

AN INVESTIGATION OF THE EFFECT OF THE ISO 9001 QUALITY MANAGEMENT SYSTEM ON SMALL AND MEDIUM ENTERPRISES IN GAUTENG, SOUTH AFRICA

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ABSTRACT

The implementation of quality management systems (QMS) is central to the performance of small and medium enterprises (SMEs). At present, there is a lack of information about the level of adoption and implementation of QMS by SMEs in Gauteng Province, even though that province has the highest number of SMEs in South Africa (SA). This study therefore aims to investigate the effect of the ISO 9001 QMS on SMEs in Gauteng. Quantitative research was conducted, and an online survey was used to collect data. An inferential statistical data analysis involving the Statistical Package for the Social Sciences (SPSS) software was used to analyse the collected data. The chi-square and Fischer's exact tests were applied to validate the statistical significance of four hypotheses. The inferential analysis showed that there is a relationship between ISO 9001 implementation and SMEs' sustainability, as well as a direct relationship between the implementation of ISO 9001 and the performance, growth, and life span of SMEs in Gauteng Province. In addition, the results indicated that 64 per cent of the surveyed SMEs are aware ISO 9001, while 36 per cent of SMEs were not aware of QMS. The survey indicated that SMEs face several challenges, such as the ineffective implementation of QMS, poor funding, a low level of human capacity development, a lack of adequate resources, poor working environment, and poor work organisation, a lack of necessary materials, and the use of inappropriate work methods. It is envisaged that, if a culture of QMS were to be adopted and implemented by SMEs, there would probably be an improvement in operational efficiency, leading to improved customer satisfaction and increased turnover and profitability.

OPSOMMING

Die implementering van kwaliteitsbestuurstelsels (QMS) is sentraal tot die prestasie van klein en medium ondernemings (KMO's). Tans is daar 'n gebrek aan inligting oor die vlak van aanvaarding en implementering van KMO's deur KMO's in Gauteng Provinsie, alhoewel daardie provinsie die hoogste aantal KMO's in Suid-Afrika (SA) het. Hierdie studie het dus ten doel om die effek van die ISO 9001 QMS op KMO's in Gauteng te ondersoek. Kwantitatiewe navorsing is gedoen, en 'n aanlyn opname is gebruik om data in te samel. 'n Inferensiële statistiese data-analise wat die Statistiese Pakket vir die Sosiale Wetenskappe (SPSS) sagteware behels, is gebruik om die versamelde data te analiseer. Die chi-square en Fischer se presiese toetse is toegepas om die statistiese betekenis van vier hipoteses te bekragtig. Die Inferensiële analise het getoon dat daar 'n verband is tussen ISO 9001 implementering en KMO's se volhoubaarheid, asook 'n direkte verband tussen die implementering van ISO 9001 en die prestasie, groei en lewensduur van KMO's in Gauteng Provinsie. Daarbenewens het die resultate aangedui dat 64 persent van die opname se KMO's bewus is van ISO 9001, terwyl 36 persent van KMO's nie bewus was van KMO's nie. Die opname het aangedui dat KMO's verskeie uitdagings in die gesig staar, soos die ondoeltreffende implementering van QMS, swak befondsing, 'n lae vlak van menslike kapasiteitsontwikkeling, 'n gebrek aan voldoende hulpbronne,

swak werksomgewing en swak werksorganisasie, 'n gebrek aan nodige materiaal en die gebruik van onvanpaste werksmetodes. Daar word voorsien dat, indien 'n kultuur van QMS deur KMO's aangeneem en geïmplementeer sou word, daar waarskynlik 'n verbetering in bedryfsdoeltreffendheid sou wees, wat lei tot verbeterde kliëntetevredenheid en verhoogde omset en winsgewendheid.

1 INTRODUCTION

Small and medium enterprises (SMEs) in South Africa (SA) are defined as any enterprise that has fewer than 250 full-time paid employees and an annual turnover of less than R220 million, according to different sector turnover limits [1]. Stats SA [2] found that the entire formal business sector in SA generated R2.39 trillion in turnover in the first quarter of 2019. Of this amount, large businesses contributed 62 per cent, small businesses 29 per cent, and medium-sized businesses 10 per cent [3]. The findings also showed that the contribution of small businesses to the country's annual turnover has increased over time, from 24 per cent in the first quarter of 2009 to 32 per cent in the third quarter of 2017. SMEs are the best way to grow the economy, as they require little start-up capital and generate revenue for both individuals and the government [3]. SMEs are also valuable as employers [3]. Furthermore, SMEs offer training services and skills development opportunities for employees. The SME sector employs 47 per cent of SA's workforce, contributes more than 20 per cent of the country's gross domestic product (GDP), and pays about six per cent of its corporate taxes [4].

The aim of this study is to investigate the effect of ISO 9001 QMS implementation on SMEs in Gauteng Province, SA. The study's objectives are to determine the level of ISO 9001 QMS awareness in SMEs in Gauteng Province; to examine the effect that ISO 9001 has on work processes, productivity, products, and service quality in SMEs in Gauteng Province; and to examine the likelihood of ISO 9001 implementation in SMEs.

Sustainability challenges are common among SMEs in SA. According to the Small Enterprise Development Agency (SEDA) [6], two to three years of operating is a critical threshold for an SME in respect of its longer-term survival. The number of SMEs that survive for less than three years in business has gradually declined, from 35 per cent in 2008 to 26 per cent in the first quarter of 2019. This implies that nine per cent of new SMEs failed to survive within that period, which represents a decline in the survival rate of SMEs, as start-up SMEs risk closing within the first three years [7]. SBP ALERT [8] reported that as many as 70 per cent of the country's SMEs fail in their first year; thus SA has one of the highest failure rates in the world.

The important roles of SMEs in any country's development cannot be overemphasised. SMEs play a critical role in contributing significantly to the GDP of any country and are a source of employment opportunities for members of the community [9]. In SA, many people have benefitted from SMEs [5], as they have provided employment, accounting for 66 per cent of economy-wide employment in SA [7]. Employment provided by SMEs increased to 10.8 million in the first quarter of 2019 from 10.6 million in the fourth quarter of 2018 [7]. The SA government is on a quest to assist SMEs by prioritising entrepreneurship and the development of SMEs by implementing policies that ensure adequate financial support for long-term prosperity [10-11]. In 2015, Brendon [12] found that smaller firms in SA were stagnating in both turnover and employment growth. The report showed some of the causes of the decline to be unfavourable trading and economic conditions, and that an increasingly hostile business climate was a threat to growth. According to Brendon [12], the failure of SA's SMEs to drive inclusive growth, unlike other small enterprises in the world, is the result of factors such as diminishing workforces, skills shortages, restricted cash flows, dysfunctions in governance, poor service delivery, and a failure to meet regulatory standards. Steyn [13] identified deficiencies in management and leadership skills to be among the reasons for small business failure. Olusanya and Adegbola [14] discovered that an awareness of the QMS concept and its principles is low in emerging countries. Thus, the benefits of QMS remained unknown to various companies, including SMEs.

Chimucheka [9] identified the challenges that SMEs face as being a lack of training and education, limited access to financial resources, lack of access to markets, lack of support structures, lack of access to appropriate technology, and lack of access to other resources such as like human resources. In a bid to assist SMEs, Fonseca [15] introduced a 'risk-based thinking' approach – a systematic evaluation of potential risks and opportunities with the aim of creating robust and capable processes. At present, South African SMEs have a worryingly low survival rate: 80 per cent of all small businesses fail within the first five years as a result of sustainability-related issues in respect of finance, management, competitive edge, and legal requirements, and other factors [16].

Nieman and Pretorius [17] highlighted that it is important to consider resources and risk when planning to grow a business. Clove and Darroch [18] identified possible solutions to be the provision of appropriate infrastructure and training, the development of innovative loan products, and policies that reduce the cost of compliance with legislation. Chimucheka [9] suggests that, if SME owners and managers were empowered with entrepreneurial skills and knowledge, they would be able to find solutions to the challenges they face. The solutions suggested in this section could be achieved by implementing a system that addresses many of these challenges – that is, a quality management system. Kain [19] suggested that a QMS such as ISO 9001 can be a powerful tool for business survival and growth. The revised ISO 9001:2015 standard is adaptable to SMEs and the service industry, and it is performance-based with less of an emphasis on documentation [15]. Alič and Rusjan [20] indicate that a mature QMS can assist in improving an organisation's efficiency, as well as connecting quality goals to the organisation's strategic goals. Garza-Reyes, Rocha-Lona, & Kumar [21] argued that failures in implementing QMS are mostly to be blamed on the implementation strategy and not on the particular QMS.

A quality management system is a documented collection of business processes that are focused on improving services, consistently meeting customers' requirements, and enhancing customer satisfaction [22]. Efficient quality management leads to a sustainable reduction in costs, and facilitates the development of quality products with a high degree of customer satisfaction [23]. Garza-Reyes *et al.* [21] found that companies with a well-structured and developed QMS experienced the benefits of increased customer satisfaction, a growth in revenue, an increased quality of products and service, an increase in productivity and efficiency, increased profit margins, and an improved control of business processes and procedures. Various quality management methodologies are available, such as total quality management (TQM) and business excellence models (BEMs) [22]. The commitment of top management to change and improvement is vital to the success of system implementation; almost as important is the commitment of all employees.

Quality management tools are those that are used for quality control and monitoring. For effective quality management, tools such as control charts, Pareto charts, cause-and-effect diagrams, checklists, and flow charts are suitable [24]. Studies have indicated that an efficient QMS can lead to a sustainable reduction in costs, and can facilitate the development of quality products with a high level of customer satisfaction [23-24].

Neo, Mukwakungu, Lumbwe & Sukdeo [25] studied QMS implementation in South African SMEs, and argued that QMS is key to their development; while Jayasundara *et al.* [26] agreed that this is valid in a global perspective. However, there is a lack of information about the level of adoption and implementation of QMS by SMEs in Gauteng Province, even though that province has the highest number of SMES in SA [7]. Neither has the effect of QMS implementation on the performance of SMEs in SA been sufficiently highlighted in the literature. Thus providing information about the implementation of QMS by SMEs in Gauteng is one of the major contributions made by this study. On the basis of the established fact that the implementation of QMS can positively influence the performance of SMEs, the following null hypotheses were formulated:

H0₁: There is no awareness of ISO 9001 QMS in SMEs in Gauteng Province

H0₂: The implementation of ISO 9001 has no positive effect on SMEs in Gauteng Province.

H0₃: SMEs in Gauteng Province are unlikely to implement ISO 9001 QMS in their organisations.

The outcome of this study could be useful to SMEs in deciding about implementing and maintaining ISO 9001 quality management systems in their businesses. The study reveals the level of awareness of ISO 9001 QMS in SMEs in Gauteng Province. It also determines the likelihood that SMEs will implement ISO 9001 in their organisations. It is envisaged that, if a culture of QMS were adopted and implemented by SMEs, their operational efficiency would probably improve, leading to improved customer satisfaction and to an increased turnover and profitability. This study provides an insight into the root causes of some of the challenges faced by SMEs in Gauteng Province. It also provides some recommendations on the proven best practices in business and how SMEs can be managed efficiently, to promote cost and time effectiveness in business operation.

2 RESEARCH METHODOLOGY

A survey was used to collect the data. Online questionnaires were sent to participants using SurveyMonkey [27]. The online option reduces interruptions of business services. However, to cater for those who were not internet- or web-savvy, a printed copy was made available and was delivered to such participants. The questionnaire was designed to take no more than three minutes to complete. The Statistical Package for the Social Sciences (SPSS) was used for the inferential analysis of the collected data to test whether the hypotheses should be accepted or rejected. Bar charts and pie charts were used to provide a visual representation of the categorised data.

2.1 The sample size

The questionnaire was sent to a pool of participants using a simple random sampling approach that was used because it is a simple and unbiased method. For this study, only SME owners, employees, suppliers, and other stakeholders in Gauteng Province were included in the survey. The survey excluded those who did not reside in the province and businesses that did not fall into the category of SMEs.

A total of 84 responses was received, and the total number of valid responses came to 70. Sixty per cent of the participants were owners (n=42), employees were 26 per cent (n=18), and suppliers made up 14 per cent (n=10). The participants' genders were males (60 per cent) and females (40 per cent), and the largest age group was between 35 and 44 years. According to SEDA [7], the number of SMEs in SA is 2,550,540; Gauteng Province has the highest number of SMEs: 903 220, or 35.4 per cent of the total number of SMEs. The sampling was limited to Gauteng Province because it has the highest number of SMEs in SA [7], coupled with the fact that it makes the largest contribution to SA's GDP at about 34 per cent [2]. With a 90 per cent confidence level, a 10 per cent margin error, and a population size of 903 220, an ideal minimum of 63 samples was obtained using Equation 1.

$$\text{Ideal sample size} = \frac{(Z\text{-score})^2 \times \sigma \times (1-\sigma)}{e^2} \quad (1)$$

where the Z score at a 90 per cent confidence level is 1.645, σ is the standard deviation (0.5), and e is the margin of error (confidence interval) of +/- 10 per cent.

The following ethical issues were considered when conducting this research.

- i. *Informed consent: An information letter and an informed consent form were issued to each participant. The information letter included the reasons for the study, the methods or procedures used, its duration, and the rights of participants.*
- ii. *Voluntary and withdrawal rights: Steps were taken to ensure that the informed consent was voluntary and that the participants had the right to withdraw their consent any time without any consequences.*
- iii. *Confidentiality, privacy, and anonymity: Answers to the questions were not linked to the identity of any of the participants, and each business's name, location, and owner were not reflected in the questions or the results. The survey link that participants used did not acquire any information from the participants' personal gadgets, as it used reputable survey software.*

2.2 Reliability and validity

Cronbach's alpha was calculated in the SPSS environment to investigate the reliability and internal consistency of the instrument that was used. Validity was ensured with the use of a structured questionnaire based on the established principles of ISO 9001 QMS. The questionnaire was also piloted with a smaller sample size of 20 participants to test whether the questions were understood by the target group. The appropriate sampling method was employed to determine the size of and the participants in the pilot group. To ensure that the obtained result was valid and so would make it possible to draw a general conclusion, the target population was defined, and the valid responses were found to be a true representation of the target population.

2.3 Data analysis

Statistical Package for the Social Sciences (SPSS) version 26 was used for the inferential analysis of the data to test the hypotheses for either acceptance or rejection. The characteristics of the inferential analysis considered for the study included test statistics and the p-value. The chi-square and Fischer’s exact tests, which are non-parametric, were used as a hypothesis testing tool, which allows testing of an assumption that is applied to a population. The hypotheses testing was implemented to test the null hypothesis, after which the null hypothesis would be either rejected or accepted. The literature has reported that inferential analysis involving the use of the chi-square and Fischer’s exact tests to validate a hypothesis statistically is suitable for both nominal and ordinal scaled data [28-29].

The chi-square expression used for the computation of the chi-square statistics is presented in Equation 2 [29].

$$\chi^2 = \frac{(O-E)^2}{E} \tag{2}$$

where O is the observed value of the cells and E is the expected value.

When $p < 0.05$, the null hypothesis is rejected. However, when $p > 0.05$, the null hypothesis is accepted.

The expression for Fisher’s exact test is presented in Equation 3 [29].

$$p = ((a + b)! (c + d)! (a + c)! (b + d)!)/a! b! c! d! N! \tag{3}$$

where a, b, c and d represent the frequencies of the categorical variable of the 2×2 contingency table, and N is the total frequency.

3 RESULTS AND DISCUSSION

For the reliability test, the alpha value was 0.75, which implied that the construct being tested was internally consistency and significant (Table 1). The general rule of thumb is that a Cronbach’s alpha score of 0.70 or above is good; 0.80 or above is better; and 0.90 is the best [30]. This means that the instrument employed for the study was reliably consistent.

Table 1: Accuracy of financial reporting investigation

Cronbach’s alpha	Cronbach’s alpha based on standardised items	No. of items
.750	.762	6

3.1 Hypotheses testing

The chi-square and Fischer’s exact non-parametric tests were applied to test the formulated hypotheses. The tests are suitable for a categorical set of data, which characterises most of the outcomes of this survey [31].

Hypothesis 1: H_{01} - There is no awareness of ISO 9001 QMS in SMEs in Gauteng Province

From Table 2, five factors were used to evaluate this hypothesis: organisational performance review, change management implemented, employee training offered, organisational objectives determined, and document control system. From the results obtained from the chi-square and Fischer’s exact tests, the p-values were less than 0.05 ($0.000 < 0.05$), which, for these five factors at a 95 per cent confidence level, mean that the null hypothesis, H_{0a} , that “*there is no awareness of ISO 9001 QMS in SMEs in Gauteng Province*”, was rejected. The alternative hypothesis, that “*there is awareness of ISO 9001 QMS in SMEs in Gauteng Province*”, was accepted.

Statistics from the analysed data showed the solid feasibility of the sustained use of QMS in SMEs, with the following QMS requirements that are currently practised in SMEs: organisational performance review (58.57 per cent), change management implementation (85.71 per cent), employee training (80 per cent), organisational objectives (71.43 per cent), and document control system (62.86 per cent).

Table 2: Chi-square and Fischer's exact test for QMS practices in SMEs

Factors	Organisation's performance review	Change management implementation	Employee training offered	Organisation's objectives determined	Document control system
Statistical parameter	Value	Value	Value	Value	Value
Chi-square test statistics	23.686	85.514	68.686	47.086	31.657
Asymp. sig. (2-tailed p-value)	0.000	0.000	0.000	0.000	0.000
Fischer's exact sig.	0.000	0.000	0.000	0.000	0.000

Hypothesis 2: H_{02} . *The implementation of ISO 9001 has no positive effect on SMEs in Gauteng Province*

From the results obtained from the chi-square and Fischer's exact tests, the p-values in Table 3 were less than the 0.05 level of significance, and therefore the null hypothesis was rejected. This meant that the alternative hypotheses were accepted: that the implementation of ISO 9001 has a positive effect on SMEs, and that there is a relationship between the implementation of ISO 9001 and the growth of SMEs in Gauteng Province. Kain [19] agreed that a quality management system such as ISO 9001 can be a powerful tool for business survival and achieving growth as global competition grows.

Table 3: The chi-square and Fischer's exact tests for QMS effect on SMEs

Factors	QMS implementation	QMS effect on productivity	QMS effect on work processes	QMS benefit
Statistical parameter	Value	Value	Value	Value
Chi-square test statistics	6.914	22.743	37.486	3.920
Asymp. sig. (2-tailed p-value)	0.009	0.000	0.000	0.048
Fischer's exact sig.	0.012	0.000	0.000	0.032

Hypothesis 3: H_{03} . *SMEs in Gauteng Province are unlikely to implement ISO 9001 QMS in their organisations.*

From Tables 2 and 3, four factors were used to evaluate this hypothesis: QMS implementation, QMS effect on productivity, QMS effect on work processes, and QMS benefits. From the results obtained from the chi-square and Fischer's exact tests, the p-values of the factors considered were less than 0.05, showing the statistical significance of the factors at a 95 per cent confidence level. These results indicated sufficient evidence against the null hypothesis (H_{0c} : *SMEs in Gauteng Province are unlikely to implement ISO 9001 QMS in their organisations*), which was rejected, and so the alternative hypothesis was accepted (*SMEs in Gauteng Province are likely to implement ISO 9001 QMS in their organisations*).

3.2 Results obtained from survey

The information stated earlier (in section 2.1) gives the background to the sample group, and indicates that a majority of the participants (60 per cent) were SME owners. This shows that a large number of SME owners are aware of ISO 9001 QMS, and perceive that QMS is beneficial to SMEs. This also indicates a likelihood that SMEs will implement ISO 9001 QMS in future.

3.2.1 SME business sector

The participants were from various business sectors. Figure 1 shows that the largest business type to respond was from from ones in the tertiary sector providing general services (50 per cent), followed by those providing sales of products (20 per cent). There was a 10 per cent representation from each of the

following business sectors: the primary sector, involved in producing raw materials, farming, mining, and forestry; the secondary sector, involved in processing, manufacturing, and construction; and the quaternary sector, involved in knowledge production, IT, and media. The purpose of giving this distribution was to show the percentage of the SMEs that responded, so that a valid inference that they were representative of SMEs in Gauteng Province could be made. SEDA [7] reported SMEs' distribution by industry in the first quarter of 2019, indicating that the trade and accommodation industry had the most SMEs (41.3 per cent), followed by construction (13.9 per cent), and financial and business services (13.3 per cent).

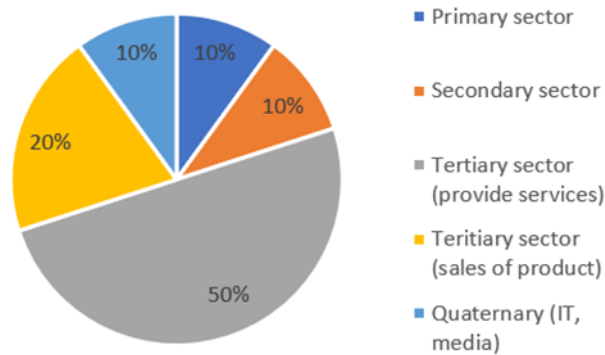


Figure 1: SME business sectors

3.2.2 Length of operation

Figure 2 shows that the percentage of respondents who had spent more than five years in operating an SME (57 per cent) was greater than those who had spent fewer than five years (41 per cent). Two per cent the respondents were undecided because they did not know how long the business has been in operation. The length of operation provides insight into the survival rate of SMEs. SEDA [6] stated that the first two to three years of an enterprise's existence are critical to its longer-term survival: the longer it operates, the higher the probability that it will survive, and that it will adopt a QMS once the business is out of the five-year start-up phase.

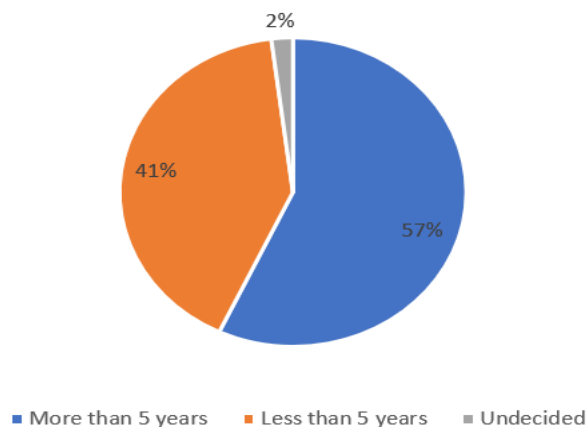


Figure 2: The length of operation of SME respondents

3.2.3 Participants' knowledge of QMS

Figure 3 shows the responses about participants' awareness of ISO 9001a. Of the participants, 45 (64 per cent) were aware of ISO 9001 and 25 (36 per cent) were not. The results show that there is an above-average awareness of ISO 9001 in SMEs.

Kain [19] pointed out that the knowledge of QMS allows SMEs to make better decisions, enhances their sustainable development, and ultimately promotes customer satisfaction and market competitiveness.

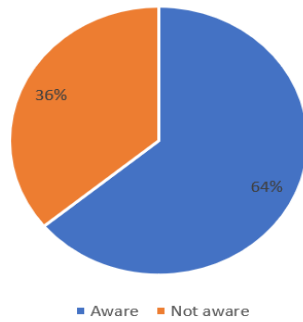


Figure 3: Quality management system awareness

Figure 4 shows that the majority of SMEs practised most of the QMS requirements; however, just over a third of the respondents had implemented a QMS in their organisations. This data supports the feasibility of QMS in SMEs. The results show that most of the SMEs that participated in the survey had not adopted a QMS; but at the same time, the data indicated a high likelihood of QMS implementation.

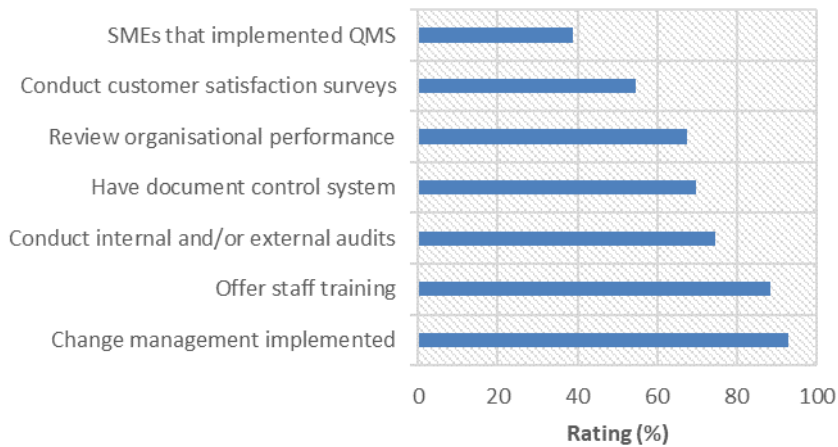


Figure 4: QMS practices in SMEs

3.2.4 The effect of QMS on work processes and productivity

Figure 5 shows the analysis of the responses to the effect of QMS on work processes and on productivity. It clearly shows that the largest group of people (n=25) agreed that QMS implementation had a positive impact on the work processes of their businesses. A very positive response to the effect of QMS on work processes emerged in this study: the largest number of respondents (50 per cent) gave a very positive response; the lowest number (four per cent) was from participants with a very negative response. Many scholars agree that the benefits of QMS outweigh the challenges of the implementation processes [19, 20, 21, 23].

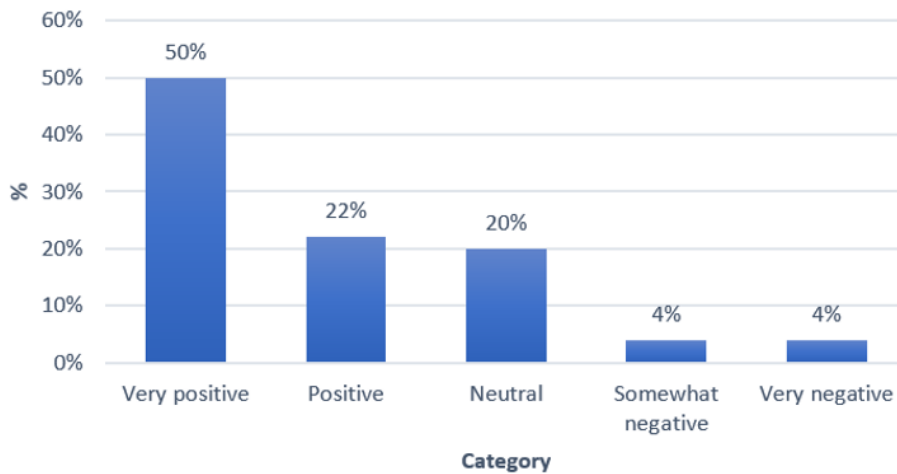


Figure 5: Effect of QMS on SMEs' work processes

Figure 6 shows the effect of QMS on productivity. Of the respondents, 63.57 per cent agreed that QMS positively influenced the productivity of their SMEs, while 29.86 per cent were indecisive. However, 6.57 per cent indicated that the implementation of QMS had a negative effect on productivity because of the cost incurred in its implementation.

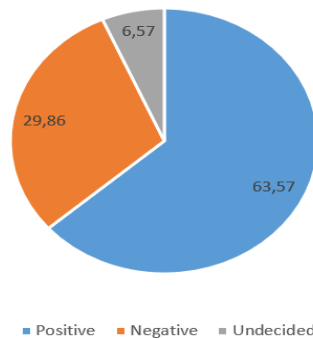


Figure 6: Effect of QMS on productivity

3.2.5 Effect of QMS on product and service quality and customer satisfaction

Figures 7 and 8 show the analysis of the responses to the effect of QMS on improvements in the quality of products and services and in customer satisfaction. The figures show that SMEs in this study that had implemented QMS had seen improvements in the quality of their products and services and an improvement in customer satisfaction. Eighty-three per cent agreed that the quality of their products and services improved when QMS was implemented, while 88 per cent experienced an increase in customer satisfaction. In line with this finding, Demartini, Orlandi, Tonelli & Anguitta [23] stated that efficient quality management leads to a sustainable reduction in costs and facilitates the development of quality products and a high degree of customer satisfaction.

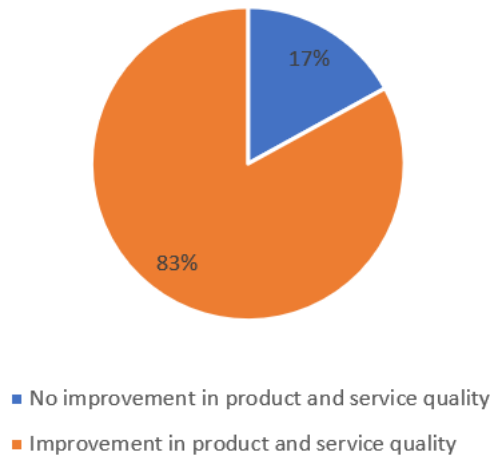


Figure 7: Product and service quality improvement

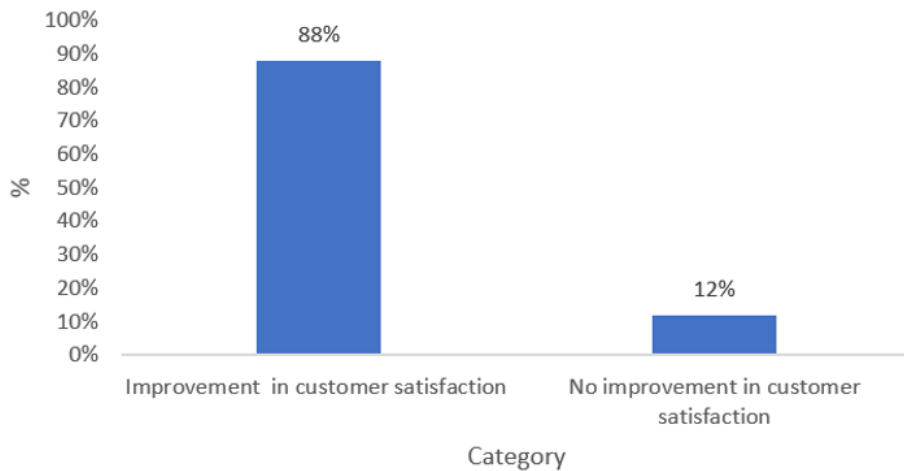


Figure 8: Customer satisfaction improvement

3.2.6 QMS benefits to SMEs

Figure 9 shows that 82.86 per cent of the participants agreed that the implementation of QMS was beneficial to their SMEs. Only 8.57 per cent of the respondents disagreed, while 8.57 per cent were indecisive. Garza-Reyes *et al.* [21] argued that companies with a well-structured and well-developed QMS experienced benefits in the form of increased customer satisfaction, a growth in revenue, an increase in the quality of products and services, increased productivity and efficiency, greater profit margins, and an improved control of business processes and procedures. Similarly, SEDA [6] concluded in an empirical study that a small enterprise experienced a greatly improved business performance and a reduced number of customer complaints after implementing and obtaining certification for ISO 9001. Various scholars [19, 20, 21, 23] have concurred that QMS implementation adds value to SMEs.

QMS is simple to implement in SMEs, as their business structure is smaller than that of large organisations. This is because SME operations are done on a smaller scale than those of big organisations. The reporting structure is simple, and the turnaround time for managerial approval of requests is quicker because all the staff members are located in the same premises.

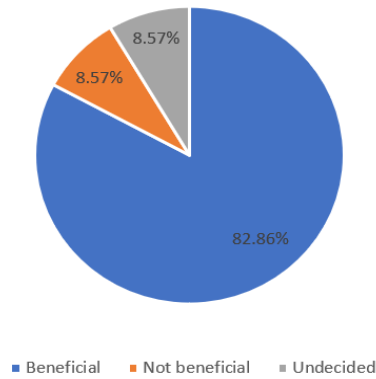


Figure 9: QMS benefits to SMEs

From the survey results, more than 64 per cent of the surveyed SMEs in Gauteng Province were aware of quality management systems and quality management tools. The results also show that the implementation of QMS has positive effects on work processes and improves the quality of products and services along with customer satisfaction. Thus the adoption of QMS in SMEs in Gauteng Province is recommended for operational efficiency and sustainability. Kain [19] supported the notion that a QMS such as ISO 9001 was a powerful tool for business survival and for achieving growth as global competition grows.

From the survey that was conducted, the respondents indicated that a lack of funds, resources, and commitment from management, and resistance to change on the part of employees are some of the reasons for the low rate of QMS implementation in SMEs. The involvement and commitment of the leadership is important to the successful implementation and maintenance of a QMS in SMEs.

These findings led to the development of a cause-and-effect diagram that illustrates the six major reasons for the non-implementation of QMS in Gauteng Province and the effect on the survival rate of SMEs (Figure 10). These were: the environment in which the SMEs were operating; the materials used by the business operation; funding; human resources; business processes; and the machinery used. Identifying the causes of the non-implementation of a QMS can aid the deployment of resources by SMEs in tackling the challenges of promoting effective QMS implementation. Sfakianaki and Kakouris [32] found that the most often cited obstacles to implementing ISO 9001 were bureaucracy, a lack of guidance from top management, demands on time and resources, and the reactions of employees. During the initial stages of SMEs’ development, their owners are concerned about the survival of their business and are not focused on implementing a QMS. Daniyan *et al.* [33] suggested the implementation of continuous improvement techniques such as the lean Six Sigma to enhance work processes, productivity, products, and service quality in the manufacturing industries. Figure 10 presents the cause-and-effect diagram for the root causes of the factors affecting QMS implementation in SMEs.

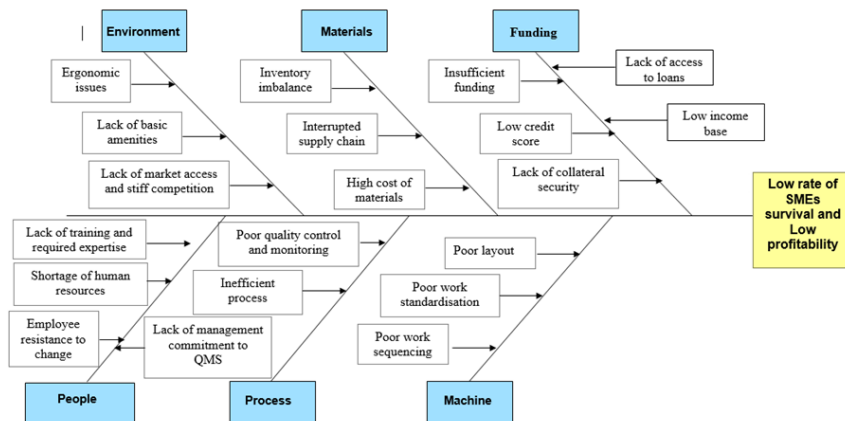


Figure 10: The cause-and-effect diagram of root causes (Authors’ design)

4 CONCLUSION AND RECOMMENDATION

The aim of the study was to investigate the effect of ISO 9001QMS on SMEs in Gauteng Province, South Africa. The objectives were to determine the level of ISO 9001 QMS awareness; to examine the effect that ISO 9001 has on work processes, productivity, and product and service quality in SMEs in Gauteng Province; and to examine the likelihood of ISO 9001 implementation in SMEs.

This was achieved through quantitative research and an online survey involving 84 participants. The results indicated the rejection of all the null hypotheses that were formulated; a 64 per cent level of ISO 9001 awareness in SMEs in Gauteng Province; a 63.57 per cent positive effect on productivity and a 50 per cent very positive effect on work process. Of the respondents, 83 per cent agreed that the quality of their products and services improved when QMS was implemented, and 88 per cent experienced an increase in customer satisfaction. These results implied that there was an awareness of ISO 9001 QMS in SMEs, and that the implementation of ISO 9001 had a positive effect on them. The SMEs that had implemented a QMS indicated that they had experienced increased productivity, improved business operations, and increased customer satisfaction. Statistics from the analysed data showed a solid level of feasibility for the implementation of ISO 9001 in SMEs, with the following QMS requirements that are currently practised in SMEs: organisational performance reviews (58.57 per cent), change management implementation (85.71 per cent), employee training (80 per cent), defined organisational objectives (71.43 per cent), and a document control system (62.86 per cent). This indicated a high likelihood of QMS implementation in SMEs. Of the survey participants, 82.86 per cent perceived that QMS was beneficial to SMEs.

The adoption of QMS by SMEs in Gauteng Province is recommended for operational efficiency, increased customer satisfaction, and SMEs' sustainability. ISO 9001 is recommended as a proactive business management tool. The ISO 9001 standard contains sections that provide guidelines and requirements on planning, risk-based thinking, risk management, leadership commitment, management reviews of business effectiveness, and continuous improvement. The effective implementation of this QMS standard could help SMEs to solve most of the identified operational and management challenges that they face.

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