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Relationship between Internal Quality Audit and Quality Culture toward Implementation Consistency of ISO 9000 in Private College of Sulawesi Province, Indonesia

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Abstract

The study aims to find out the influence of internal quality process on the growth of quality culture in private college. This study is treated toward 178 lecturers of 25 private colleges in Sulawesi, Indonesia by means of questionnaire. Confirmatory factor analysis applied to assess the reliability of validity and measurement model. Relationship between latent variable is checked by Structural Equation Modeling (SEM). This finding reveals the importance of facilitating personal involvement in organization and certainty toward implementation of job description in purpose to maximize the use of personal competence, wisdom, skill, and creativity. Simultaneous, multi-stage and systematic internal audit process will become forging experience for staffs, so it will form habits, beliefs, behavior, and attitude. The formation will bring changes of quality culture in private college. Sample is only taken from private college in Sulawesi, Indonesia and it does not involve state college. The finding may not be generalized for the other colleges. Hence, the further study is suggested to complete the gap. Considering the rise of quality assurance standard demand for college, then identification on factors which can grow up implementation consistency of quality management system is an urgent. Therefore, it is recommended that top management of college pay more attention to the process of internal quality audit systematically and continually. This paper explains factors affecting the growth of quality culture as the basis for implementation consistency of ISO 9000 quality management system in private college.

Keywords: TQM, ISO 9000, private college, quality culture, internal quality audit

1. Introduction

Recently, there issues a great demand on colleges to be more accountable, efficient, effective, and customer-centric. Simply put, the colleges are obliged to carry out a qualified education process. What is meant by qualified is the totality of condition and characteristics of input, process, output, and outcomes which are assessed based on some determined standard. In order to achieve this quality standard, the college has to be active in establishing comprehensive and integrated internal quality underwriting. One of adoptable concepts of quality management system in the college is Total Quality Management (TQM), where in education world, it is called as Total Quality Management in Education (TQME). This concept encloses all functions of educational organization into holistic philosophy which is established based on quality concept, teamwork, productivity, achievement, and customer satisfaction.

Implementation of quality management system in Indonesian colleges has been clarified in the government regulation of the Republic of Indonesia No. 19 of 2005 on national standard of education. Related to this matter, Shutler and Crawford (1998) states that ISO 9000 as the international standard for quality management system could be applied well in the college. Today, this ISO 9000 has been adopted by most of colleges in Indonesia. Unfortunately, implementation of ISO 9000, specifically in private colleges in Sulawesi, Indonesia has not been optimally applied. Accredited data of National College Accreditation Council (ID: Badan Akreditasi Nasional Perguruan Tinggi/BAN-PT) in 2013, as authority council of external quality audit for college quality certification in Indonesia, states that from 1437 study programs spread on 354 private colleges, amount of accredited college with grade A (very good) are only 8 colleges (0.55%), grade B (good) are 185 colleges (12.8%), grade C

(average) are 575 colleges (40%), and the other 669 colleges have not been accredited (46.55%). However, there is only one accredited private college which indicates that the required quality standard in accreditation of National College Accreditation Council have not been able to guarantee the improvement of college internal process through ISO 9000 quality management system. Meanwhile, the finding of Espinoza and González (2013), states that accreditation system may assist in creating persistent procedure which can raise internal process for quality assurance.

Various case study findings reveal that implementation of quality management system requires continual effort and resource commitment, especially if it relates to changes of behavior, work system, and culture. O'Mahony and Garavan (2012) identify four main factors for the effective implementation of quality management system in college, i.e. leadership, involvement of stakeholders, implementation of quality process, and cultural changes. Just as the finding of Trivellas and Dargenidou (2009), they propose that organizational culture and staff satisfaction affect the received service quality. This finding is also supported by Ali and Musah (2012) that there is a significant correlation between quality culture and labor performance in Malaysian college.

On the other side, Ehlers (2009) found that quality development of education in college is often limited to bureaucratic documentation only, but it ignores quality development as organizational culture holistically. In order to avoid document system-based implementation of ISO 9000 quality management system, it requires an internal audit process which is internally driven to monitor consistency of the whole process as an integrated quality system.

As explained above, this study aims to find out that: a) If there is significant effect of internal quality audit process on the growth of quality culture. b) If internal quality audit affects implementation consistency of ISO 9000 quality management system in private college.

2. Relationship between TQM, ISO 9000, and Accreditation of National College Accreditation Council

One of adoptable quality management concepts is TQM. It aims to increase the value continually to the customer by means of designing and keeping improving the system as well as organizational process (Selvaratnam, 2005, through ISO 9000 based on principles of Plan, Do, Check, Action (*continuous quality improvement*). According to Shutler and Crawford (1998), ISO 9000 as an international standardized quality management system may be well applied in the college. Therefore, recently, ISO 9000 is adopted by most of colleges, especially by colleges in the Indonesian eastern region. As an integrated system, implementation of ISO 9000 has to be monitored and evaluated in order to know effectiveness and capability of the process, effectiveness of resource usage, performance result of product and process, and the improvement activities which have been performed consistently by audit. According to Kettunen (2012), audit will assist institution in taking corrective action to change the process description or maintain the process. Audit may determine the achieved degree of customer satisfaction (ISO 19011:2011 Guidelines for Auditing Management System, International Organization for Standardization, 2011).

Related to this matter, National College Accreditation Council is an institution to which authority to evaluate, assess, as well as to decide quality rank and status of institution is given based on the determined quality standard. Therefore, purpose of accreditation is to guarantee that every accredited educational unit have met the quality standard as determined by National College Accreditation Council with reference to national standard of education. Similar to the finding found by Espinoza and González (2013), they state that accreditation system may assess in making fixed procedure for quality assurance which will increase internal process.

3. Quality Culture in TQM

Definition of quality culture, according to Gryna and Watson (2001), is a pattern of habits, beliefs, and behavior concerning quality. Habit is personal character arising from forging life experience, environment, and nature characters. A belief is faith in the truth on something based on some events, either through personal experience or other people's experience. While, behavior emerges as a form of habits as appeared in surface both by what have we said and done.

According to Andrews (1987), success of TQM implementation is a commitment of all staffs in holistic process for the success of implementation by involving relationship of among people within the organization. Thus, top management has to contribute by giving strong commitment for TQM through strategic planning (Juran, 1989), while the staffs participate through empowerment practices and human resource involvement (Ahire & Dreyfus, 2000). Therefore, we have a notion that TQM will only be successfully implemented if quality culture in the organization became the main concern. Culture is interpreted as beliefs and values practiced by people of the organization (Sashkin & Kiser, 1993). There is a significant statistical correlation between quality culture and

labor performance in the college (Trivellas & Dargenidou, 2009; Ali & Musah, 2012).

4. Research Hypothesis

Ehlers (2009) proposes that quality development of education in college is often limited to bureaucratic documentation only, but it ignores quality development as holistic organizational culture. So does Temponi (2005) who states that implementation of quality management system in colleges does not only sue administrative commitment, but also the underlain culture. According to Gryna and Watson (2001), quality culture is described as habits, beliefs, and behavior. Herein, role of the top management through commitment and strategic planning (Juran, 1989) functions as facility and support of personal reflectivity to develop initiative of improvement and then implements it continually. According to Dahlgaard and Dahlgaard-Park (2006), there is an inclination that up to now, college tends to just focus more on intools and technical training than constructing appropriate institutional culture. Whereas, in order to ascertain staffs' consistency in implementing every process, internal quality audit has to be done. Systematic and continuous audit process to monitor the staffs' involvement and consistency in every process of quality management system will form quality culture gradually. In ISO 9000 clausula 8.2.2, internal audit process is classified into: a) systems audit, b) compatibility audit, and c) product audit.

Based on the description above, the following is working hypothesis:

H1: Internal quality audit affects significantly to quality culture.

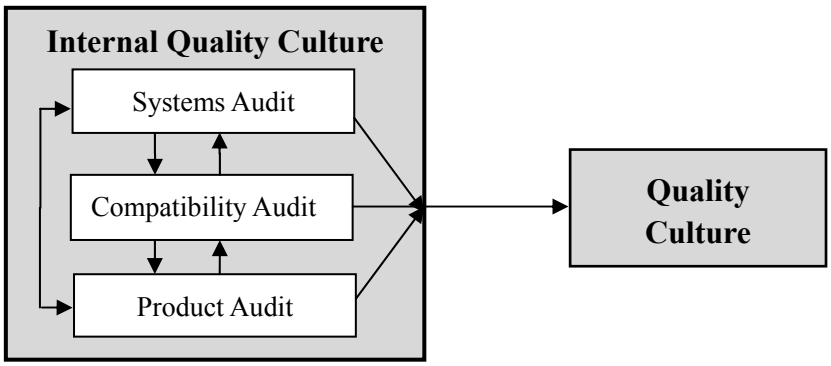

Figure 1. Conceptual model

5. Methodology

5.1 Data

Data sample in form of direct survey is distributed randomly to multiple private colleges in Sulawesi Province, Indonesia. From 300 questionnaires which are distributed randomly, 193 sheets were returned. Information of 15 questionnaires were incomplete, then it is only 178 sheets are considered as valid. This study belongs to confirmatory construct analysis with endogenous and exogenous variable by using structural equation model to examine causal relationship intensity of internal quality audit to quality culture. According to Ferdinand (2002), amount of required sample is 100-200 samples for maximum likelihood estimation technique. Table 1 shows technical characteristics of this study.

Table 1. Technical specification of confirmatory analysis

Sample	**: Lecturers of multiple private colleges**
Sampling location	: Sulawesi Island–Indonesia
Type of sample	: 178 lecturers from 25 private colleges consisting of: 12 (48%) universities, 3 (12%) institutes, 6 (24%) colleges, 4 (16%) academies, 11 (44%) private colleges in South Sulawesi, 3 (12%) private colleges in West Sulawesi, 4 (16%) private colleges in Central Sulawesi, 4 (16%) private colleges in North Sulawesi, and 3 (12%) private colleges in Southeast Sulawesi.
Sampling method	: Stratified random sampling
Sampling error	: 6.55%
Confidence level	: 95%; $p = q = 0.5$ (si $z = 1.96\%$)
Data collection	: Direct visit + post shipping
Date of fieldwork	: January-April, 2013

Measuring instrument

Measuring instrument uses indicators by means of assessment based on Likert scale (Likert, 1932). Point "1" means "strongly disagree" and "5" means "strongly agree". Measuring instrument is developed by adopting some relevant studies and references. Before collecting data, first, pretest is conducted to get feedback on the content, format, comprehensibility, and accuracy. Even though the utilized instruments are adopted from various previous studies, they may still be considered to be the new measuring instrument proposal. These utilized measuring instruments consist of systems audit, compatibility audit, product audit, and quality culture as presented in Table 2.

Table 2. Measuring instrument (main characteristics)

Calculation	Amount of Item	Adapted from	Concept
Systems audit	4	Quality Management System-Guidelines for the Application of ISO 9001:2000.	to determine if the institution have had system in conducting operation (institutional target, program, plan, procedure, commitment)
Compatibility audit	6	Quality Management System-Guidelines for the Application of ISO 9001:2000	to ensure if the procedure, work instruction, and plan are implemented consistently)
Product audit	4	Quality Management System-Guidelines for the Application of ISO 9001:2000	to determine if the product corresponds to specification as achievement rate of customer satisfaction.
Quality culture	4	Watson M.A., and Gryna, F.M. (2001:41)	to assess the staffs' habits, beliefs, behaviors, and attitude toward the quality.

5.2 Validation and Measurement Reliability

Conducted preliminary test is homogeneity test to examine validity. In order to evaluate measuring consistency, we use item-total correlation (Anderson & Gerbing, 1988). Variable score of each question item is correlated to total score of the item in one variable. If the item score correlates positively to the total score of item and it is higher than inter-correlation of inter-item, the instrument is valid. If indicator of item-total correlation and factor

loading are low, they have to be omitted (Bagozzi, 1981). This correlation uses correlation method of Product Moment Pearson > 0.4 (Singgih, 2000) as presented in Table 3. Meanwhile, measurement reliability is evaluated by Alpha Cronbach > 0.8 (Nunnally, 1979). As seen in Table 4, measurement instrument is strongly reliable based on the applied statistic since they reach above the required minimum limit.

Table 3. Measurement validity

Estimator							
Systems	Indicator	X1.1	X1.2	X1.3	X1.4		
Audit	Pearson correlation	0.721	0.889	0.884	0.799		
Compatibility	Indicator	X2.1	X2.2	X2.3	X2.4	X2.5	X2.6
audit	Pearson correlation	0.842	0.822	0.814	0.802	0.813	0.811
Product Audit	Indicator	X3.1	X3.2	X3.3	X3.4		
	Pearson correlation	0.752	0.740	0.778	0.715		
Quality Culture	Indicator	Y1	Y2	Y3	Y4		
	Pearson correlation	0.795	0.713	0.794	0.816		

Correlation is significant at the 0.01 level (2-tailed).

Table 4. Measurement reliability

Estimator	Systems audit	Compatibility audit	Product audit	Quality culture
Cronbach α	0.815	0.802	0.745	0.805
Valid (%)	88.1	88.1	88.1	88.1
Excluded (%)	11.9	11.9	11.9	11.9

5.3 Confirmatory Factor Analysis

Furthermore, by using structural equation modeling (SEM) and statistic software of AMOS 18 and by applying maximum likelihood method (Anderson & Gerbing, 1988), test is conducted to find out if the model have been fit to the data. Psychometric nature of the instrument such as reliability, dimension, convergent, and discriminant validity are also being examined. Confirmatory factor analysis reveals that the model is strongly fit based on the following criteria: Cmin/df = 1.385, RMR = 0.034m, RMSEA = 0.044, PNFI = 0.625, NFI = 0.835, RFI = 0.780, IFI = 0.948, TLI = 0.972, CFI = 0.946, and Chi-square = 177.343, as recommended by Anderson and Gerbing (1988) and Yilmaz (2004).

Then, construct validity test is conducted to discern if the indicators are a kind of part or it may explain a construct. As presented in Table 5, most of factor loadings are above 7.0. As a whole, this result gives support to dimension, convergent, and discriminant validity (Anderson and Gerbing, 1988). Besides, if the value of variance extracted is >0.5, it means that there is a relationship of inter-construct which is quite firm (Table 6).

Table 5. Convergent validity and discriminant validity (final data n = 187)

Estimator	Indicator	Estimate (factor loadings)
Systems audit (X1)	X1.1	0.769
	X1.2	0.776
	X1.3	0.819
	X1.4	0.789
Compatibility audit (X2)	X2.1	0.723
	X2.2	0.726
	X2.3	0.701
	X2.4	0.752
	X2.5	0.744
	X2.6	0.691
Product audit (X3)	X3.1	0.772
	X3.2	0.764
	X3.3	0.717
	X3.4	0.740
Quality culture (Y)	Y1	0.711
	Y2	0.735
	Y3	0.709
	Y4	0.703

Table 6. Variance extracted

			Estimate
Systems audit	<-->	Compatibility audit	0.657
Systems audit	<-->	Product audit	0.976
Compatibility audit	<-->	Product audit	0.819

6. Findings

Relationship of hypothesis is examined by using AMOS 18. Table 7 and Figure 2 shows that all of hypothesis relation is significant at credence rate of 95%. Data shows that, just as determined by the model, system audit has significant and positive influence on the quality culture. Then, compatibility audit also affects quality culture positively and significantly. Additionally, there is sufficient empirical evidence to declare that product audit affects quality culture positively. Based on Table 7, structural equation relating to quality culture formation reveals that almost 90% of variants may be explained by the effect of internal quality audit. It affirms conceptual model that internal quality audit affects quality culture. Concerning on goodness of fit of causal model, the result shows well founded compatibility between the model and the data.

Table 7. Tested hypothesis, structural coefficients, significant at P***<0.001

Hypothesis	Estimate	S.E	C.R	P	Causal relationship
Systems audit → quality culture	.795	.192	4.135	***	Yes
Compatibility audit → quality culture	.894	.202	4.424	***	Yes
Product audit → quality culture	.879	.215	4.079	***	Yes

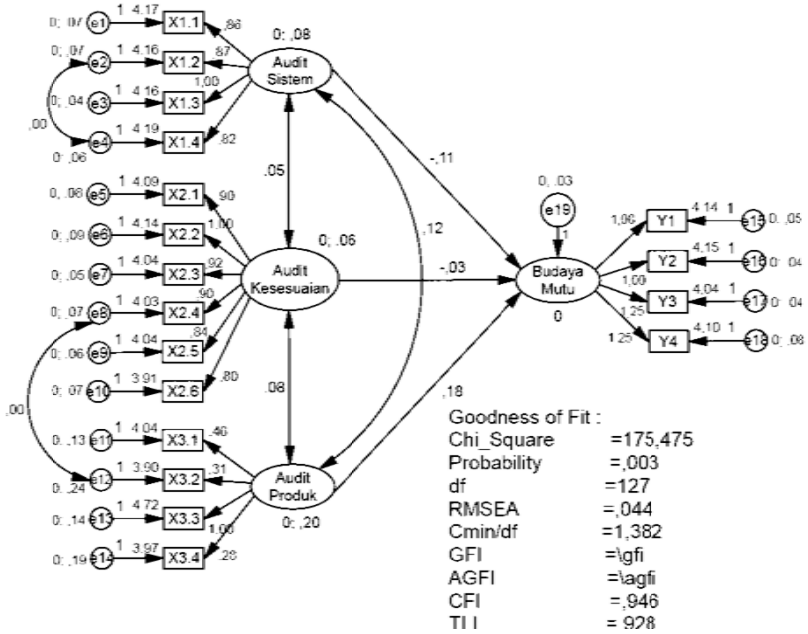

Figure 2. Overall model (Final model)

7. Discussion

TQM implementation in college institution in Indonesia is relatively new since the decision of the government regulation of the Republic of Indonesia No. 19 of 2005 on national standard education. As the consequence, college is left behind compared to the other institutions in encouraging TQM implementation. Based on various related literature consideration on TQM in college, it is only a few attention which discusses TQM practices grounded on staffs' aspect or individual level, especially if it relates to quality culture. Meanwhile, according to Baird et al. (2011), teamwork culture dimension is the most important factor in elevating TQM implementation. Sometimes, attention is focused more on intools training and technique than comprehension of human factor, i.e. how to construct appropriate institutional culture (Dahlgaard & Dahlgaard-Park, 2006).

This study contributes to literature on how internal quality audit process which is conducted systematically and continually may grow quality culture in the college. Factor analysis is conducted to 18 indicators related to internal quality audit and quality culture. This analysis delivers a solution which may explain the influence of internal quality audit on quality culture as presented in Table 7.

7.1 Compatibility Audit

Factor analysis shows that compatibility audit is the most influential variable on quality culture by loading factor of 0.894.The six observed variables in this compatibility audit are: management process (X2.1), personnel (X2.2), learning (X2.3), improvement (X2.4), feedback (X2.5), and continual process (X2.6). Value of loading factor for this variable is higher than 0.6. For such, policy maker in college has to facilitate personal involvement in organization as well as certainty on the implementation of job description to maximize the use of personal competence, wisdom, skill, and creativity. Just as proposed by Schmalensee (1991) that involvement, empowerment, and internal customer satisfaction is so important for the success of service marketing. For improvement purpose in the process, it is important to get feedback that allows organization keep inventing new values. Plan of development and improvement program for education quality is distributed periodically.

7.2 Product Audit

The second most influential variable is product audit by loading factor of 0.879. The four observed indicator variables consist of main competence (X3.1), featured competence (X3.2), other competence (X3.3), and soft skill (X3.4). Value of loading factor for these variables is higher than 0.6 too meaning that they may significantly explain quality culture. For such, management has to evolve audit process to ascertain that the alumnus has competence and competitive excellence correspond to their science. This possibility is counted to technology mastery, skill, character, and culture.

7.3 Systems Audit

The third most influential factor is systems audit by loading factor of 0.795. The observed variables in this factor are organization objective (X1.1), systems approach (X1.2), interaction process (X1.3), and quality standard (X1.4). Value of loading factor which is higher than 0.6 shows that it is quite significant to determine quality culture. Therefore, systems audit in every level of organization has to have quality standard and target relevant to the objective of organization. In addition, it needs to involve operation process administratively to meet the objectives by trying to comprehend interaction of inter-process as an integrated system. This finding is also supported by Fotopoulos and Psomas (2010) by stating that the involvement of employee in quality management system and focus on the process which relates to employee's internal procedure will significantly affect company's performance.

Relationship between systems audit, compatibility audit (process), and product audit (output) is very strong as depicted by variance extracted value, i.e. systems audit-compatibility audit by 0.657, systems audit-product audit by 0.976, and systems audit-product audit by 0.819. Thereby, process of internal quality audit has to be conducted simultaneously, periodically, and systematically. This process will become forging life experience for staffs, either by personal experience or other people's experience, so it will form habits, beliefs, behavior, and attitude. It is convinced that continual supervision process will change quality culture in private college as proposed by Beyer and Trice (1993). They state that cultural change may be initiated by top management.

8. Conclusion

This finding has a number of practical implications for the top management in private college to identify factors which can grow up implementation consistency of ISO 9000 quality management system. Recommendation for the colleges is that in order to increase their quality culture, they have to pay more attention to the process of internal quality audit systematically and continually.

Limitation of the study is that the sample is limited to private colleges in Sulawesi without involving state colleges. It is likely that the findings may not be generalized for the other colleges. Hence, further study is highly recommended to fulfill the gap which may strengthen the findings; furthermore, it may have a generalization including by making comparison to other colleges for the deeper insight.

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