

## The Mediating Role of Student Satisfaction between Quality Management Principles of ISO 9001:2008 and Communication Behavior in Higher Education

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**Abstract:** ISO 9001:2008 is a customer-oriented quality management system and in higher education institutions (HEIs), it is designed to ensure quality of teaching and learning process delivered to students. In a highly competitive higher education market, Student Satisfaction (SS) and positive Communication Behavior (CB) among students are important to sustain loyalty of students towards the HEIs. Public universities in Malaysia are concerned about ensuring quality of higher education services and ISO 9001:2008 is adopted to manage quality of teaching and learning process. Recent trend in Malaysia's public HEIs highlighted that determining students' CB, satisfaction and the practice of Quality Management Principle (QMP) of ISO 9001:2008 are crucial for the public universities to sustain their performances in term of getting higher quality rating, higher enrollment of students, loyalty of the students towards the HEIs and securing compliance to the accreditation bodies. Most previous studies on quality of higher education addressed the effectiveness of ISO QMP from the service provider perspective and research assessing the QMP and its effect on SS and CB from the service receiver perspective is less emphasized. This issue led to the important of studying how the QMP is linked to the SS and CB in higher education setting as well as the mediating role of SS between the QMP and CB. The conceptual model of this study features four constructs of QMP, students' perceived outcome of the teaching and learning performance to determine SS and word of mouth of services marketing literature to measure positive CB. Using stratified random sampling procedure, a questionnaire was distributed to final year students of ISO certified faculties in a public university. Hierarchical regression analysis performed on the 351 completed questionnaires revealed that there are significant correlations between variables of this study in the first three regression models. In regression four, that is when SS and CB were controlled, the mediating effect of SS between the QMP and CB was observed in higher education setting. This study highlights the need to give greater focus on SS as mediator for improving positive CB to spread out favorable image of public universities in domestic and global higher education markets.

**Key words:** ISO 9001, QMP, student satisfaction, communication behavior, higher education

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### INTRODUCTION

Total Quality Management (TQM) and ISO 9001 are two management approaches of ensuring quality of products and services delivered to customers. Both TQM and ISO implementation were initiated in industry and manufacturing companies and they can be applied in service industry including in higher education (Sayeda *et al.*, 2010). The ISO 9000 was implemented in educational institutions in Europe since 1990s, followed by HEIs in the United States and Asia. In Malaysia higher education, among public universities that are certified to the standard are Universiti Teknologi MARA, Universiti Malaysia Terengganu, Universiti Teknologi Malaysia,

Universiti Malaya, Universiti Utara Malaysia, to name a few (Azizaman *et al.*, 2015). The current version of ISO 9001:2008 has attracted public universities in Malaysia to adopt the system as a way of ensuring quality of higher education because of its orientation to process and customer satisfaction. However, the effectiveness of ISO 9001:2008 implementation in higher education setting has been debated especially in term of its ability to improve quality and customer satisfaction (Gotzamani and Tsiotras, 2002) as well as in meeting all specified requirements of various stakeholders.

Students are the direct recipient of teaching and learning services and therefore, their satisfaction is important in determining effectiveness of ISO quality

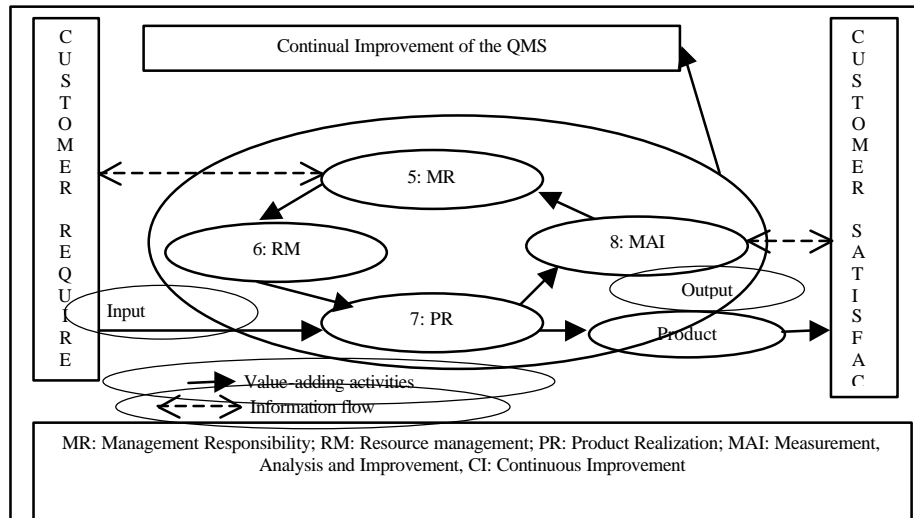


Fig. 1: A Process-based of ISO 9001:2008

management system. Further, in service marketing literature, Communication Behavior (CB) is crucial because it leads to the favorable word of mouth and loyalty of customers towards an organization. In Malaysia HEIs, students' CB, satisfaction and the practice of Quality Management Principles (QMP) of ISO 9001:2008 are crucial for public universities to sustain their performances in term of getting higher quality rating, higher enrollment of students, favorable word of mouth and loyalty of the students. Specifically as they are certified to ISO certification: demonstrating the effect of the QMP on student satisfaction is a requirement of the ISO Standard and it must demonstrated during the ISO audit process; when students are satisfied, they would Communicate positively (CB) and stay loyal to the universities and this could lead to sustainable admission of students (Thomas and Galambos, 2004), intention to further their studies and participate in various universities' programs; both satisfaction and positive CB of students as a result of QMP practices serve as an indicator of effectiveness of ISO quality management system for the universities.

In a competitive higher education market, high level of QMP is required till the customer satisfaction (Ahmad *et al.*, 2012). In service marketing literature, service quality will lead to customer satisfaction (ACSI) and this in turn will direct customers to say positive things about the service. Positive Communication (CB) is a result of customer satisfaction (Hermawan, 2001) and this indicates that satisfied customers have high propensity to communicate positively about the service. This implies that when students are satisfied with the implementation of QMP of ISO 9001, they might involve

in positive communication behavior. In addition, satisfaction also serves as mediator between quality services and CB (Hermawan, 2001; Chaniotakis and Lympelopoulou, 2009). However, these relationships are less emphasized in higher education context, particularly in the ISO certified public universities. Thus, this research is carried out to fill this empirical gap, i.e., to examine the role of customer satisfaction as mediator between the QMP and CB in higher education context. Specifically, this study attempted to examine the mediating role of student satisfaction between QMP of ISO 9001:2008 and CB in ISO certified public universities. This study integrates QMP of ISO and services marketing literatures and therefore enriches their application in higher education setting.

**Literature review:** ISO 9001:2008 provides standards and instructional guidelines to establish a quality management system. It is a generic model providing requirements for designing, developing and implementing a QMS. These requirements are organized into five clauses-Quality management system, management responsibility, resource management, product realization and Measurement, analysis and improvement. ISO 9001:2008 adopted a process-based QMS and the interrelationship between those clauses is shown in Fig. 1.

There are eight quality management principles of ISO 9001:2008 QMS-customer focus; leadership; process approach; involvement of people; system approach to management; factual approach to decision making; mutually beneficial supplier relationship and continual improvement. ISO 9001:2008 quality management system implementation involves these eight QMP and they must

Table 1: The QMP of ISO 9001:2008

The QMP	Explanation
Customer focus	Organizations must identify who are their customers and their needs must be determined and fulfilled. Practicing this principle also requires an organization to offer products or deliver services that are exceeding customer expectations
Leadership	Effective leadership is important to ensure effective implementation of the ISO QMS. This principle requires top management to determine future direction of the organization and to provide adequate resources and training to implement the system
Total employee involvement	All employees of various functions and levels must be involved in the implementation of ISO QMS. Adhering to this principle recognizes that employees and their abilities should be used to full effect for business success
Process approach	This principle deals with efficiency and the understanding that appropriate processes will speed up activities, thus, reducing costs due to effective use of resources, improved and consistent results and focused improvements
System approach management	Achieving greater efficiency require organizations to foster a strong relationship between various business elements. Therefore, to this principle requires that multiple processes are managed together as a system throughout the entire organization
Factual approach to decision making	Practicing the principle of factual approach to decision making allows decisions to be made with clarity and this will leads to improved understanding of the marketplace, process capability, QMS performances and product conformity. It requires organizations to collect and analyze data systematically and continuously in the process of making decision
Continual improvement	Continual improvement involves improving quality of products, services, systems, processes, etc. on a continuous basis. This practice enhances organizational ability to embrace new opportunities, organizational flexibility and improved performance
Mutually beneficial supplier relationship	This principle relates to effective supply chains management. In ISO certified organizations, a strong relationship between the organizations and their suppliers is important to ensure quality of supplied or purchased products. This practice will contribute to the higher productivity and encourage smooth operation between the organizations and the suppliers



Fig. 2: The conceptual model of the study

be incorporated in the system to drive organizations towards improved performance. Table 1 presented the QMP of ISO 9001:2008 and its explanation.

Based on the service quality and customer satisfaction literatures, the practice of QMP is expected to contribute to the effectiveness and business performance, measured in term of fulfilling customer satisfaction (Ahmad *et al.*, 2012) and positive CB (Hermawan, 2001; Ahmad *et al.*, 2012). Theoretically, service quality will lead to customer satisfaction (Hermawan, 2001) and positive communication is a result of customer satisfaction (Hermawan, 2001). Satisfaction is a person’s feeling of pleasure or disappointment resulting from comparing a product received performance (or outcome) in relations to the person’s expectation and it serves as a mediating role between the service quality and customer loyalty and positive word of mouth, i.e., the CB (Hermawan, 2001; Chaniotakis and Lymperopoulos, 2009).

ISO certified organizations are found to have better practices of QMP (Teong *et al.*, 2006) and these practices positively affect students’ satisfaction of academic performance (Sakthivel *et al.*, 2005). Previous studies indicated that the customer/student satisfaction (Gotzamani and Tsiotras, 2002; Talib *et al.*, 2010) and their

communication behavior (Hermawan, 2001) were affected by the quality of service/QMP. Further, customer satisfaction was regarded as mediator to the QMP and CB of many studies (Hermawan, 2001; Chaniotakis and Lymperopoulos, 2009). Thus, a conceptual model of this study is established as depicted in Fig. 2. In this model, student satisfaction is hypothesized to have the mediating effect between the QMP and CB. Construct of QMP Table 1 in higher education includes; student focus, management by fact, factual approach to decision making, continuous improvement and employee involvement/people participation (Arcaro 1995; Kanokwan, 2003). The QMP is somewhat similar with what being addressed in the QMP of ISO 9001:2008. Therefore, they are adapted with the QMP of ISO 9001:2008 to measure the QMP from the perspective of service receiver, i.e., the students.

In higher education context, students are internal customers and determining and fulfilling their requirements towards the teaching and learning is important. Student satisfaction is a measure of quality of higher education services and in ISO certified faculties, evidence of student satisfaction must be demonstrated. The adoption of TQM and ISO in higher education is

actually to apply the principle of customer satisfaction to students as the recipient of the teaching and learning service (Hartman and Schmidt, 1995; Hermawan, 2001). Student satisfaction is the outcome of multidimensional process and it is depending on the goal and expectation of the students (Hartman and Schmidt, 1995; Hermawan, 2001; DeShields *et al.*, 2005). Thus, students' satisfaction is determined based on the their perceived outcome of the teaching and learning performance (Hartman and Schmidt, 1995). The outcome includes improved writing and verbal communication skills, critical thinking and analysis skills (Hermawan, 2001). It shows that how student perceived performance and perceived outcome of education or teaching and learning will influence their student satisfaction. In ISO certified universities, this perceived outcome can be measured based on the generic competencies specified in the academic programs.

CB is a form of interpersonal communication of consumers regarding their personal experiences with a firm or a product. It is a communication about products and service 'between people who are perceived to be independent of the company providing the product or services, medium perceived to be independent of the company (Hughes, 2005). In higher education setting, intention of students to say positive things about the universities include instructional cues, academic support and non-academic cues and this CB was influenced by students satisfaction (Hermawan, 2001). When customers are satisfied with the quality of services they received, they are willing to inform others about the service (Swan and Oliver, 1989; Hermawan, 2001). In contrast, dissatisfaction and complaining behavior of students on quality of higher education influence negative word of mouth. Measure of CB include willingness to say positive things about the universities, voluntarily to inform others regarding the services received and recommending others to use the service (Swan and Oliver, 1989; Zeithaml and Bitner, 1996; Hermawan, 2001).

## **MATERIALS AND METHODS**

A questionnaire was developed to measure the QMP, students' satisfaction and their communication behavior in the five ISO certified faculties of a Malaysia's public university. The 22 items of four dimensions of QMP were adapted from the works by Lewis and Smith (1994), Arcaro (1995) and Kanokwan (2003) and the QMP of ISO 9001:2008. The four QMP used in this study are student focus, total employee involvement, continuous improvement and factual approach to decision making. For student focus, seven items were developed, five questions (total employee involvement) and five items

each for continuous improvement and factual approach to decision making. The other four QMP leadership, system approach to management, process approach and mutually beneficial supplier relationship are difficult to assess from the service receivers (students) perspective, thus they were excluded from this study. Seven items of students' satisfaction were constructed based on the students' perceived outcome of the teaching and learning performance (Hartman and Schmidt, 1995; Hermawan, 2001). The outcome is determined based on the technical knowledge, skills and generic competencies specified in the program specifications of the faculties. For CB, four items were developed (Swan and Oliver, 1989).

All final year students pursuing their study in the Faculties serve as population of the study. Based on the Krejcie and Morgan of sample size determination, 364 questionnaires were distributed to the students using stratified random sampling procedure. The final year students were chosen because they are in a better position as compared to year 1-3 students in term of measuring the extent to which they are satisfied with the learning outcomes acquired throughout their study in the faculties.

Prior to the Exploratory Factor Analysis (EFA), the KMO measure of sampling adequacy for QMP is 0.894, 0.878 for student satisfaction and 0.809 for CB (supported with Bartlett's test of Sphericity of 0.00). Based on the result of EFA (first round) for QMP, 22 items were loaded in the four dimensions of QMP; however, 3 items with factor loading of <0.5 were omitted. In the second round of EFA, four components with eigenvalues of >1 were extracted with total variance explained of 65.4%. All the remaining questions (19 items) with factor loading of <0.5 were retained. For student satisfaction, the EFA produced one component (student satisfaction) with total variance explained of 58.95%. For CB, all the seven items were loaded in one component with total variance explain of 71.64%. All questions of SS and CB were retained based on their factor loading scores of >0.5.

For reliability analysis, the Cronbach's alpha scores for the four constructs of QMP-students focus, total employee involvement, factual approach to decision making and continuous improvement are >0.8 which are 0.869, 0.867, 0.856 and 0.861, respectively (0.838 for the QMP). For student satisfaction and CB, the scores are 0.884 and 0.894, respectively. Thus, all variables used in this study are valid and reliable for inferential analysis.

## **RESULTS**

Hierarchical Multiple Regression Analysis was performed to determine the mediating effect of student

Table 2: Result of Hierarchical multiple Regression Analysis (HRA) of the mediating effect of Student Satisfaction (SS) between Quality Management Principles (QMP) and Communication Behavior (CB)

IV	The mediating analysis Step 1: QMP-CB (Step 1)			Step 2: QMP-SS (Step 2)			Step 3: SS	Step 4: HRA QMP and SS-CB				
	Coef.	t-values	Sig.	Coef.	t-values	Sig.	(Mediator)-CB	R <sup>2</sup>	Sig.	Coef.	t-values	Sig.
SF	0.298	5.841	0.000	0.384	7.76	0.000	Coef: 0.418	0.108	0.000	0.162	3.100	0.002
FADM	0.360	7.217	0.000	0.429	8.88	0.000	t-value: 8.605	0.085	0.000	0.222	4.210	0.000
TEI	0.328	6.486	0.000	0.399	8.11	0.000	Sig: 0.000	0.098	0.000	0.192	0.368	0.000
CI	0.411	8.419	0.000	0.444	9.25	0.000		0.069	0.000	0.280	5.360	0.000

F-change and Sig. of F-change for SF (46.933, Sig. 000); FADM (37.782, Sig. 000); TEI (43.108, Sig. 000) and CI (70.887, Sig. 000)

\*\*Significant at .001, \*at 0.005

satisfaction (SS) between QMP and CB. As presented in Table 2, the conditions of Step 1-4 are met (Baron and Kenny, 1986). Specifically, the result shows that: in Step 1, all the four constructs of QMP are significantly correlated with the dependent variable of CB student focus-SF ( $\alpha = 0.298, -5.841, \text{Sig.} = 0.001$ ), Factual approach to decision making-FADM ( $\alpha = 0.360-7.217, \text{Sig.} = 0.001$ ), total employee involvement-TEI ( $\alpha = 0.328-6.486, \text{Sig.} = 0.001$ ) and continuous improvement CI ( $\alpha = 0.411-8.419, \text{Sig.} = 0.001$ ).

In Step 2, all dimensions of QMP are significantly correlated with the dependent variable of SS-SF ( $\alpha = 0.384, t = 7.76, \text{Sig.} = 0.001$ ), FADM ( $\alpha = 0.429-8.88, \text{Sig.} = 0.001$ ), TEI ( $\alpha = 0.399, -8.11, \text{Sig.} = 0.001$ ) and CI ( $\alpha = 0.444, -9.25, \text{Sig.} = 0.001$ ).

The third condition is met in Step 3 in which SS as the mediator is significantly correlated to the CB ( $\alpha = 0.418, t = 8.605, \text{Sig.} = 0.001$ ).

In Step 4, the result shows all the correlations between four constructs of QMP and CB are significantly reduced when the mediator variable of SS is included in the model. Specifically, SF (0.298-0.162,  $p < 0.05$ ) when the mediator is included in the model (RSQUARE change = 0.108,  $p < 0.01$ ); FADM (from 0.360-0.222,  $p < 0.05$ ) when the mediator is included in the model (RSQUARE change = 0.85,  $p < 0.01$ ); TEI (from 0.328-0.192,  $p < 0.05$ ) when the mediator is included in the model (RSQUARE change = 0.98,  $p < 0.01$ ) and CI (from 0.411-0.280,  $p < 0.05$ ) when the mediator is included in the model (RSQUARE change = 0.69,  $p < 0.01$ ). Therefore, it can be concluded that SS partially mediate the relationship between QMP of ISO 9001:2008 and CB.

**DISCUSSION**

As mentioned earlier, this study attempted to examine the mediating effect of SS between QMP and CB in higher education context. The hierarchical regression analysis revealed that the QMP of ISO is positively and significantly affected students' satisfaction; students CB was significantly and positively influenced by their satisfaction. The QMP is significantly and positively correlated with CB and (d) Students' satisfaction partially

mediates the relationship between the QMP of ISO 9001:2008 and positive communication behaviour of students. Therefore, in higher education service, students' satisfaction has a mediation role in the relationship between QMP of ISO 9001:2008 and positive communication behaviour of student.

The finding on the mediating effect of SS between QMP and CB is consistent with the studies by Hermawan (2001) and Chaniotakis and Lymperopoulos (2009). This implies that to stimulate positive word of mouth among students, it is necessary for public universities to ensure student satisfaction is fulfilled. As satisfaction of students is determined by the outcome of teaching and learning performance, therefore ensuring quality or performance of teaching and learning process is crucial. Suggestion to maintain and sustain satisfaction of student includes: monitoring of changes in students' expectation and try to meet their expectation on a continuous basis (SF); ensuring all staff are committed to deliver quality of Teaching and Learning (TEI); continuous usage of data related to the students' educational background and academic performance (FADM) to ensure effective decision making related to the student academic performance and embarking on continuous improvement in the service delivery, for instance use of latest technologies in teaching and learning and process benchmarking to improve the process standards and outcomes.

**CONCLUSION**

This research finding highlights that the mediator of student satisfaction between QMP and CB was also observed in the public HEIs context. Therefore, to ensure positive word of mouth among their students, it is important for the HEIs to focus on fulfilling and sustaining student satisfaction. As the faculties are certified to ISO 9001:2008, the practice of the QMP had contributed to the satisfaction of their students and this had contributed to their willingness to say positive things about the faculties, thus serving as 'indirect marketers' for the institutions. Enhancing SS should focus on the technical skills and generic competencies of students

because these two learning outcomes are directly related to the performance of teaching and learning.

The mediating effect of SS between QMP and CB should be further validated by extending this study to include all ISO certified faculties or public and private universities in Malaysia. Further, items of QMP should include other components of teaching and learning, for example quality of supervision and academic advisory, to determine the practices of QMP from the student perspective.

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