

## Effect of Organisational Size on the Relationship between Implementation of Quality Management Systems and Organisational Management Practices in Tertiary Educational Institutions in Kenya

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### Abstract

This study assesses the moderating effect of organizational size (number of students) on the relationship between implementation of quality management systems (QMS) and organizational management practices (OMP) in Technical, Industrial, Vocational, and Entrepreneurship Training Institutions (TIVETs). The study was conducted in April to August 2014 in eleven (11) public TIVET institutions. The study had two (2) objectives and consequently two (2) null hypotheses to guide it. Survey type of quantitative research design was adopted for this study. Similarly, ISO 9001:2008 quality management principles offered theoretical guidance. At a confidence interval of 95%, an online sample size calculator was used to arrive at two hundred and seventy four (274) respondents out of nine hundred and forty five target (945) respondents. Proportionate stratified random sampling technique and an online list randomizer were used to select respondents in the selected TIVETs to participate in the study. Using moderated multiple regression (MMR) analysis, the hypotheses in this study were tested based on empirical data gathered using a survey questionnaire of sixty (66) questions from the eleven (11) ISO certified public TIVET institutions. Moderated multiple regression showed that organizational size moderated the relationship between QMS implementation and organisational management practices at  $p < 0.05$ . This study provides new and relevant insights to literature on organizational size and quality in tertiary educational institutions in Kenya. Because ISO 9001:2008 certification is the most widely adopted management tool to manage and improve management techniques in educational institutions, the findings on the moderating effect of institutional size (number of students) would be useful to ISO certified TIVET institutions and other institutions of higher learning which are still on the road map to certification, in informing their planning process.

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**Keywords:** quality management systems, organisational management practices, administrative management practices, organisational size, tertiary educational institutions

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### INTRODUCTION

Over the last decade, issues on quality and quality assurance have become a central preoccupation of most organizations. The quality concept has grown from a simple check at the organizational end product, to philosophy encompassing the entire organizational value chain. One of the more visible features of this quality wave has been the certification of the quality assurance mechanisms on the basis of ISO standards (Van De Berghe, 1998). It is for this reason that many organizations worldwide have either embraced ISO or used it as the basis for their national quality certification systems (Chow-Chua, Goh & Wan, 2003). The ISO standards had originally been conceived for companies in the manufacturing industries.

However, application of these standards has increasingly spread to other sectors of the economy. Most quality experts agree that the requirements set forward in the standards can provide a suitable framework for the quality assurance system of any type of organization.

In Kenya today, ISO standards are rapidly being implemented in many service industries such as educational institutions, and by the end of the year 2014, approximately forty one (41) educational institutions had been certified on ISO 9001:2008 standards, twelve (12) of which are public TIVET institutions (KEBS, 2012).

### STATEMENT OF THE PROBLEM

Despite accreditation and other quality management systems, TIVET institutions are currently facing significant challenges in providing the highest level of quality instruction, optimizing services, and creating economic efficiencies that will integrate efficacy of technical, vocational, industrial, entrepreneurial and training processes with business processes (Nyerere, 2009).

Literature on quality management is replete with studies on potential benefits of ISO 9001:2008 (Ayudhya, 2001; Quazi & Jacobs, 2004; Sakhthivel, Rajendran & Raju 2005; Lassaad, Federico & Mohammed 2006; Sareen & Singh, 2006; Bayati & Taghavi, 2007; Calisir, 2007; Mola, 2007; Peter, To & Billy 2009; Srivastav, 2010; Antonio & Nuno, 2012).

On the contrary, there is a school of thought that argues that although adoption of quality management systems may result in more benefits, organizational size is one of those organization specific challenges which may hinder the realization of such results (Porter, 1980; Hagedoorn & Schakenread, 1994; Marquardt & Reynolds, 1994; Sazali, Haslinda, Jekak, & Raduan, 2009; Kaziliunas, 2012).

In the light of this possible challenge in implementation (Kaziliunas, 2012), there was need to fill the void and empirically establish the moderating effect of organizational size on the relationship between implementation of quality management systems and organizational management practices in public TIVET institutions in Kenya.

### THEORY AND HYPOTHESIS

This study was based on ISO 9001:2008 Quality Management Principles (ISO, 2008). The ISO 9001:2008 quality management principles are comprehensive and fundamental rules and beliefs for leading and operating an organization aimed at continually improving performance by focusing on customers that receive a service/product. The eight (8) quality management principles are: customer focus, the role of leadership, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making, and mutual beneficial supplier relationship (ISO, 2008).

Literature on quality management is replete with studies on benefits of ISO certification. Quazi & Jacobs (2004) highlighted that ISO certification leads to significant improvement on general human resource development activities, and on the same note Srivastav (2010), showed that ISO 9000 implementation significantly contributes to improvement in organization's culture, climate, role stress, and coping strategy. Sakhthivel et al. (2005)

empirically reported that ISO certified institutions offer better quality service than non ISO certified institutions, while Peter et al. (2009), demonstrated that organizations portray different performance outcomes as a result of their variations in emphasis and implementation of ISO quality management systems. Similarly, Singh & Sareen (2006) indicated that institutions that have documented their systems and procedures to the ISO standards have benefitted from the exercise, which tend to agree with Srivastav (2010) who reported that ISO implementation results in enhanced human well being and increased functionality of organizational culture and climate, and coping strategy.

Sazali, Haslinda, Jekak, & Raduan, (2009) posit that organizational size has a significant effect on: strategic planning and cooperation (Hagedoorn & Schakenread, 1994), propensity of the organization to develop competitive advantage and improvement in performance (Porter, 1980), and organizational learning (Marquardt & Reynolds, 1994). Some scholars contend that large organizations tend to have a higher level of flexibility for successful implementation of quality management issues because of the diversity of their resources (Boeker, 1991). In contrast, other authors hold that only small organizations have greater flexibility to adapt quality management interventions because they can respond more quickly and information flow is faster (Macdonald, 1995; Quinn, 1985).

In order to determine the moderating effect of organizational size on the relationship between implementation of quality management systems and organizational management practices, the study set out the following hypotheses:

*H<sub>01</sub> Organizational size does not moderate the relationship between implementation of quality management systems and improvement administrative management practices in certified public TIVET institutions.*

*H<sub>02</sub> Organizational size does not affect the relationship between implementation of quality management systems and improvement instructional management practices in certified public TIVET institutions.*

### LIMITATIONS OF THE STUDY

The major limitation was on external validity or generalisability of the findings of the study to other public TIVET institutions. Given the sample size of 284 respondents, the study was faced with a limitation as to whether the findings of the study were generaliseable to other TIVET institutions on the basis of this study alone. Whereas the study attempted to capture all variables used to measure levels of ISO 9001:2008 implementation, administrative management practices and instructional management practices in TIVET

institutions, the researcher reckons that to achieve a complete and accurate reflection of those constructs, is hardly fully achievable

## **METHODS**

### **Sample**

This study was conducted in ISO 9001:2008 certified public TIVET institutions in Kenya. As at the end of the year 2012, there were twelve (12) ISO 9001:2008 certified public TIVET institutions in Kenya. These TIVETs had approximately one thousand and sixty two (1,062) staff. However, for the purposes of this study, simple random sampling was used to select eleven (11) out of the twelve (12) ISO certified public TIVET institutions to participate in the study. The eleven selected TIVETs had nine hundred and forty five (945) members of academic staff. One (1) certified public TIVET institution that did not participate in the study was used to pilot the instruments.

An online sample size calculator was used to determine the sample size that would precisely reflect the target population (www.surveysystem.com/sscalc.htm). At a confidence level of 95%, a sample of two hundred and seventy three (274) was arrived at. Stratified simple random sampling technique, and more specifically an online list randomizer was used to proportionately select respondents in every selected TIVET institution (stratum) to participate in the study (https://www.random.org).

### **Research Instruments and Measurement**

This study used the following two instruments; questionnaires and document analysis. The main instrument was the questionnaire which was administered on two hundred and seventy four (274) members of staff in order to obtain information on implementation of quality management systems and organizational management practices. The questionnaires comprising of sixty six (66) questions were closed ended and in the Likert type of scale ranging from: Weak (1), Satisfactory (2), Good (3), Very Good (4), Excellent (5) for the first part of the instrument and 'Strongly Disagree' (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA) for the second, third and fourth part of the questionnaire. Document analysis was used to find out the number of staff and students in the participating institutions.

### **Independent Variable - ISO 9001:2008 Quality Management Principles**

This study operationalised quality management principles in terms of specific requirements for quality management system where TIVET institutions demonstrate their ability to provide products and services that meet customer, statutory, and regulatory requirements, and enhance customer

satisfaction. The independent variable was measured in terms of customer focus, leadership, involvement of people, process approach, systems approach to management, continual improvement, factual approach to decision making, and mutually beneficial supplier relationship. Cronbach's Alpha test revealed that the responses were internally consistent, with results ranging from 0.856 (Process approach) to 0.944 (Security dimension). Shapiro-Wilk test showed that the responses were normally distributed (sig. 0.827), while multiple regression showed that the responses were free of multicollinearity problem with Variance Inflation Factor loadings ranging from 1.961 (Leadership) to 8.201 (Continual Improvement).

### **Dependent Variable - Organisational Management Practices**

In this study, this term was used to mean those activities in TIVET institutions that meticulously define how staff members provide and receive quality services in terms of administrative and academic functions in those institutions

### **Administrative Management Practices**

In order to gather information on organizational management practices among ISO 9001:2008 certified TIVET institutions in Kenya, this study used questionnaires comprising of fourteen (14) questions to obtain quantitative data on the following three constructs: capacity building, strategic quality planning, and quality assurance and quality results practice. Cronbach's Alpha test revealed that the responses were internally consistent, with results ranging from 0.919 (capacity building) to 0.925 (strategic quality planning). Shapiro-Wilk test showed that the responses were normally distributed (sig. 0.882).

### **Instructional Management Practices**

To obtain information on instructional management practices among ISO 9001:2008 certified TIVET institutions in Kenya, this study used questionnaires comprising of fourteen (14) questions to obtain quantitative data on the following three constructs: availability of instructional materials, pedagogy and instructional preparation, and assessment and evaluation. Cronbach's Alpha test revealed that the responses were internally consistent, with results ranging from 0.901 (availability of instructional materials) to 0.944 (assessment and evaluation). Shapiro-Wilk test showed that the responses were normally distributed (sig. 0.817).

### **Moderating Variable - Organisational Size**

The moderating variable (organizational size) was measured using the total number of students and coded using the dummy coding system 1=Small TIVET (students≤1200), and 2=Large TIVET (students>1200 (Dhanaraj, Lyles, Steensma, &

Tihanyi, 2004; Tsang, Tri, & Erramilli, 2004). This was done because of its simplicity and ease of interpretation of results when making comparisons between different groups.

**MODEL AND ANALYSIS**

Using the moderated multiple regression, the moderating effect of organizational size was analyzed by interpreting the R<sup>2</sup> change in the model summaries and the regression coefficients for the product term obtained from the model summaries. To determine the presence of moderating effect, the OLS model (Y=β0+ β1X+ β2Z+e) was then compared with the MMR model (Y=β0+ β1X+ β2Z+ β3X\*Z+e), where Y=Dependent Variable, X=Implementation of Quality Management Systems, Z=a hypothesized binary grouping moderator of organizational size

(large vs Small), X\*Z=product term between predictors, β0=the intercept of line-of-best-of-fit value of Y when X=0, β1=least squares estimate of the population regression coefficient for X, β2= least squares estimate of the population regression coefficient for Z, β3=the sample-base least squares estimate of the population regression coefficient for the product term, e=the error term.

**RESULTS**

**Moderating Effect of Organisational Size on the Relationship between Implementation of Quality Management Systems and Administrative Management Practices**

Table 1 below shows a summary of the results.

Table 1: Model Summary of Moderating Effect of Organizational Size on the Relationship between Quality Management Systems and Administrative Management Practices

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std Error	R <sup>2</sup> Change	F Change	Sig.
1	.727 <sup>a</sup>	.528	.524	.690	.528	138.129	.000
2	.733 <sup>b</sup>	.537	.531	.685	.009	4.881	.028

a. Predictors: (Constant), Zscore QMS, Zscore ORGSIZE

b. Predictors: (Constant), Zscore QMS, Zscore ORGSIZE, ZscoreQMS\*ZscoreORGSIZE

c. Dependent Variable: Zscore AMP

Source: Research Data (2015)

Table 1 shows that for Model 1, R=0.727, R<sup>2</sup>=0.528 and F (2,247) =138.129, p=0.000. Model 2 shows the results after the product term (ZQMS\*ZORGS) was included in the equation. The results in the table show that there was an R<sup>2</sup> change of 0.009, F (1, 246) =4.881, p = 0.028, after the product term was included. The findings led to the conclusion that organizational size moderates the relationship between the independent and dependent variables. In other words, organizational size explains 0.9% variance in administrative management practices over

and above the variance explained by implementation of quality management systems. Therefore H<sub>01</sub> was safely rejected.

**Moderating Effect of Organisational Size on the Relationship between Implementation of Quality Management Systems and Instructional Management Practices**

Table 2 below shows a summary of the results.

Table 2: Model Summary of Moderating Effect of Organizational Size on the Relationship between Quality Management Systems and Instructional Management Practices

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std Error	R <sup>2</sup> Change	F Change	Sig.
1	.745 <sup>a</sup>	.555	.552	.669	.555	154.254	.000
2	.781 <sup>b</sup>	.609	.605	.629	.054	34.052	.000

a. Predictors: (Constant), Zscore QMS, Zscore ORGSIZE

b. Predictors: (Constant), Zscore QMS, Zscore ORGSIZE, ZscoreQMS\*ZscoreORGSIZE

c. Dependent Variable: Zscore IMP

Table 2 shows that for Model 1, R=0.745, R<sup>2</sup>=0.555 and F (2,247) =154.254, p=0.000. Model 2 shows the results after the product term (ZQMS\*ZORGS) was included in the equation. The results in the table show that there was an R<sup>2</sup> change of 0.054, F (1, 246) =34.052, p = 0.000, after the product term was included. The findings led to the conclusion that organizational size moderates the relationship between the independent and dependent variables. In

other words, organizational size explains 5.4% variance in instructional management practices over and above the variance explained by implementation of quality management systems. Therefore H<sub>02</sub> was safely rejected.

## DISCUSSION AND CONCLUSION

### **Moderating Effect of Organizational Size on the Relationship between Quality Management Systems and Improvement in Administrative Management Practices**

According to Sazali, Haslinda, Jekak, & Raduan (2009), empirical studies have affirmed that organizational size has a significant effect on: strategic planning and cooperation (Hagedoorn & Schakenread, 1994), propensity of the organization to develop competitive advantage and improvement in performance (Porter, 1980), and organizational learning (Marquardt & Reynolds, 1994). Some scholars contend that large organizations tend to have a higher level of flexibility for successful implementation of quality management issues because of the diversity of their resources (Boeker, 1991).

In contrast, other authors hold that only small organizations have greater flexibility to adapt quality management interventions because they can respond more quickly and information flow is faster (Macdonald, 1995; Quinn, 1985). Empirical studies such as Sazali et al., (2009) found out that organizational size significantly moderates the relationship between technology transfer and human resource performance, although the moderating effect was not significant for corporate performance. Sakhivel et al., (2005) found out that size of institutions was not a determining factor when comparing student's satisfaction of academic performance between ISO certified and non-ISO certified institutions.

Following past studies on organizational size (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004; Sazali et al., 2009; Tsang, Tri, & Erramilli, 2004), this study measured organizational size by the total number of students and coded using the dummy coding system 1=small TIVET (students $\leq$ 1200) and 2=large TIVET (students >1200). The OLS and MMR models were compared and the results showed that there was an  $R^2$  change of 0.009,  $F(1, 246) = 14.848$ ,  $p = 0.028$ , after the product term was included. The findings led to the conclusion that organizational size moderates the relationship between the independent and dependent variables. In other words, organizational size explains 0.9% variance in organizational management practices over and above the variance explained by implementation of quality management systems. The findings support the findings by Sazali et al., (2009) on the moderating effect of organizational size on the relationship between technology transfer and human resource performance, and literature on organizational size by Hagedoorn & Schakenread (1994); Porter (1980); and Marquardt & Reynolds (1994). The findings however contrast the results of Sazali et al., (2009) on the moderating effect of organizational size on the relationship between

technology transfer and corporate performance; Sakhivel et al., (2005), and literature on organizational size by Macdonald (1995; and Quinn (1985).

### **Moderating Effect of Organizational Size on the Relationship between Quality Management Systems and Improvement in Instructional Management Practices**

Sazali, Haslinda, Jekak, & Raduan, (2009) posit that organizational size has a significant effect on: strategic planning and cooperation (Hagedoorn & Schakenread, 1994), propensity of the organization to develop competitive advantage and improvement in performance (Porter, 1980), and organizational learning (Marquardt & Reynolds, 1994). Some scholars contend that large organizations tend to have a higher level of flexibility for successful implementation of quality management issues because of the diversity of their resources (Boeker, 1991). In contrast, other authors hold that only small organizations have greater flexibility to adapt quality management interventions because they can respond more quickly and information flow is faster (Macdonald, 1995; Quinn, 1985). Empirical studies such as Bae (2007) found out that there is significant relationship between ISO certification and students' attendance rates in schools. However, it was suggested that standardization, a core mechanism of ISO standards may be fundamentally incompatible with institutional features such as diversity and size of schools. Similarly, Sakhivel et al., (2005) found out that ISO certified institutions offer quality education compared to non-ISO certified institutions. Conversely, the study acknowledged that size of institutions was not a determining factor when comparing student's satisfaction of academic performance between ISO certified and non-ISO certified institutions.

Following past studies on organizational size (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004; Sazali et al., 2009; Tsang, Tri, & Erramilli, 2004), this study measured organizational size by the total number of students and coded using the dummy coding system 1=small TIVET (students $\leq$ 1200) and 2=large TIVET (students >1200). The OLS and MMR models were compared and the results showed that there was an  $R^2$  change of 0.054,  $F(1, 263) = 34.054$ ,  $p = 0.000$ , after the product term was included. The findings showed that organizational size explains 5.4% variance in instructional management practices over and above the variance explained by implementation of quality management systems.

The findings support the findings by Sazali et al., (2009) on the moderating effect of organizational size on the relationship between technology transfer and human resource performance, and literature on organizational size by Bae, (2007); Hagedoorn &

Schakenread (1994); Porter (1980); Sakthivel et al., (2005); and Marquardt & Reynolds (1994). The findings however contrast the results of Sazali et al., (2009) on the moderating effect of organizational size on the relationship between technology transfer and corporate performance; Sakthivel et al., (2005), and literature on organizational size by Macdonald (1995; and Quinn (1985).

### RECOMMENDATIONS

This study has empirically demonstrated that students' enrollment moderates the relationship between implementation of ISO 9001:2008 quality management principles and organizational management practices. It is the view of this study that this moderation is magnified with very high and very low rates of student enrollments compared to institutional capacities. As such, because under enrollment and over enrolment may work against the consequential benefits of quality management systems, ISO certified TIVET institutions should moderate their students enrollment rates with their institutional capacities.

The scale and debate on the moderating effect of organizational size is quite extensive and even more multifaceted at the educational service provision platform. To generate firm conclusions on the effect of organizational size on the relationship between implementation of quality management systems and organizational management practices, there is need for more studies to allow for further assessment of this effect size debate. In order to gain better understanding of the moderating effect of organizational size, future research could be conducted to examine the moderating effect of other organizational size measures such as number of staff, range of programs, and number of campuses on the relationship between implementation of quality management systems and performance outcomes in ISO certified educational institutions.

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