Could ISO 9001:2008 factors improve the Emergency Services performance? A case of the City of Tshwane

Tshepo Sethakha Paul
EI Edoun
Solly Pooe
Tshwane University of Technology, South Africa

Keywords
ISO 9001, performance management, competitive advantage and continuous improvement.

Abstract

The purpose of this study is to determine the ISO 9001 factors that improve performance in the Emergency Services. Proper understanding of these factors might help to improve emergency services performance and related organisations. a structured questionnaire was used to collect data from 121 emergency service employees. ISO principles served as measurable variables and the results were interpreted based on these variables. Descriptive statistics and cross-tab analysis were applied for the purpose of this study.The results show that high level of training, effective communication and proper record keeping as factors that could improve performance in the emergency services. Management commitment is revealed to be insignificantly related to performance. The study is the first in the emergency services (firefighting and ambulance) in relation to quality management. The study provides emergency services managers with thorough understanding of the implementation of ISO 9001 quality management system and can use it to further enhance their decisions, thus improving performance.

Corresponding author: Solly Pooe
Email address for the corresponding author: PooeSP@tut.ac.za
First submission received: 2nd of November 2023
Revised submission received: 25th of March 2024
Accepted: 2nd of April 2024

Introduction and Background

The City of Tshwane Emergency Services Department is entrusted with ensuring community safety and protection against fire, ambulance, disaster and related operations. Following the pronouncement of the Executive Mayor's commitment to comply with the standard of ISO 9001 and King III code of good governance the entire City departments were to be certified (State of the City Address 2012:3). The Emergency Service obtained ISO 9001:2008 certificate and was first within the city departments to be certified and first in all Emergency Services in South Africa (Emergency Services Annual Report 2015:32). The implementation of ISO 9001:2008 within the emergency services proved to be the first in South Africa and perhaps one of the few in the emergency services. Larkin (2003) has shown that there is lack of active quality management system in the emergency services. According to Bashan and Kordova (2021:13) there should be a measure for the purpose of assessing the level of performance at local level. The implementation of ISO 9001:2008 in the emergency services helps to provide a structured quality system that can be evaluated and measured against performance.

Abimbola (2020:88) reiterated that "The objective of every organization is to develop a sustainable competitive advantage that will promote continuous growth and expansion." Research has proven that implementation of ISO 9001 stimulates competitive advantage (Psomas & Pantouvakis, 2013),

(Valmohammadi & Khodapanahi, 2011:607) and (Ochieng & Njihia, 2015:768). In addition, Rodriguez-Anton, Alonso-Almeida, Celemin & Rubio (2011:80) proved that the implementation of a quality management system improves both financial and performance results of the organisation. There is also a positive association of organizational factors such as top management support, employee involvement and reward and recognition to quality management systems (Ferdousi et al, 2018:552).Psomas et al, (2016:56) studied the effects of quality management in local authorities and found that local authorities adhere to the traditional authoritative management style as opposed to quality improvement efforts. It is also important to note that their little research on public service implementation of the quality management systems (Oschman, Stroh & Auriacombe, 2005; Olsson, 2014), and even lesser at local government level. Available literature on quality management points to the health care services (Buttigieg, Dey & Cassar, 2016), but silent on emergency services such firefighting and ambulance services. Therefore, quality management factors remain unempirical in relation to emergency services. This study seeks to respond to the following research question: What factors affect adherence to ISO 9001:2008 code within the City of Tshwane Emergency Services? The objective of this paper is to describe these factors and how they impact on organisational performance.

Literature review

Quality management systems are used largely by organisations to improve operations and enhance efficiency. According to Oschman, Stroh and Auriacombe (2005:188), quality management is directed at changing people's behaviour, both management and employees. Kaziliunas (2010:31) indicated that "quality may be considered as a strategic competitive tool, and organisations cannot afford to ignore their competitive position." Quality can be defined as "a dynamic state associated with products, services, people process, and environments that meets or exceed customer expectations and help produce superior value" (Goetsch and Davis, 2013:97).

ISO 9001 standards can be traced back to 1987 when it was formally published as a standard emanating from the army procurement standards (Lewis, Pun and Llala 2007:1). The standard received more appreciation from European companies who enjoyed the earliest benefits of the standard and then started pressurizing external suppliers to be certified. With time the standard became a tool of trade and accustomed to competitive advantage. Many organisations around the world enjoyed the benefit that came with the standard and their impact on organisational development. As at December 2014 there were 1 138 155 ISO 9001 certificates issued around the world (ISO survey, 2015). Sharif and Kagioglou (2008:317) asserts that ISO was written to suit all types of organisations, with generic terminology. The revision of this standard happens almost every seven years. Martinez-Lorente and Martinez-Costa (2014), Ooi, Safa and Arumugam (2006) and Fons (2011) studied ISO 9000 standards against other quality management practices and found that ISO certification provides more weight than uncertified quality management practices. The studies of Ochieng, Muturi and Njihia (2015:768),Psomas and Pantouvakis (2014:526), Psomas, Pantouvakis and Kafetzopoulos (2012:159) have similar results that ISO 9001 implementation contributes significantly to the improvement of the overall performance of an organisation.

However, the view Sampaio, Saraiva and Rodrigues (2008:52) holds that "regardless of the effort already carried out within the scope of ISO 9001 standard, significant contradictory and unanswered questions still remain." In support of this view is Heras-Saizarbitoria and Casadesus (2014:881) who asserted that internalization of the standard and the benefits obtained may be limited. Thus, the adoption and implementation of the standard should be done bearing in mind the needs of the organization and the likelihood of the impact thereof. So top management should observe that employees' "buy in" to the quality management system and provide good knowledge and direct involvement to achieve employee acceptance of the quality management system (Lewis, Pun and Lalla 2007:13).

Sharif and Kagioglou (2008:318) identified the reasons for organisations to seek ISO certification as internal and external motives. They mention quality improvements, reduction of costs, organisational efficiency and improvement in documentation process as internal factors while marketing, increasing market share, pressure from competitors, customer satisfaction, government demands and regulations and credibility to suppliers are considered external factors. Aba, Badar and Hayden (2015:85) concluded that obtaining ISO 9001 have far reaching financial advantages compare to the cost of obtaining certification. According to Psomas, Vouzas and Kafetzopoulos (2014:441) factors such as quality improvement, employee benefits, customer satisfaction and improved organisational performance are factors that inherently benefit the organisation upon implementation of the quality management system. Equally, it is important to recognize the objectives in relation to the impact on employees. As drivers, implementers and beneficiaries of the organisational vision, they cannot be ignored when adopting any quality management tool. Valmohamadi and Khodapanahi (2011:607) concluded that "quality management system does have significant effect on personnel attitude toward their job and their organisation". This is supported by Liu and Liu (2012:12) who asserts that quality management practices can reduce workloads and employee stress. Another benefit is that ISO 9001 has a positive influence on return on assets (ROA) (Ochieng, Muturi and Njihia 2015:768).

While many researchers agree that obtaining ISO 9001 does impact positively on the quality culture of an organisation, it is important to note the study of Martinez-Lorente and Martinez-Costa (2004:271) which concluded that ISO does not improve results, especially when the organisation is also applying a TQM policy. This study suggests that utilizing more than one quality management system simultaneously may produce undesired results probably due to improper system application and complications which may arise from system analyses control and measurement.

Quality management system is considered a very important concept within the organisations thinking process in that they guide the outcome of the organisation from productivity to an engraved quality thinking process. "Activating psychological resonance empathy, willingness to co-operate among the members of the group can dramatically increase the outcome while making employees more satisfied with their work" (Conti 2006:305). Liu and Liu (2012:6) reaffirm the implementation of a quality management system since it reduces employee workload and most importantly stress. Conti (2006:305) concludes that the issue is system thinking, the integration of quality management concepts.

Maintenance of ISO 9001

While ISO 9001 is a tool for organisational improvement, it is also subjected to expiry. Renewal may be granted on request from the Accreditation Authority concerned. This happens every three years. Subject to this provision Wahid and Corner (2009:881) hinted on the critical success factors and problems in the ISO 9000 maintenance. Their study shows people elements, understanding of ISO 9000 and continuous improvement as the main important factors to successful maintenance of the quality system. The study continues to explore problems such as lack of understanding, ignorance, lack of training, improper documentation, subcontractors who work shortcuts and communication as problems hindering maintenance of ISO 9000. Hoyle (2012:87) defines maintenance as "the action of retaining something in a serviceable or proper condition." ISO 9001 repeatedly mentions maintenance of the quality management system with clause 4.1, 6.1 (a), 6.3 and 7.6 committing the organisation to maintain the quality management system (ISO 9001:2008:2-11). Quality management should be engraved on both the top management and the employees of an organisation in order to effectively maintain a quality management system (Liu and Liu 2012:6).

Decertification

Llach, Marimon and Bernado (2010:299) cautioned on the importance of managers to know about trends on certification and decertification of the standard so as to be alert on what other companies in their sector are deciding upon. A study conducted by Candido, Coelho and Peixinho (2016:18) regarding decertification of ISO 9001 by the Portuguese companies proved that withdrawal of the certificate does not lead to any significant abnormal financial performance although competitive advantage may not be accrued post decertification. Kafel and Simon (2017:180) concluded that there is no correlation of decertification to financial performance. The main reason for decertification in the European companies is that customers do not require ISO certification from suppliers anymore (Aamer, Alwaqi & Mandahawi 2020:365). Thus, once quality management system thinking has been embedded on employees' organizations tend to decertify their ISO 9001 certificates to reduce cost of certification.

Criticism of the ISO standard

Valmohammadi and Khodapanahi (2011:602) argued that ISO 9001 discourages creative and critical thinking because employees are forced to work according to well prescribed procedures and rules. Therefore, creativity-oriented strategies would find the standard dysfunctional, while control and operation-based strategies would be likely to benefit the most from the certification (Kaziliunas, 2010:32). Another aspect to consider is that ISO certification comes with extra cost to the organisation, i.e. the financial costs of obtaining a certificate, training of "ISO champions" and the alignment of all documentation and strategy to befit the standard. Hoyle (2007:43) reiterated that ISO does not necessarily prevent an organisation from producing poor quality products.

ISO 9001:2008 as a standard

Generally, applying ISO 9001 standard has been perceived to be more customer-focused, less biased towards manufacturing and more generic (Ismyrlis, Moschidis and Tsiotras 2013:115). The standard has eight mandatory requirements/principles upon which an organisation must comply (ISO 9001:2008). Of the eight, four are more crucial since they are distinct to other management systems. They are-

- Management responsibility – which requires management to fully commit to the quality management system. This includes components such as customer focus, quality policy, planning, communication, and management review.
- Resource management - which entails provision of human capacity and infrastructure required to successfully realize the implementation of the standard. This includes training and awareness of the employees.
- Product realization – which emphasizes the planning process towards the achievement of customer relationship and
- Measurement analysis and improvement – which requires accredited organisations to monitor, evaluate, analyse, and improve the system.

In addition, ISO 9001:2008 appreciates the Deming's principles of Plan – Do – Check – Act (PDCA) cycle which compliments the review process for continual improvement. The standard commits top management to designing and implementing quality management system (ISO 9001:2008:3). Included in this is communication, education and reviewing the inputs and output in relation to the standard. Thus, top management are expected to review the results of the standard continually to keep track of the benefits that comes with it.

According to Ochieng, Muturi and Njihia (2015:762) certain variables should be in place to determine how an organisation is performing and whether the standard is bringing improvement in the organisation. Quality and performance cannot be dissociated and forms integral components of the overall strategic objective of the organisation. Performance is linked to financial goals while quality compliments both

productivity and performance outputs. Oschman, Stroh and Auriacombe (2005:185) stated that "employees are the critical stakeholders as the institutional outcomes required to meet all the needs of the stakeholders." Liu and Liu (2012:2) stated that quality management practices can influence individuals by empowering them to take responsibility for work processes. Another important aspect of TQM is to empower employees to be more involved in their jobs by participating in decision making activities (Karia and Asaari 2006:33). Employee participation draws them closer to the organization which improves participation and the culture of decision making thereby enhancing a sense of accomplishment in job tasks.

Quality and performance

Research over business improvements culminated in empirical receiving more attention particularly regarding improvement of performance and profit maximization. Axson (2010:25) attributes the following to performance management, "Performance management encompasses all the processes, information and systems used by managers to set strategy, develop plans, monitor execution, forecast performance, report results and make decisions." Ebrahimi and Sadeghi (2013:5638) concluded that performance can be affected if all the quality management practices are wholistically approached. Business performance can be demonstrated by a wide range of variables depending on the research and its objectives. As described by Maletic, Maletic and Gomiscek (2014:1748) the effectiveness of the production equipment in a manufacturing concern ranges from availability, performance and the quality rate. Ignoring any of these variables may produce undesired results. Therefore, the measure of performance is not limited to one variable, but a conglomerate surmising a whole.

Process orientation and management

Another factor in ISO 9001:2008 is outlining processes to guide the employee on how best to execute their functions (ISO, 9001: 2). This necessitates a process flow diagram with timelines to effectively support the efforts of employees. According to Chountalas, Magoutas and Zografaki (2019:65) continuous improvement is the most beneficial element in the successful implementation of the ISO 9001. Furthermore, Delic, et al. (2014:370) asserts that organisations regular internal audits help to raise nonconformances and correcting them prevent future recurrence. Lee and Lee (2014:1074) found that the effect of process management on business performance is greater than that of customer focus. "Exploitation of information in process management is important in driving the strong positive relationship between process management and product quality" (Laosirihongthong, Teh and Adebanjo, 2013:1001).

Management commitment

The decision to implement ISO 9001 is a management decision and therefore should be driven from the high decision-making bodies within an organization. Alic (2010:59) asserted that managers need to give high priority to the quality system by taking it seriously through cooperating and implementing activities using the QMS documentation and encouraging others to do so, motivate the employees and support them to achieve the expected outcome. The operationalization of resources should be a top management priority to give a clear vision and leadership together with the commitment and time to understand and systematically communicate requirements within the organisation, thus implementing the cultural change (Carina, Keskitalo and Liljenfeldt, 2014:475). Therefore, management should be clear on content and process management so as to guide those struggling with the grasping of the standard. Valmohammadi and Khodapanahi (2011:607) recommends that senior managers pay more attention to ISO practices and consistently examines how problems can be prevented and corrected. This is supported by Cheung and to (2010:261) who highlights three indicators of management commitment which are: reflecting a true commitment to service quality and not just paying lip service, providing personal input in the service delivery process and empowerment and encouraging customer contact employees to speak up and get the job done. These attributes are valuable in reflecting management commitment. Top management need to

set priorities in appropriate resource allocation during the design and implementation of the ISO 9000 standard (Kaziliunaz, 2010:36). The direction of top management in guiding the standard leaves employees with limited choice in disengaging from the standard.

Customer focus

A functional quality management system is one that respond to customer needs, interorganisational needs and the needs of suppliers. In this way a wholistic business cycle is completed. Arumugam, Ooi and Fong, (2008:648) concluded that customer focus practice is the key quality management practice of ISO 9001 regardless of the organisational 17 quality context. Customers are the central figure towards the implementation of a successful quality management system. At a point of service, the customer interaction happens between the customer and the employee. Therefore, customers cannot be ignored in the strategy formulation of an organisation. Cheung and to, (2010:261) observed the autonomy of employees regarding customer satisfaction without the involvement of top management results in improved employee job satisfaction and enhanced organisational performance. According to Kaziliunas, (2010:31) top management should drive the influence on strategic factors towards the provision of necessary resources to satisfy customer expectations.

Communication

Once top management have shown commitment to the standard, middle management must cooperate and coordinate all employees to the course. Hawrysz and Hys (2014:82) observed that there is a lack of cooperation between middle level managers through to lower-level supervisors and the entire staff. They further assert that "in the public sector organisations the level of trust is low" and that "the higher the trust, the higher the communication efficiency" (Hawrysz and Hys, 2014:83). Olsson (2014:122) recommends a deeper understanding of reputation-oriented communication and operational communication which brings about trust and authentic transparent conversations. Therefore, communication is a critical implementation factor and without it a system failure becomes prevalent.

Resource management

Sivaram, Devadasan and Murugesh,(2013:36) advised on effective optimisation of resources and non-duplication of procedures and processes. Stello (2011:25) maintains that organisations should "use their human resources well by ensuring that the right people are in the right job at the right time and being used to their fullest potential." Buttigieg, Dey and Cassar (2015:136) warns against ignoring resource management which may result in operating system failures. Carina, Keskitalo and Liljenfeldt, (2014:478) avers that well prepared management plan that can be interpreted by all employees reduces the risk of mistakes being made upon implementation. Proper planning on how resources should be management enables employees to minimize costs and maximise output. According to Mello, (2010:26) product definition is linked to the ability of an organisation to discover and synthesise customer input during product definition. Therefore, proper utilization of employees, organisational resources and focusing on customer service have positive impact in organisational performance.

Competence, training and awareness

Training enhances the skills of employees in dealing with unexpected work problems and make appropriate suggestions for decision making (Cheung & To, 2010:261). Liu and Liu (2012:12) assert that organisations should arm their employees with skills and knowledge in order to maintain quality thinking and develop a quality-based culture. Yaya *et al*. (2015:227) concluded that it is necessary to develop and upgrade the skills of employee's workforce and to promote labour mobility. Jamaluddin, Razali and Mustafa (2014:503) confirmed that if the employee is satisfied and understood the training provided, the usage of quality tools in process improvement may result in creative problem solving. Moreau and Mertens (2013:169) advised that in order to effectuate an efficient transfer of competences in an organisation,

collective training plan can be established according to the missing competences. Training involves capacitating employees to perform their duties effectively. There exists a need to evaluate this continuously. The study of Quintino, Fernandes and Miranda (2011:512) it was proven that the international harmonisation of training, qualification and certification provided an organisation with a convenient, comprehensive and convincing way of demonstrating compliance to set standards. Therefore, training should aim at achieving organisational results.

Document control

Effective document control enables an organisation to track its records effectively and measure its outcome against previous outcome (Maletic, Maletic and Gomiscek, 2014:1748). This would improve organisational results. As cited by Neary, (2014:34) Pyrek noted that poor documentation may lead to negligence, inaccurate and insufficiently detailed information. Grenersen (2012:130) advised organisations to inculcate a culture of a "document institution", which is defined as "an organisation that cross the borders between texts, artifacts, files, performance and include a phenomenological and cultural sensitive understanding of the documentation process." Zhou *et al*, (2015:1024) recommended that a model documentation be used for documentation even though an innate feature was established as a finding within this sector. This could assist in obviating discrepancies and aligning context for the understanding of all users.

Methods and materials of study

The study is descriptive and cross sectional. This study aims to outline the factors that affect adherence to ISO 9001:2008 and how they impact on overall organisational quality management implementation in the emergency services of the city of Tshwane. A sample size of 121 emergency services employees within the city of Tshwane was used for the study. A quantitative method of data analysis was used. Frequency tables and Pearson chi-square tests of association. Data was collected using a structured questionnaire which was validated through a pilot study conducted to test and validate the simplicity of the questionnaire. Since the department has ISO champions, they were chosen for piloting the study. Their responses saw the amendments to the questionnaire and then distribution. The questionnaire comprised of two sections with Section A measuring the demographic information of the respondents and Section B with 32 questions on a Likert scale, thus measuring adherence against the practices of ISO 9001:2008 standard. 121 questionnaires were received after a month of collecting data. The questionnaire on ISO 9001 dimensions were grouped into four practices which are management commitment, training and education, communication and customer focus. For each item of the practices, responses were measured using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The dependent variable adherence has been reflected and measured in few previous empirical studies. The aforementioned practices measures adherence constructs. Also, a question is asked to determine the willingness to adhere to ISO standard with the response yes or no. The statistical computer program used was STATA version 13. In order to determine the relationship between dependent and independent variables, correlation studies were used. For the purpose of ensuring that the measurements made can be reproduced independently by other researchers, the reliability tests were used. TUT standards of ethical considerations were observed. Participants were informed about their voluntary right to participate in the study. Participants' confidentiality was guaranteed, and no names were required for response.

Results of study

The 121 emergency services respondents were asked 22 questions relating to factors that affect adherence to ISO 9001:2008. A standard and validated composite index was used for the assessment of adherence to ISO 9001.

Table 1: Characteristics of study

Variables	Results and percentages
Commitment to adherence	Yes:108 (89.26%) No: 13 (10.74%)
I know what is expected of me at work	Agree: 2.50% Disagree: 97.50%
There is a quality policy in place	Agree: 77.69% Disagree:22.31%
Quality objectives are clearly established	Agree: 65.29% Disagree:34.71%
There are management review meetings	Agree: 52.89% Disagree:47.11%
I have the tools needed to perform my duties	Agree: 57.11% Disagree: 42.15
There are adequate team members to perform the task required of me	Agree: 56.20% Disagree:43.80%
I went to training in the past 12 months	Agree:45.45% Disagree:54.55%
I have the necessary skills and experience to perform my duties	Agree:94.21% Disagree:5.79%
I am satisfied with the buildings, equipment and transport form my organisation	Agree: 32.23% Disagree:67.77%
Favourable environment	Agree: 46.28% Disagree:53.72%
I am more comfortable working with a team rather than individually	Agree: 81.82% Disagree:18.18%
There are proper record keeping procedures in place	Agree: 67.50% Disagree:32.50%
I know who our customers are and what they expect of me	Agree: 83.47% Disagree:16.53%
The fire department provides good customer service	Agree: 62.81% Disagree: 37.19%
I communicate with my clients and give feedback whenever required	Agree: 67.77% Disagree: 32.23%
Customer satisfaction survey is conducted to collect suggestions for improving	Agree: 45.45% Disagree: 54.55%
The Emergency Services collects complaints from the community	Agree: 38.84% Disagree:61.16%
There is a process map indicating my response approach	Agree: 64.46% Disagree: 35.54%
Internal audits	Agree: 57.02% Disagree: 42.98%
I am satisfied with my co-workers	Agree: 85.95% Disagree: 14.05%
I am satisfied with my job	Agree: 72.73% Disagree: 27.27%

Table 1 shows the variables of the study in relation to characteristics. Of the 121 respondents 89.26% responded positively to adherence to ISO principles whilst 10.74% responded negatively.

Table 4.2 Results obtained from the cross-tab analysis

List of variable significantly associated with adherence to ISO 9001:2008	Observed chi-squared value	P-Value
I know what is expected of me at work	0.3738	0.541
There is a quality policy in place	0.6007	0.438
Quality objectives are clearly established	2.3533	0.125
There is management review meeting	0.0053	0.942
I have the tools needed to perform my duties	0.3582	0.550
There are adequate team members to perform the task required of me	0.1687	0.681
I went to training in the past 12 month	0.0029	0.957
I have the necessary skills and experience to perform my duties	2.4625	0.117
I am satisfied with the buildings, equipment and vehicles for my organisation	0.5588	0.455
My working environment is favourable	1.4096	0.235
I am more comfortable in a team rather than individually	1.5513	0.213
There are proper record keeping procedures in place	5.6040	0.018
I know who my clients are and what they expect from me	0.4526	0.501
The fire department provides good customer service	0.2571	0.612
I communicate with my clients and give feedback whenever required	5.7272	0.005
Customer satisfaction survey is conducted to collect suggestions for improvement	2.9417	0.086
The fire brigade collects information from the community	0.3997	0.527
There is a process map indicating my response approach	0.7166	0.397
Internal audits are performed continuously	0.7024	0.402
I am satisfied working with my co-workers	0.0215	0.883
I am satisfied with my job	0.9193	0.338

Table 4.3 Results obtained from Pearson's chi-square tests of associations

Factors associated with adherence to ISO standards	Observed Pearson chi-square value	P-value
Highest level of training (Qualification)	21.7126	0.005**
Effective communication	5.7272	0.017*
Proper record keeping practice	5.6040	0.018*

Legend: Significance levels at * P<0.05; ** P<0.01; *** P<0.001

Table 4.3 shows influential predictor variables that affect the degree of adherence to ISO standards in the City of Tshwane. The table shows that adherence to ISO standards depends on academic qualification, effective communication and proper record keeping, in a decreasing order of strength. The number of respondents who are qualified and adhere to the standard is 107 (89.17%) out of 121. The number of respondents who are qualified but do not adhere is 13 (10.83%) out of 121. The P-value for the association between adherence and qualification is 0.005. This shows that the association between the two variables of study is statistically significant at the 5% level of significance.

The number of respondents who communicate effectively and adhere to the standard is 77 (63.64%) out of 121. The number of respondents who communicate effectively but do not adhere is 31 (25.62%) out of 121. The number of respondents who do not communicate effectively but adhere to the standard is 5 (4.13) out of 121. The number of respondents who do not communicate effectively and do not adhere is 8 (6.61) out of 121. The P-value for the association between adherence and qualification is 0.017. This shows that the association between the two variables of study is statistically significant at the 0.05% level of significance.

The number of respondents who practice proper record keeping and adhere to the standard is 91 (75.21%) out of 121. The number of respondents who do not practice proper record keeping but adhere to the standard is 17 (14.05%) out of 121. The number of respondents who do not practice proper record keeping but adhere to the standard is 10 (8.26%) out of 121. The number of people who do not practice proper record keeping and do not adhere to the standard is 3 (2.48%) out of 121. The P-value for the association between adherence and proper record keeping practice is 0.018 which is below than 0.05% this shows that the association between the two variables of study is statistically significant at the 5% level of significance.

Discussion

The overall objective of this study was to identify factors that affect adherence to ISO 9001:2008 standard. The study has revealed three factors that affect adherence to ISO 9001 code which shall be discussed below. It should be noted that these factors might also be identified through an internal audit process conducted by a competent internal auditor. As part of exploring opportunities and area for continuous improvement, internal quality audits must be conducted with the intension to root out the more pressing issues regarding the maintenance and preservation of the standard.

Major results of the study

The results of this study revealed that where qualification was perceived as a dominant ISO 9001 practice, there was a strong association with adherence. The results entail that ISO 9001 recognizes and emphasizes the importance of qualification to capacitate employees to do the work properly. These results are in support of the study Quintino, Fernandes and Miranda (2011:512) and Fons (2011:471) that trained employees will have higher impact on the output of the organisation.

Whereas education and training cannot be separated from qualification, the results in figure 4.14 shows a majority of participants have not undergone any training within the last 12 months. These results indicate possible flaws in the implementation of the quality management system as the concept of "continuous improvement" may not be in support of this finding. Karia and Assari (2006:32) have hinted that it may be difficult for management to hold employees accountable if no training was provided. Continuous improvement happens when regular management reviews are conducted, where gaps in the quality management system can be identified and then responded to. Thus, Psomas et al, (2016:57) concluded that local authorities seem not to be process oriented and not yet managed continuous improvement in the context of quality management.

Marinucci (2013:51) concluded that in the Emergency Service setting "quality service is affected by the number of people available, their talents, their level of training, the apparatus and equipment available and arrival at the scene of the emergency within a time frame that will make a difference." According to Larkin (2003:13-16) the Fire Brigade Services should continuously educate its employees on report writing, equipment and procedure handling, quality management system improvements, remedial training and proper documentation. This study further recommended that the quality program be developed and implemented by the Fire department.

The results also identified effective communication as a factor to consider for adherence to successful implementation of the quality management system. These results also supported the view of Ooi, Safa and Amurugam (2006:50) that organisational communication is an essential element for connecting employees and permitting organisations to function and an essential element to TQM. Their research identified organisational communication as a dominant and decisive factor in determining the success of the increased affective commitment amongst employees within an organisation.

Liu and Liu (2012:12) concluded that in order to mediate the relationship between quality management practices and employees' attitudes, organisations can initiate a quality management system that will create a climate of empowerment and communication. Similarly, Wagner and O'Neill (2012:435) observed that the Fire Brigade Service personnel needs to be trained in effective supervisory methods and communication skills which may assist in moderating the negative responses about firefighters when asked about satisfaction and departmental relations. Effective communication facilitates a platform for liaison on common issues among interdepartmental organisations thereby bringing unity among all role players.

Proper record keeping practice was also found to be an integral aspect in this study. This is congruent to the study of Skold (2015:311) who illustrated that proper documentation "reminisce and inform actions and perspectives of the present." The study of Zhou *et al*. (2015:1039) advised that "in order to ameliorate the quality of documentation a paradigm shift is required." The City of Tshwane has thus been found to be well in support if the proper record keeping procedures with 67.5% respondents agreeing to maintain a good proper record keeping practice. Grenerer (2012:131) concluded that "without the documents there will be no evidence left of a traditional knowledge system where people, animals and landscape were interconnected in an intimate way and were transferred through participating in the daily activities."

Lastly, the results also revealed management commitment to be insignificantly related to adherence. Management commitment is the most important aspect to effect successful implementation of any quality management system. As discussed in the literature review management must be actively involved so as to educate, motivate and improve on the organisational strategic objectives. The conclusion contrasts the study of Jamaluddin, Razali and Mustafa (2014:502) that management commitment may be indirectly supporting the quality management system because the responsibility of implementing the quality management system lies with the research and innovation department.

In addition to the above, 94.21% agree to have the necessary skills and experience to perform their duties accordingly and only 5.79% of the respondents do not agree to have the skills and experience to perform the duties effectively is sufficient to support the fact that people who are qualified are more likely to support the quality management initiative and that those without the skills may wish to be qualified to match the others, thus supporting the principle of continuous improvement in the standard.

The fact that 52.89% of the respondents agree to conduct management reviews whereas 47.11% disagree to conducting management reviews indicates a grey area requiring serious consideration by the management of City of Tshwane Emergency Services. Management reviews meetings plays a crucial information dissemination role and provides tacit proof to the employees that management is committed to the course of ISO 9001. Regular management review may assist top management to ensure readiness for internal audits and maintenance of the standard.

Another concern is that 47.11% of the respondents agree to have the necessary tools to perform their job effectively whereas 42.15% of the respondents disagree indicates that top management is slightly impoverished on this aspect. Tools of trade, e.g. vehicles and equipment are compulsory for the Emergency Services and thus proper planning on this aspect is fundamental for proper realization of the implementation of the standard. 10.74% of the respondents were unsure to this question. This is imperative to note since being unsure may mean either the current status of tools is acceptable, which is a positive sign, or respondents may have chosen not to disclose since this may demean their career profile or lower the

standard of the city. Therefore, if we are to add 10.74% to the minority 42.15% of the respondents, it will mean that the majority of the respondents agree to not having the proper tools of trade, thereby indignantly representing the standard.

The results of Figure 4.9 show that 45.45% of the respondents agree to conduct customer satisfaction survey whereas 54.55% disagree with conducting customer service survey proves that the employees of the city do not understand customer relations and why they proved a service. This factor is important to the very principle, as proven in literature survey, that customer focus should be a priority for employees. This interaction conveys a message that says management should educate and train employees on the reason why they provide a service. As observed by Cheung and To, (2010:261) the autonomy of employees regarding customer satisfaction without the involvement of top management results in improved employee job satisfaction and enhanced organisational performance.

The other results job satisfaction, process map, infrastructure and quality objectives as demonstrated in Table 4.1 show manageable levels of ISO 9001. It can be said from these results that ISO 9001 is within its manageable context and if the management can improve on the quality management system.

Limitations of study

The study was carried out in the City of Tshwane Emergency Services, which is a local government sector, and most respondents work shifts. The factors that were identified were only tested against the emergency services and not on the entire city. Since there are different departments, it could be possible that other factors might be explored.

The study was conducted on a service rendering organisation and not a manufacturing concern, thus the results might be limited to a similar organisation. Furthermore, the study was carried out on a local government sector which is a non-profit organisation. Tighter rules and measures are applicable in a private organisation than in a public organisation. While the emergency services are a paramilitary organisation with strict rules, guidelines and policies, there is still that element of "public service employee" where enforcement may be relaxed. The private sector might explore more factors due to the scope of business and strictness in the application of the policy.

Literature has shown that the successful implementation of the quality management system is also dependent on the employees' understanding and "buy in". Menezes, (2012:323) concluded that job enrichment features are important for an effective quality management system. This study could not explore the soft elements such as employee reimbursement which may have adverse implementation effects on the system.

The instrument used to gather data might have also been very limiting in identifying the other factors. A modified questionnaire with possible one-on-one interview questions might contribute immensely for future research.

Recommendations

Managers within the emergency services may use this information to improve on strategy development and implementation. Management should monitor the progress of the ISO 9001 standard on a regular basis to prevent problems that may subsequently arise. While a strong relationship was evinced in this study, it is recommended that employees be trained and regularly updated on the system and its application. Secondly, an improved communication system within the system may sustain communication. Thirdly, proper record keeping practices constitutes to significant productivity benefits and thus organisations should formulate a document control system that allows them to thrive.

Management is thus cautioned to commit more to the standard as they bear the brunt of the deterrence of improper quality management system implementation.

Conclusion

This study has identified factors associated with adherence to ISO 9001:2008 practice within the City of Tshwane Emergency Services. The findings indicate that qualification and effective communication and proper record keeping have a positive relationship with adherence to ISO 9001:2008, thus improving on performance. These findings indicate that top management should review their ISO 9001 implementation strategies. "The success of any quality management system approach critically depends upon the commitment of top management who must be, and be seen to be involved, establish unity of purpose and direction" (Oschman, Stroh and Auriacombe, 2005:192).

Moreover, this study was distinct in identifying qualification as a factor for management to consider when implementing ISO 9001. This calls for management to consider bringing on board other employees who might be less qualified and to further enhance the skills of those already qualified.

These results might be limited to emergency services. Other industries which are ISO certified might provide a good platform for further research. Additional research on this topic might be useful to validate the authenticity of the instrument and the study thereof.

References

Aba, E.K., Badar, M.F. & Hayden, M.A. Impact of ISO 9001 certification of firms financial operating performance. *International journal of quality and reliability management*, 33(1):78-89.

Alic, M. 2013. Issues of ISO 9001 implementation: improper praxes leading to bureaucracy. *Dynamic Relationship Management Journal,* 55-67.

Alvarez, M.J., Jaca, C., Viles, E. & Colomer, A. 2012. Quality management in hotels in the Basque Country. *International Journal of Quality and Service Sciences,* 4(1): 51-60.

Anderson, C. 2013. What are 10 reasons why you need ISO 9001 [Online]. Available from:http://www.bizmanualz.com/obtain-iso-certification/what-are-10-reasons-why-you-need-iso-9001-certification.html[Accessed: 22 Feb. 2016].

Arumugam, V., Ooi, K. & Fong, T. 2008. TQM practices and quality management performance. An investigation of their relationship using data from ISO 9001:2000 firms in Malaysia. *The TQM Magazine*, 20(6): 636-650.

Axson, D.A.J. 2010. *Best practices in planning and performance management: radically rethinking management for a volatile world*. 3rd ed. New Jersey: John Wiley & Sons.

Bashan, A. & Kordova, S. 2022. Challenges in regulating the local and global needs of quality management systems. *International journal of quality management and reliability*.

Buttigieg, S.C., Dey, P.K. & Cassar, R.M. 2015. Combined quality function deployment and logical framework analysis to improve quality of emergency care in Malta. *International journal of healthcare quality assurance,* 29(2):123-140.

Candido, C.J.F., Coelho, L.M.S. & Peixinho, R.M.T. 2016. The financial impact of a withdrawn ISO 9001 certificate. *International Journal of Operations and Production Management,* 36(1): 23-41.

Carina, E. Keskitalo, H. & Liljenfeldt, J. 2014. Implementation of forest certification in Sweden: and issue of organisation and communication. *Scandinavian Journal of Forest Research,* 29(5): 473-484.

Cheung, M.F.Y. & To, W.M. 2010. Management commitment to service quality and organisational outcomes. *Managing Service Quality,* 20(3): 259-272.

City of Tshwane (South Africa). 2012. *State of the City Address 2012*. Internal document. Pretoria: City of Tshwane.

City of Tshwane (South Africa). 2013. *Emergency Services Annual Report 2013*. Internal document. Pretoria: City of Tshwane.

Constitution See South Africa.

Conti, T. 2006. Quality thinking and systems thinking. *The TQM magazine,* 18(3): 297-308.

Delic, M., Radlovacki, V., Kamberovic, B., Maksimovic, R & Pecujlija, M. 2014. Examining relationships between quality management and organisational performance in transitional economies. *Total Quality Management,* 25(4): 367-382.

Ebrahimi, M. & Sadeghi, M. 2013. Quality management and performance: an annotated review. *International Journal of Production Research,* 51(18): 5625-5643.

Ferdousi, F. Baird, K. Munir, R. & Su, S. 2018. Mediating role of quality performance on the association between organizational factors and competitive advantage. *International journal of productivity and performance management,* 68(3):542-560.

Fons, L.A.S. 2011. Measuring the effects of quality management systems. *The TQM Journal,* 23(4): 458-474.

Goetsch & Davis. 2013. *Quality management: just the facts 101.* 5th edition. Content Technologies.

Grenersen, G. 2012. What is a document institution? A case study from the South Sami community. *Journal of Documentation,* 68(1): 127-133.

Hawrysz, L & Hys, K. 2014. Communication channels of middle managers and non-managers in public sector organizations in Poland. *International Journal of Contemporary Management,* 13(2): 72-85.

Hoyle, D. 2007. *Quality management essentials*. Burlington: Butterworth-Heinemann.

Ismyrlis, V., Moschidis, O. & Tsiotras, G. 2013. Critical success factors examined in ISO 9001-2008-sertified Greek companies using a multidimensional statistics. *Journals for Quality and Reliability Management,* 32(2): 114-131.

ISO Survey. 2015. ISO survey of management system standard certification [Online]. Available from: http://www.iso.org/iso/iso-survey. [Accessed: 08 Jan. 2016].

Jamaluddin, Z. Razali, A.M. & Mustafa, Z. 2014. The relationship between quality management practices and organisational performance: a structural equation modeling approach. In: The 2nd ISM International Statistical Conference, 2014: 494-504.

Karia, N & Asaari, M.H.A.H., 2006.The effects of total quality management practices on employees' work-related attitudes. *The TQM Magazine,* 18(1): 30-43.

Kaziliunas, A. 2010. Success factors for quality management system: certification benefits. *Intellectual Economics,* 2(8): 30-38.

Laosirihongthong, T. Teh, P. & Adebanjo, D. 2013. Revisiting quality management and performance. *Industrial Management and Data,* 113(7): 990-1006.

Larkin, R. 2003. *Evaluating a quality improvement program for the emergency medical service in the Burnsville Fire Department.* National Fire Academy: Executive Fire Officer Program.

Lee, H. & Lee, C. 2014. The effects of total quality management and organisation learning on business performance: evidence from Taiwanese insurance industries. *Total Quality Management,* 25(9): 1072-1087.

Lewis, W.G., Pun, K.F & Lalla T.R.M. 2007. The effects of ISO on TQM implementation in SME in Trinidad. *West Indian Journal of Engineering,* 30(1): 1-16.

Liu, N & Liu, W. 2012. The effect of quality management practices on employees' well-being. *Total Quality Management and Organisation Excellence*, Aug.: 1-15.

Llach, J., Marimon, F. & Bernado, M. 2010. ISO diffusion analysis according to activity sectors. *Industrial Management and Data Systems* 111(2): 298-316.

Maletic, D., Maletic, M. & Gomiscek, B. 2014. The impact of quality management orientation on maintenance performance. *International Journal of Production Research,* 52(6): 1744-1754.

Marinucci, R. 2013. The chief problem solver: quality is the problem. *Fire Engineering.*

Martinez-Lorente, R. &Martinez-Costa, M. 2004. ISO 9000 and TQM: substitutes or complimentaries? An empirical study in industrial companies. *International Journal f Quality and Reliability Management,* 21(3): 260-276.

Mello, S. 2010. *Customer Centric Product definition: the key to product development.*Boston: PDC professional.

Menezes, L.M. 2012. Job satisfaction and quality management: an empirical analysis. *International Journal of Operations & Production Management,* 32(3): 308-328.

Moreau, C. & Mertens, S. 2013. Managers' competences in social enterprises: which specificities. *Social Enterprise Journal,* 9(2): 164-183.

Neary, A. 2014. Do emergency nurse practitioners provide adequate documentation? *Art & science, education and practice,* 22(4): 34-40.

Ochieng, J., Muturi, D & Njihia, S.N. 2015. The impact of ISO 9001 implementation on organisational performance in Kenya. *The TQM Journal,* 27(6): 761-771.

Olsson, E. 2014. Crisis communication in Public Organizations: Dimensions of crisis communication revisited. *Journal of Contingencies and Crisis Management*, 22(2): 113-125.

Ooi, K.B., Safa, M.S. & Arumugam, V. 2006. TQM practices and affective commitment: a case of Malaysian semiconductor packaging organizations. *International Journal of Management and Entrepreneurship,* 2(1): 37-55.

Oschman, J.J., Stroh, E.C. & Auriacombe, C.J. 2005. In search of excellence in public service delivery: Primary and Supportive Dimensions of Total Quality Management. *Politeia,* 24(2): 176-196.

Psomas, E. & Pantouvakis, A. 2014. ISO 9001 overall dimensions: an exploratory study. The *TQM Journal,* 27(5): 519-531.

Psomas, E., Pantouvakis, A. & Kafetzopoulos D.P. 2012. The impact of ISO 9001 effectiveness on the performance of service companies. *Managing Service Quality,* 23(2): 149-164.

Psomas, E. Vouzas, F. Bouranta, N. & Tasio, M. 2016. Effects of total quality management in local authorities. *International journal of quality and service science,* 9(1):41-66.

Psomas, E., Vouzas, F. & Kafetzopoulos. 2014. Quality management benefits through the soft and hard aspect of TQM in food companies. The TQM Journal, 26(5) : 431-444.

Quintino, L. Fernandes, I. Miranda, R.M. 2011. International harmonization of training and qualification in the manufacturing industry. *Journal of European Industrial Training*, 35(8): 502-514.

Rodriguez-Anton, J.M., Del Mar Alonzo-Almaida, M., Celemin, M.S. Rubio, L. 2012. Use of different sustainability management systems in the hospital industry. *Journal of Cleaner Production,* 22(1): 76-84.

Sampaio, P., Saraiva, P &Rodrigues, A.G. 2008. ISO 9001 certification research: questions, answers and approaches. *International Journal of Quality and Reliability Management,* 26(1): 38-58.

Sharif, & Kagioglou, M. 2009. An investigation into the critical success factors affecting the implementation of ISO 9001 standards. *School of Built and Human Environment,* 316-325

Sivaram, N.M., Devadasan, S.R. &Murugesh R. 2013. Conceptualization for implementing total productive maintenance through ISO 9001:2008 standard based quality management system. *South African Journal of Industrial Engineering,* 24(2): 33-46.

Skold, O. 2015. Documenting virtual world cultures. *Journal of Documentation,* 71(2): 294-316

South Africa. 1996. *The Constitution of the Republic of South Africa as adopted by the Constitutional Assembly on 8 May 1996 and as amended on 11 October 1996.* Pretoria: Government printers. (B34B-96).

Stello, C.M. 2011. *Herzberg's two factor theory of job satisfaction: an integrative literature review.* Minnesota: University of Minnesota.

Valmohammadi, C. & Khodapanahi, M. 2011. The impact of ISO 9001:2000 implementation on job satisfaction: a case study. *International Journal of Academic Research, 3(1)*, Jan.: 601-609.

Wagner, S.L. & O'neill, M. 2012. Job, life, and relationship satisfaction of paid-professional firefighters. *Journal of Loss and Trauma,* 17:423-438.

Wahid, R.A. & Corner, J. 2009. Critical success factors and problems in ISO 9000 maintenance. *International Journal of Quality and Reliability Management*, 26(9): 881-893.

Yaya, L.H.P., Marimon, F., Llach, J. Bernado, M. & Casadesus, M. 2015. Analysis of training programmes related to quality management system: the Spanish case. I*nternational journal of quality and reliability management,* 34(2):216-230.

Zhou, J., Love, P.E.D., Matthews, J., Carey, B, Sing, C.P. & Edwards, D.J. 2015. Towards productivity improvement in electrical engineering documentation. *International Journal of Productivity and Performance Management,* 64(8):1024-1040.