector in Zimbabwe is well established and highly diverse as the agro-based economy has provided opportunities for value addition of produce from agronomy, horticulture, animal husbandry and aquaculture sectors. Contributions to the Gross Domestic Product (GDP) by the food manufacturing sector were reported to be 10.7% of the total manufacturing industry contribution in 2010, including foreign currency earnings from international markets (Ruzivo Trust, 2011). Data from Zimtrade (2011, 2014) indicated that there were over 102 large-scale manufacturers in the Zimbabwean food processing sector, with production mainly located in the larger cities of Harare, Bulawayo, Mutare, Kwekwe and Gweru.

To remain competitive in both domestic and international markets, food processing firms have to adopt Quality Management Systems (QMS), Food Safety Management Systems (FSMS) and Environmental Management Systems (EMS). Although certification for management systems is voluntary, stakeholders such as consumers and trade partners have increasingly demanded that food-manufacturing firms demonstrate commitment to

quality, product safety and environmental conservation through certification to internationally recognized standards (Kafel and Sikora, 2011). Incentives for manufacturers to introduce a QMS include; promotion of confidence in the company's ability to offer a high-quality product, fulfilment of contractual requirements, competitive advantage for future transactions and ability to charge a price premium for a high-quality product (Sharif, 2005; Kafel and Sikora, 2011; ISO, 2015).

Despite the potential marketing benefits that are associated with QMS implementation and certification only 140 out of a possible 5 000 companies (2.8%) in the Zimbabwean industrial sector had SAZ quality certification in 2017 (Business Weekly, 2017) and out of 300 000 registered companies in 2019, less than 1% were certified (Nsingo, 2019). In a survey on the state of the local manufacturing sector, the Confederation of Zimbabwe Industries (CZI, 2014) reported that non exporting companies cited product failure to meet technical standards and requirements of potential export markets as one of the major reasons for not exporting.

Currently, the most commonly applied standards in the food processing sector include ISO 9001 (QMS), ISO 22000 (FSMS), and HACCP (Kafel and Sikora, 2011). Companies in Zimbabwe may also elect to obtain an SAZ Quality Mark for a specific product produced under an approved system of supervision and control. Records from the Standards Association of Zimbabwe indicate that in September 2012, only one food processing company had SAZ HACCP certification, one company had ISO 22000 certification, and fifteen food processing companies had certification for the ISO9001 standard. In comparison, figures from September 2014 indicated three HACCP, six ISO 22000, four ISO 14001, twelve ISO 9001 and nineteen SAZ Product Quality Mark certifications in the food processing sector (SAZ, 2015). It should however be noted that some multinational concerns in Zimbabwe are certified through South African and United Kingdom based organizations, and are therefore not reflected in the SAZ certification records.

There are two component costs to certification. One is for accreditation and the other is preparation in readiness for accreditation. The costs associated with the introduction or systematization of QMS include: senior management and staff time in generating procedures; setting up, designing, implementing and maintaining the QMS itself; training of personnel; upgrading the infrastructure to meet international standards, recording; testing; new equipment; calibration; inspection; internal audits; consultant fees, registration fees, on-going annual fees, re-certification audits every three years, and advertisement costs to publicise the organization's new quality certification (Magd and Nabulsi, 2012; Dogui *et al*., 2014).

During the preparation period for certification, consultation fees are charged at an hourly flat rate. Consultants may also conduct introductory training for staff to explain the required changes and their effects on the operation as well as guide the auditors during the final compliance audit. Finally, consultants may conduct an internal audit of the quality system to check compliance prior to the actual certification audit. The time taken from the decision to start certification to the final audit is typically a minimum of four to six months but can be up to twelve months.

Current published work on food industry certification levels in Zimbabwe is based mainly on the Harare Province, with Macheka *et al*. (2013), indicating that 60% of large-scale food processing companies in Harare had no FSMS in place. This present study provides data on the status of food processing enterprises in the Bulawayo and Midlands provinces with regards to their food safety, quality management and

environmental management certifications. The study also provides a quantitative analysis of the costs associated with QMS implementation and maintenance.

2. METHODOLOGY

Information on the levels of certification for QMS and the perceived difficulties in obtaining certification was gathered from thirty-eight small, medium and large food manufacturing enterprises in Bulawayo, Gweru and Kwekwe. Food processing companies were identified from a member list of the Association for Business in Zimbabwe and the Bulawayo Chamber of SME's.

Data collection was through questionnaire surveys and interviews administered to all identified food processing concerns in Bulawayo and large scale food processors in Gweru and Kwekwe in the period from February to June 2015. Questionnaires were distributed either physically or by e-mail to Quality Assurance Managers and responses were obtained from ten micro scale, five small scale, eight medium scale and fifteen large scale food processing enterprises. Participating companies were classified using the Zimbabwe Ministry of Small and Medium Enterprises Development (2014) criteria where micro, small and medium enterprises were defined as organizations with maximum annual turnovers not exceeding US$30 000, US$500 000 and US$1 000000, respectively. Cost estimates for Quality and Food Safety Management System implementation were obtained from three quality consultancy companies in Bulawayo and Harare.

2.1. Questionnaire Design

The questionnaire comprised of both open ended and closed questions. Questions elicited for information on company size, company's quality management awareness, certification for quality standards, cost of QMS implementation, QMS implementation skills among staff, barriers to QMS implementation, and challenges faced during QMS implementation and maintenance. Additional comments on the certification process were accommodated in an open-ended section of the questionnaire.

2.1 Data Analysis

The Statistical Package for the Social Sciences (IBM SPSS Version 21) software package was used to process and analyze questionnaire data. Chi-square tests were used to determine the strength of association between certification and factors such as company size, financial status and QMS implementation knowledge at the 95% ($p<0.05$) level of significance.

3. RESULTS

3.1 Levels of QMS awareness and certification

Only one of the ten micro scale enterprises that were interviewed indicated an awareness of ISO QMS and their relevance to food processing companies. There was however a higher level of QMS awareness in the small, medium, and large scale enterprises at 40% (2/5), 88% (7/8) and 100% (15/15) respectively. However, none of the employees in the micro and small scale enterprises had sufficient knowledge to implement any of the QMS, whilst 62% (5/8) and 87% (13/15) of the medium and large scale enterprises respectively, had at least one employee with sufficient knowledge to implement a QMS.

None of the micro, small or medium scale enterprises were certified for any quality

standard, whilst 60% (9/15) of the large food processing companies were certified for at least one standard. Certification levels for the various standards in large companies were 40% (6/15) for ISO 9001, 27% (4/15) for ISO 22000, 27% (4/15) for HACCP, 20%

(3/15) for ISO 14001, and 20% (3/15) for the SAZ Quality Mark (Fig 1). Three companies among the large scale processing concerns were certified for five quality standards (ISO 9001, ISO 22000, HACCP, ISO 14001 and the SAZ Quality Mark), whilst four companies were certified for two quality standards (SAZ Quality Mark and ISO 9001 or ISO 22000). Of the ISO certified companies, two multinational concerns were certified through South African and United Kingdom based organizations.

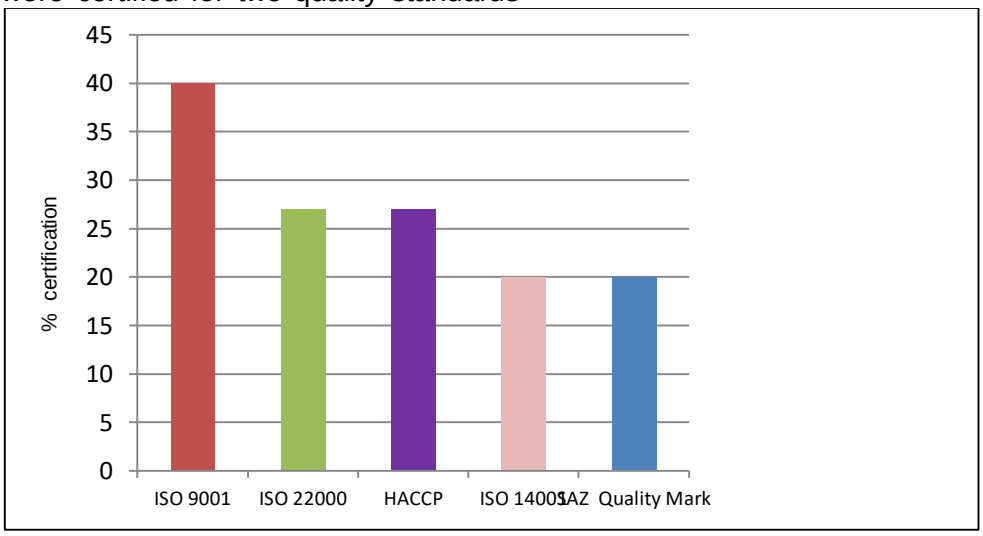

Fig. 1. Quality, food safety and environmental management system certification levels among large food processing companies in Bulawayo, Gweru and Kwekwe (n=15)

Amongst the companies that were not certified for any Quality Management Standard, none of the micro or small enterprises had any intention for certification due to financial constraints, lack of staff with adequate knowledge and experience in QMS implementation, perceived difficulty of obtaining QMS certification, and concerns that certification would impose restrictions on potential sources of raw materials. However, 38% (3/8) of medium scale enterprises intended to pursue certification for the ISO 9001 standard, whilst 18% (2/11) of large companies not certified for the ISO 22000 standard were in the process of certification and 33% (3/9) of large companies not certified for ISO 9001 intended to pursue certification for the standard.

3.2. Cost of Quality Management System implementation

Registration costs for ISO 9001, ISO 22000 and HACCP for Small, Medium and Large scale enterprises as provided by Zimbabwe registration authorities ranged from US$4 665 for small scale enterprises to US$7 335 for large scale companies (Tables 1 – 3). Follow-up audits are charged at US$492/auditor/day for QMS and US$600/auditor/day for EMS.

Table 1. Cost of ISO 9001 Registration

Activity	Cost (US$)		
	Small enterprise	Medium enterprise	Large enterprise
Stage 1 audit	492	492	984
Stage 2 audit	1 968	2 460	2 952
Annual Registration Fee	1 596	1 596	1 596
Total (Including 15% VAT)	4 665	5 230	6 362
Additional sites (2-5)	40% per site of fees charged for the first site		

Source: SAZ

Table 2. Cost of ISO 22000 Registration

Activity	Cost (US$)		
	Small enterprise	Medium enterprise	Large enterprise
Stage 1 audit	600	600	1 200
Stage 2 audit	3 000	3 000	3 600
Annual Registration Fee	1 596	1 596	1 596
Total (Including 15% VAT)	5 975	5 975	7 355
Additional sites (2-5)	40% per site of fees charged for the first site		

Source: SAZ

Table 3. Cost of HACCP Registration

Activity	Cost (US$)		
	Small enterprise	Medium enterprise	Large enterprise
Stage 1 audit	600	600	600
Stage 2 audit	2 400	2 400	3 600
Annual Registration Fee	1 596	1 596	1 596
Total (Including 15% VAT)	5 285	5 285	6 665
Additional sites (2-5)	40% per site of fees for the first site		

Source: SAZ

Where companies opt for 'SAZ Product Quality Mark' registration, rates were quoted at a more affordable US$746 per product, which is inclusive of a US$363 annual licence fee. Pre-requisite requirements include upgrading

premises and production equipment to meet specifications and the implementation of Good Manufacturing Practices. Once a Product Quality Mark Licence has been issued, surveillance inspections and testing are carried out at least every four months.

Consultancy services fees for documentation development are company specific, depending on the level of the quality system in place and the company size. The minimum rate was however quoted at US$300 per day. Consultancy assignments may take up to a month, equating to a consultancy fee of US$9 000.

3.3 Training costs

Training of staff is an integral component of a successful implementation process, and various training courses are offered by the Standards Association of Zimbabwe (SAZ) and independent quality consultancies. Standard training rates provided by three service providers in 2015 ranged from US$190 to US$290 per person for 3 day courses and up to US$730 for 5 day courses (Tables 4-6). In some instances, lower training rates were quoted for SME's with 3 day courses ranging from US$130 - 180 per person (Table 5). Updated training rates for 3 day courses in 2020 were quoted at a minimum US$195 and US$285 per person for 3 and 4 day courses, respectively.

Table 4 Quality Management System training costs (Consultancy A).

Training Course	Training Period (days)	Cost US$ (per person)
ISO Awareness	1	80
ISO 9001 Development and Implementation	4	280
ISO 9001 Internal Auditing	3	290
ISO 9001 Lead Auditing	5	730
Basic HACCP	4	280
ISO 22000 Requirements	4	280
ISO 14001 Development and Implementation	3	280
ISO 14001 Internal Auditing	3	260

Table 5. Quality Management System Training costs for SMEs and large corporations

(Consultancy B)

Number of participants	Training fee per person (US$)					
	ISO 9001/ ISO 22000 Awareness: (3 ½ hours)		ISO 9001/ ISO 22 000 Development and Implementation:(3 days)		ISO 9001/ ISO 22000 Internal Auditing: (4 days)	
	SMEs	Large companies	SMEs	Large Companies	SMEs	Large companies
Individual	40	50	180	240	240	320
6-10	30	40	150	210	210	280
11-15	25	35	140	200	200	260
16-20	20	30	130	190	190	240

Table 6 Quality Management awareness and implementation training costs

(Consultancy C)

Activity	Cost (US$) per person
Quality Management Awareness Training	100
Implementation Training	250
Internal Auditor Training	250

3.4 Barriers and impediments to the implementation and maintenance of Quality Management Systems

Barriers and challenges to Quality Management System implementation in micro and small enterprises that were cited and observed included registration costs, failure of premises to meet statutory requirements, lack of management commitment, and time required for training and QMS implementation (Fig. 2). None of the employees in the micro scale and small scale enterprises had sufficient knowledge to implement Quality Management Systems.

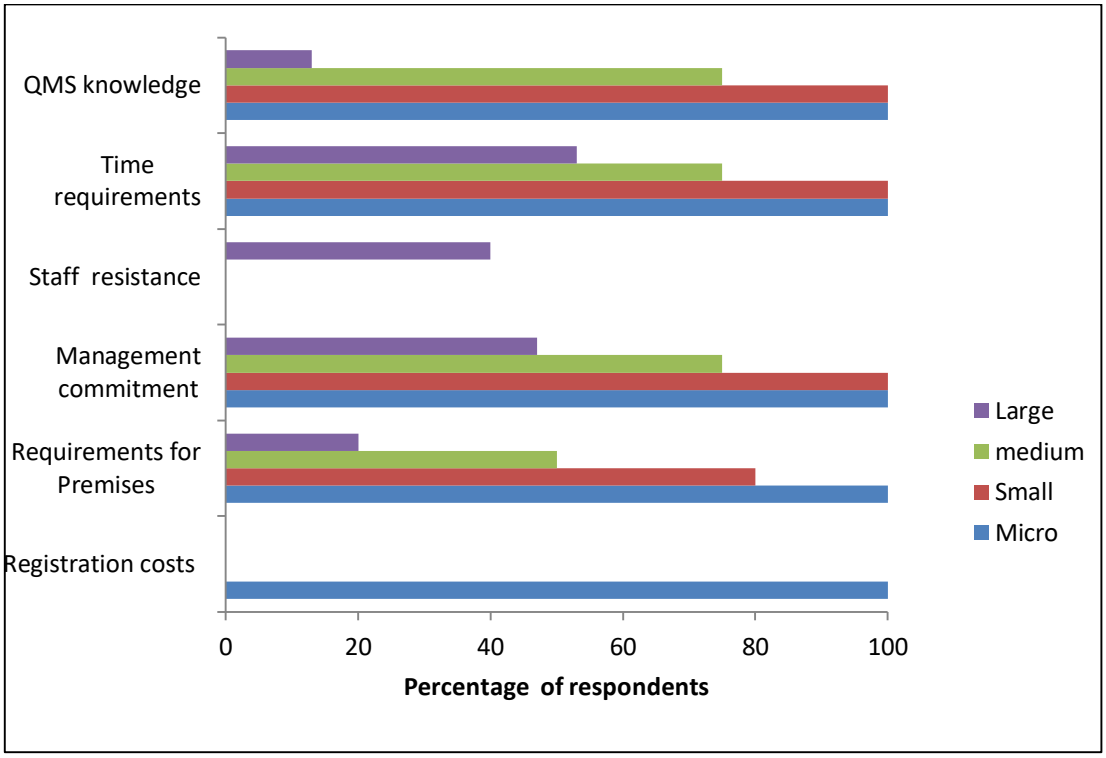

Fig 2. Barriers to Quality Management System implementation for Bulawayo and Midlands food processing companies.

For medium scale enterprises, 75% (6/8) of respondents cited time requirements and lack of management commitment, whilst 50% (4/8) cited lack of financial resources for meeting infrastructural requirements. Major challenges facing large enterprises related to time requirements for documentation and the implementation process (53%, 8/15), lack of management commitment (47%, 7/15), staff resistance due to increased workloads and changes in operational systems (40%, 6/15). Other challenges included lack of financial resources for infrastructural requirements (20%, 3/15), lack of staff with sufficient quality management knowledge for QMS implementation (13%, 2/15), difficulties in rationalizing and communicating operational requirements for multi-site organizations, and staff transfers with a resultant loss of skilled personnel.

4. DISCUSSION

Survey results indicated that food processing companies were prioritizing QMS (ISO 9001 and SAZ QM) at a 53% certification rate compared to a 33 % certification rate for FSMS (ISO 22000/ HACCP) which is consistent with an international survey on quality certification by Karaman *et al.* (2012). The FSMS certification level of 33% reported in Bulawayo and the Midlands is slightly lower than the 40% reported by Macheka *et al* (2013) for Harare food processing companies.

Preference for QMS over FSMS is further indicated by the intention for FSMS certification by 18% (2/11) of large companies which were not certified for FSMS compared to 33% (3/9) intending to pursue ISO 9001 certification. The higher percentage intending to pursue ISO 9001 is due to the generic nature of the standard, whilst the ISO 22 000 standard requires more complex product specific documentation.

The total cost of QMS registration, staff training and consultancy in Zimbabwe for one standard was calculated from

quotations (Tables 1-3) to be at least US$8 145, including a one week consultancy. This excludes the costs of meeting pre-requite infrastructural upgrades and acquisition of compliant processing equipment which from indications by companies that participated in the study are a minimum US$30 000 for an enterprise that already had a well-developed infrastructure in place. The costs of QMS implementation are therefore prohibitive for micro scale companies who, by definition, have a maximum annual turnover of US$30 000. All micro companies interviewed indicated that quality registration costs would be equivalent to their annual earnings. However, small to large companies, who, by definition, have an annual turnover of at least US$500 000 and US$1 000 000, respectively, may be able to allocate adequate funds for QMS implementation, registration and maintenance. Chi-square tests showed a strong association ($p < 0.05$) between In spite of challenges cited by participants in the survey, medium to large enterprises recognized the role of quality management system certification in product marketing, with two companies already pursuing ISO 22 000 certification due to domestic bulk customer quality requirements. Other motivational factors cited were increased operational efficiency, consistency in product quality, international competitiveness, compliance with international trade-partner contract requirements for certification, and enhanced company image. All companies that had implemented Quality Management Systems reported a marked improvement in product quality and had secured good export markets, whilst only one non-certified company indicated that it was exporting any of its products.

5.CONCLUSIONS

Whilst QMS certification levels amongst the large food processing organizations in Zimbabwe is satisfactory, the SME company size, perception of QMS affordability and certification, indicating cost to be a major barrier for QMS certification for micro and small scale enterprises.

The minimum certification cost of US$4665 for ISO standards was comparable to literature values for registration in Australia which is reported to be a total of US$4 805 for audits and application fees for the ISO 9001 (Sondalini, 2015). However, the local cost for large enterprises is higher at US$ 6332 which is a substantial amount in a developing economy.

Of particular concern is the magnification of quality system implementation costs caused by the 2019 devaluation of the local currency by a factor of 82 whilst certification, infrastructure and pre-requisite costs have been maintained at the previous US$ fees.

sector is yet to develop QMS awareness among its membership. Small scale food processors could be encouraged to implement QMS by introduction of quality awareness and information programmes by relevant central and local Government Ministries and Departments such as Health and Child Care, Agriculture, Trade and Commerce, Industry and Veterinary Services. Other measures to improve quality certification rates include provision of subsidized quality management training and consultancy for the SME sector, legislation for mandatory quality certification for large organizations, increased monitoring and inspection of food processing premises by health and food safety authorities, and customization of a less elaborate and more cost effective version of Quality Management Systems for SMEs. Currently, the SAZ Quality Mark is the most affordable quality standard and small businesses should be advised to at least attempt certification for the SAZ Quality Mark if financial and

technical demands for ISO certification are a challenge.

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