







The effect of quality culture on service quality; infrastructure quality as a mediation variable

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Abstract

This study aims to examine the influence of quality culture on service quality, the influence of quality culture on infrastructure quality, the influence of infrastructure quality on service quality, the role of infrastructure quality in mediating the influence of quality culture on service quality mediated by infrastructure quality. The population of this study are 176 pupils from class IX, or junior high school, at Umusshabri Kendari Educational Institution. The study sample was determined to be 176 after it was calculated using a technical census. employing questionnaires to acquire data. The research model is structural; thus, the data analysis uses Smart Partial Least Square PLS version3 software to examine direct influences and indirect influences. The findings of this study show the quality culture has a positive and significant effect on service quality, quality culture has a positive and significant effect on infrastructure quality, infrastructure quality has a positive and significant effect on service quality, infrastructure quality plays a role in partially mediating the influence of quality culture on service quality. Based on these findings, it is crucial for educational institutions to establish a culture of quality in order to enhance the quality of the infrastructure and the services provided to students in order to help them develop as people and provide them the skills they need to live better.

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1. Introduction

Education plays a key role in developing and improving quality human resources in order to participate in global competition. Every educational institution is required to produce graduates who are highly qualified, so that they can possess, develop, master, and use the science and technology that is always evolving (Topalović, 2015).

Educational institutions must maintain a 'quality culture' so that the structural and managerial elements synergize positively to improve education. The quality of work mechanism consists of increasing staff commitment, shared ownership, empowerment and knowledge, this will positively encourage the student satisfaction, continuous improvement of the teaching-learning process and the learning and development of students and teachers (Bendermacher, oude Egbrink, Wolfhagen, & Dolmans, 2017).

The standardization of quality management practices has contributed to the expansion of quality monitoring and the potential to identify improvement steps. However, it remains unclear whether these practices alone have contributed to improve teaching and learning (Harvey & Stensaker, 2008). However, it is still questionable whether the standard approach to quality management is compatible with the mission, objectives, size and nature of student admissions (Lomas, 1999). Additionally, enhancing quality management creates potential costs and can assuage academics' reservations about these processes being developed, administered, and imposed externally (Lomas, 2004; Newton, 2000). Tools and instruments for quality management may not work as they should or even have a negative impact on organizational processes due to their application from a top-down direction, ignoring the autonomy of individual staff members and viewing staff as passive recipients of policies instead of active contributors (Harvey & Stensaker, 2008).

The demand for improvement in the quality of an education is getting stronger as the community continuously demands improvements in quality-based educational services with a very detailed level of quality criteria. The effectiveness of educational institutions in providing services will be gauged by the quality of the educational delivery system and the alumni. Competition in the world of education is now getting tougher. The evaluation of an educational institution's quality is often based on factors such as the competitiveness of its curriculum concepts, pre-facilities and learning programmes, as well as the calibre of its educators and education personnel. Furthermore, in larger education systems competition is among well-educated alumni, who must be well educated, well skilled in the usage of technology. Graduates of a quality educational institution not only have knowledge related to insights and knowledge that has been learned, but also have good and adequate skills and personalities.

The challenges associated with the adoption of quality management practises align with scholarly research indicating that effective strategies, processes, and tools for quality management must be congruent with the prevailing organisational culture (Irani, Beskese, & Love, 2004). The organizational culture of educational institutions is a pattern of mutually shaped collective norms, values, practices, beliefs and assumptions that guide the behaviour of individuals and groups within a higher education institution and provide a frame of reference for interpreting the meaning of events and actions on and off campus' (Kuh & Whitt, 1988).

Previous research related to the effect of the implementation of integrated quality management on the creation of perceived service quality and satisfaction in finding diverse results. Research from Alfalah (2017) on the service business sector found that the implementation of quality management implementation can have a positive impact on the better service quality felt by its users. However, these findings contradict the findings of research from Soria-García and Martínez-Lorente (2019) which looked at two aspects of the application of quality management where one of the quality management practices related to technical aspects did not have a significant impact on the quality of educational services felt by service users.

In the application of quality management practices, cultural aspects are also important things that need to be addressed in the world of education. A quality culture applied in an educational institution will be able to have a good impact on the sustainability of the educational process because a quality culture includes a set of common implicit assumptions that have been accepted a person's daily behaviour (Sattler & Sonntag, 2018).

In research conducted by Dang and Do (2021) which looks at aspects of quality culture from an educational point of view, it is revealed that maintaining the cultural environment as a whole will be able to provide a sense of satisfaction to service users. Al-Otaibi, Yusof, and Ismail (2019) also revealed that quality culture has an important role in running the wheels of educational services, where the creation and application of a culture that has good quality will be able to provide pleasure for service users.

Previous research, as described in the table above, research from Soria-García and Martínez-Lorente (2019) and Patyal and Koilakuntla (2018) concluded that quality culture has a significant influence on the practices of infrastructure quality. However, other findings from Staniškienė, Stankevičiūtė, and Ramanauskaitė (2017) concluded that quality culture does not have a significant influence on the formation of quality management practices, especially on infrastructure quality practices.

Other findings made by Soria-García and Martínez-Lorente (2019) and ElMelegy, Alnajem, and Albuloushi (2022). However, other studies revealed that there was no relationship between infrastructure quality practices and core quality practices. The researchers tested the dimensions of quality management practices and discovered that infrastructure quality had a substantial impact on core quality (Naor, Goldstein, Linderman, & Schroeder, 2008). The dimension of this quality management practice on the aspect of infrastructure quality practice found that infrastructure quality practices have a significant influence on the perceived quality of services, in addition to the aspects of core quality practices it is also the case that core quality has a significant effect on the quality of services felt in research conducted by Zaid, Arqawi, Mwais, Al Shobaki, and Abu-Naser (2020). However, in the main research conducted by Soria-García and Martínez-Lorente (2019) there was no influence between core quality practices on the perceived quality of service.

The culture of quality of education is very important in order to maintain the quality of services provided by educational institutions, besides that the quality of institutional infrastructure is needed to supporting the quality of services and the sustainability to improve the quality of education. Therefore, it is important to conduct a study between quality culture and service quality mediated by infrastructure quality.

2. Literature Review

2.1. Quality Culture

Quality culture is part of the organizational culture. From an open perspective, every aspect of organizational culture can be seen as an important environmental condition that influences its systems and subsystems. [Mabawonku \(2003\)](#) defines culture as dynamic and definitive goals and tools (values, ethics, rules, knowledge systems) developed to achieve group goals. [Kinuthia and Nkonge \(2005\)](#) define culture with regard to people's understanding of themselves, their world, and influence on education. Whereas [Powell \(1995\)](#) defines culture as a simple way of saying how an organization expresses itself internally and externally. Another opinion related to culture from [Locker and Kaczmarek \(2014\)](#) defines culture is our understanding of acceptable actions and beliefs. [Cartwright, Andrews, and Webley \(1999\)](#) further say that culture is a significant influence on people's ideas, attitudes, and behaviours, and that its impact may be seen in how motivated individuals react to their cultural surroundings.

The term quality culture has been introduced to express the idea that organizational culture and educational quality should not be seen as independent entities, but rather the quality derives from a broader cultural perspective ([Harvey & Stensaker, 2008](#)). The European University Association (EUA) have formulated the definition of quality culture as an organizational culture that aims to improve quality continuously and is defined by two distinct elements namely: cultural/psychological elements shared values, beliefs, expectations, and commitment to quality. And structural/managerial elements with defined processes that enhance quality and aim to coordinate individual actions ([D'Egmont, 2006](#)). Quality culture does not stand alone, but is part of the organizational culture. It is the way in which organizational practices and behavior reflect quality principles and are manifested as personal values rather than bureaucratic decrees ([Malhi, 2013](#)).

A quality culture is a culture in which everyone in the organization is not only a quality controller, but also responsible for quality ([Ehlers, 2009](#)). Culture can consist of all the institutionalized ways and implicit ideas, norms, values, and premises that emphasize and influence behaviour. According to [Hasan and Sonhadji \(2016\)](#) there are different definitions of culture, but all of them refer to a single order, material, or pattern of behavior established by a group as a standard way to solve problems. [Sattler and Sonntag \(2018\)](#) consider that culture is best understood as a set of shared implicit assumptions that have been accepted and have shaped a person's daily behavior. It is further explained that quality culture is closely related to the well-known concept of organizational culture with three different levels: artifacts, the advocated values of an organization and the shared assumptions ([Sattler & Sonntag, 2018](#)).

2.2. Infrastructure Quality

Infrastructure quality is one of the components of quality management that shapes quality in an organization by emphasizing aspects of existing human resources and also on the concept of behaviour in the organization. [Patyal and Koilakuntla \(2018\)](#) define infrastructure quality practices are one aspect of quality management that do focus on people and culture, and they are connected to organizational development and transformation in the areas of commitment and leadership, interactions with customers, and human resource management. In addition, [Yazdani, Attafar, Shahin, and Kheradmandnia \(2016\)](#) also define infrastructure quality as a condition of quality improvement that focuses on organizational change and development in the field of commitment and management leadership, and human resource management.

The focus of infrastructure quality is the behaviour of organizational members and also the application of values adopted by members of the organization. Quality management is able to maintain the sustainability of the quality of an organization in providing services and also producing products that are in accordance with the wishes of its customers. The function of quality infrastructure is to continue to ensure that the actions of current human resources are continually focused on quality. [Addis \(2020\)](#) revealed that infrastructure quality (soft) is a way of quality improvement that includes higher dimensions of human resource management at the organizational level and is oriented towards people and culture.

In addition to this definition, [Sousa and Voss \(2002\)](#) also state that infrastructure practices are organizational quality management related to quality management attributes. [Zu \(2009\)](#) also revealed that infrastructure practices are aspects of behaviour that are oriented towards people and culture. Based on the definition of existing infrastructure quality, it can be stated that infrastructure quality is a condition of quality improvement related to quality management attributes and oriented towards human resources and culture.

2.3. Service Quality

The concept of service quality was first introduced by [Grönroos \(1984\)](#), according to him, service quality is a process of evaluating consumer assessment of overall service excellence through comparison of expected services with perceived services. Meanwhile, according to [Zeithaml, Parasuraman, and Berry \(1990\)](#) service quality is the result of comparing customer service expectations with actual service perceptions and is used as a consideration globally. The value of a service as seen by the customer and the quality of a service as perceived by an organization may not always be the same.

Service quality is defined as the difference between a customer's expectations for service performance before a service meeting and their perception of perceived service" (Asubonteng, Karl, & John, 1996). The core concept of service quality is the disconfirmation of expectations theory (Rowley & Dawes, 1999). According to the disconfirmation of expectations theory, the comparison of expectations and perceptions of services will result in a disconfirmation decision and subsequently this disconfirmation will affect the perceived quality of service (Gotlieb, Grewal, & Brown, 1994; Philip & Hazlett, 1997). When the performance of the service offered by the service provider exceeds the customer's prior expectations, the customer forms a positive disconfirmation, whereas the customer forms a negative disconfirmation when the prior expectation exceeds the performance of the service offered by the service provider (De Ruyter, Bloemer, & Peeters, 1997; Gotlieb et al., 1994; Penpokai, Vuthisophon, & Saengnoee, 2023).

Service quality is defined as a set of functions and characteristics of a product or service with the capacity to meet the explicit or implicit needs of the customer (Johnson & Winchell, 1988). According to Jiang and Lu Wang (2006) service quality is a consumer evaluation that is based on the feelings of consumer. When service provider provides the services. service provider. If the service they receive satisfies their needs, customers are happy, and this will improve their opinion of the service provider.

Nikel and Lowe (2010) service quality is described as a continuous process that changes over time as a result of businesses' ability to continuously improve service for the same consumer, giving service providers enough time to raise the degree of service appropriateness. Organizations have the opportunity to learn from their mistakes and exceed customer expectations (Henderson-Smart, Winning, Gerzina, King, & Hyde, 2006). Management can design and provide services to further improve customer satisfaction through an understanding of how consumers shape quality impressions (Seymour, 1992).

3. Hypothesis Development

3.1. Quality Culture Towards Service Quality

A positive organizational environment (quality culture) can help in creation of high service and is considered one of the most important factors for the success of organizational services (Cohen, Pickeral, & McCloskey, 2009). The dedication of teachers is a key predictor of the outcomes of the work given, according to research in the field of education. Rapp (2011) states that the implementation of a quality culture in an organization is the most effective way to develop quality assurance mechanisms that will ensure the improvement of the quality of services provided by the organization. It is beneficial to have a quality culture where the company is highly committed in making ongoing improvements since this will provide employees and customers a sense that their experiences will be of higher calibre.

Research conducted by Saleem, Moosa, Imam, and Khan (2017) shows that the good culture formed in an educational institution will be able to increase the possibility of a person or consumer being satisfied with the services provided to him. Culture plays a huge role in shaping the methods of service that organizations can provide. Research findings from Karakasnaki, Psomas, and Bouranta (2019) also show that quality culture has a positive and significant influence on the quality of services provided. Based on the findings of previous studies, the research hypothesis:

H1: Quality culture has a positive and significant effect on service quality.

3.2. Quality Culture towards Infrastructure Quality

Several cultural attributes exist related to infrastructure quality practices. Shortell et al. (1995) states that flexibility, risk taking, and organizational culture are related to the implementation of quality improvement in the organization. The development of a culture facilitated by top management and encouraging employees to take risks are key infrastructure quality attributes. Furthermore, organizations need to have a high level of culture in order to adapt the changes to satisfy customer needs and sustain customer happiness. Customer engagement requires a culture of innovation to tolerate mistakes in an effort to acquire new knowledge (Naveh & Erez, 2004).

In developing and encouraging problem solving skills, it is important that management functions as a facilitator, rather than giving orders to subordinates (Flynn, Schroeder, & Sakakibara, 1995). This management style requires a good culture to increase employee participation in the decision-making process. Due to increased awareness of responsibility and equality among subordinates, empowerment leads to increase employee participation (Ahire, Golhar, & Waller, 1996). Infrastructure quality practices are related to an individual's or an organization's capacity to uphold it and continue to improve it, and do so consistently. (Patyal, Ambekar, & Prakash, 2020). Culture has an intimate connection to how an organization is formed by its resources since it is centred on a system of values, beliefs, and shared norms that prioritize satisfaction and always seek to improve current traits.

Research from Soria-García and Martínez-Lorente (2019) reveals that a well-maintained quality culture is able to have an impact on infrastructure quality practices which will form a sustainable integrated quality management. Based on the findings of previous studies, the research hypothesis:

H2: Quality culture has a positive and significant effect on infrastructure quality.

3.3. Quality of Infrastructure to Service Quality

Quality management includes the best strategies that can be adopted and applied by organizations to improve the quality and satisfaction of customers (Brah & Ying Lim, 2006). In line with this, infrastructure quality practices concern one of the characteristics of quality management that is oriented towards people and culture. The main focus of infrastructure quality practices lies in how the forming and implementing elements in an organization can run well. The good news is that current infrastructure techniques will be able to influence the high level of service that customers perceive (Zu, 2009). In research conducted by Soria-García and Martínez-Lorente (2019) revealed that the good implementation of infrastructure quality practices in an organization will be able to create a good quality of service that will be felt by customers. In addition to these findings, other studies have found similar that there is a positive and significant influence between infrastructure practices on perceived service quality (Zaid et al., 2020). Based on the findings of previous studies, the research hypothesis:

H3: infrastructure quality has a positive and significant effect on service quality

3.4. The Role of Infrastructure Quality in Mediating Quality Culture to Service Quality

In certain aspects, core quality and infrastructure best practices are tied to culture. For management to effectively act as a facilitator and coach instead of issuing commands to its subordinates, cultural change in businesses via fostering employee abilities in quality issue resolution is crucial (Flynn et al., 1995). According to Kaynak (2003) the application of a good culture is able to increase the involvement of quality aspects of infrastructure both suppliers and customers in organizational activities where it is known that to be able to manage a quality organization and gain a competitive advantage requires effective integration of suppliers and customers.

Based on the findings of previous studies, the research hypothesis:

H4: Infrastructure quality has a positive and significant effect in mediating the influence of quality culture on service quality.

4. Measurement and Data

Measurement of quality culture includes: disciplinary culture, culture of self-development, learning process, provision of learning facilities, budget management oriented towards quality improvement. Measurement of quality culture includes: disciplinary culture, culture of self-development, learning process, provision of learning facilities, budget management oriented towards quality improvement. Service quality measurements include: concrete evidence, teaching, facility services, support services, school organization. 174 pupils in class IX participated in the study as respondents. 174 respondents made up the research sample, which was determined using census methods. Data is collected using surveys with a choice of five answers.

5. Result

5.1. Descriptive Statistics

Descriptive analysis displays the mean, maximum value, minimum value and standard deviation of each indicator used. The descriptive statistical values contained in Table 1 show that all indicators obtain a mean value greater than the standard deviation. This indicates that the current mean value indicates a good representation of the overall data.

Table1. statistic description.

	Mean	Median	Min.	Max.	Standard deviation
X11	4.105	4.17	2.33	5	0.574
X12	4.134	4	2.6	5	0.672
X13	4.428	4.5	1.83	5	0.576
X14	4.260	4.33	2.17	5	0.561
X15	4.152	4	2	5	0.7
Y11	4.283	4.4	2.2	5	0.632
Y12	4.259	4	3	5	0.667
Y13	4.432	4.5	3	5	0.568
Y14	4.207	4.33	2.33	5	0.702
Y21	4.443	4.6	2.6	5	0.556
Y22	4.484	4.57	2.86	5	0.504
Y23	4.054	4	2.33	5	0.521
Y24	4.297	4.33	2.67	5	0.609
Y25	4.283	4.25	2.25	5	0.627

5.2. Inferential Statistics

The outer loadings value as presented in Table 2 shows that all indicators have an original sample value greater than 0.5 and smaller p-values 0.05 thus all indicators are able to reflect the variables.

Table 2. Outer loading.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
X11 <- Quality culture	0.828	0.828	0.026	32.186	0.000
X12 <- Quality culture	0.887	0.887	0.015	58.773	0.000
X13 <- Quality culture	0.820	0.823	0.032	25.783	0.000
X14 <- Quality culture	0.863	0.863	0.020	42.245	0.000
X15 <- Quality culture	0.728	0.729	0.043	16.991	0.000
Y11 <- Infrastructure quality	0.884	0.884	0.022	40.452	0.000
Y12 <- Infrastructure quality	0.886	0.885	0.020	44.650	0.000
Y13 <- Infrastructure quality	0.811	0.812	0.033	24.815	0.000
Y14 <- Infrastructure quality	0.872	0.871	0.023	37.496	0.000
Y21 <- Service quality	0.870	0.872	0.027	32.198	0.000
Y22 <- Service quality	0.867	0.868	0.027	31.982	0.000
Y23 <- Service quality	0.713	0.709	0.047	15.239	0.000
Y24 <- Service quality	0.885	0.885	0.020	43.419	0.000
Y25 <- Service quality	0.901	0.900	0.019	48.269	0.000

Table 3 shows that the contribution of cultural variables of quality to infrastructure quality is 0.675. The direct impact of the variable culture of quality and quality of infrastructure on the quality of service is determined to be 0.691.

Table 3. R-square.

Endogenous variable	R square
Infrastructure quality	0.675
Service quality	0.691

The path coefficient values as presented in Table 4 show that the direct influence is: Each p-value is less than 0.05, indicating that it is significant. Quality culture on service quality, infrastructure quality on service quality, and quality culture on infrastructure quality all have positive original sample values. Likewise, the indirect influence of quality culture on service quality is mediated by infrastructure quality, which has a smaller p-value of 0.05, so that the significant nature of the mediation of infrastructure quality variables is partially mediation.

Table 4. Koefisien Jalur.

Structural Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Infrastructure quality -> Service quality	0.430	0.439	0.103	4.165	0.000
Quality culture -> Infrastructure quality	0.822	0.828	0.039	21.144	0.000
Quality culture -> Service quality	0.440	0.432	0.115	3.839	0.000
Quality culture -> Infrastructure quality -> Service quality	0.354	0.364	0.092	3.857	0.000

Figure 1 results of the structural model.

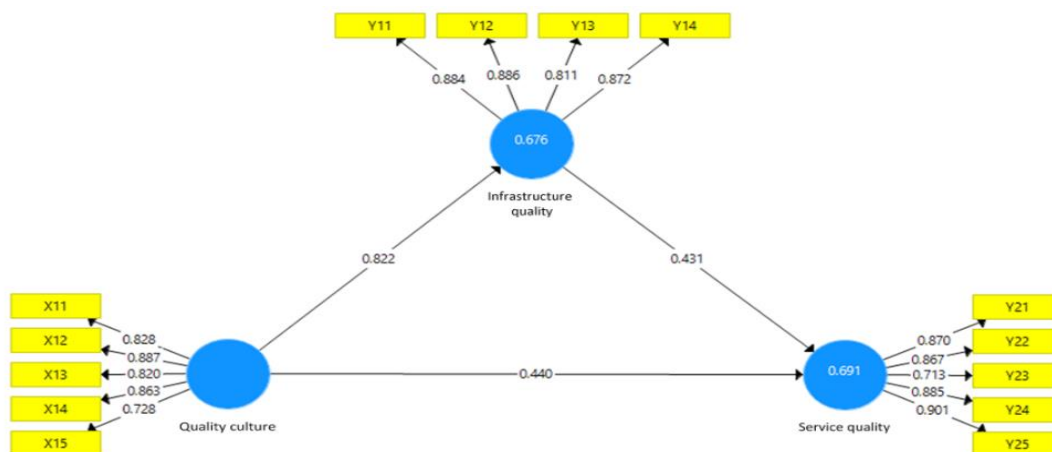


Figure 1. Empirical model.

5.3. Discussion

The coefficient of quality culture path to service quality is 0.440 and p-value is 0.000 or has a positive and significant effect. This shows that the implementation of a quality culture in the form of an organization has a high commitment in making continuous improvements to make members of the organization get a better-quality experience. The good culture provides satisfaction with the services (Saleem et al., 2017). These findings are also supported by previous research that a positive organizational environment can help in creating high service which is considered one of the most important factors for the success of an organization's service (Cohen et al., 2009; Karakasnaki et al., 2019).

The correlation between infrastructural quality and cultural quality is 0.822, with a p-value of 0.000, indicating a significant and positive tendency. This demonstrates that a key aspect of infrastructure quality is the ability of top management to foster cultural development and encourage employees to take calculated risks. In order to meet customer demands and maintain customer satisfaction, organizations must have a strong culture that allows them to be adaptable in shifting demands over time. This finding is also supported by previous research that quality culture has a positive and significant effect on infrastructure quality (Patyal et al., 2020; Soria-García & Martínez-Lorente, 2019).

The infrastructure quality path coefficient to service quality is 0.431 and the p-value is 0.000 or has a positive and significant effect (Alfalah, 2017; Zaid et al., 2020). The nature of the mediation is partial. This demonstrates how crucial it is to change the culture of the company by fostering employee skill development in quality issue solving so that management can effectively serve as a coach and facilitator rather than a dictator to their staff. Research findings are also echoed by previous research that infrastructure quality plays a role in partially mediating the culture of quality and quality of services (Kaynak, 2003; Soria-García & Martínez-Lorente, 2019).

6. Conclusion

The purpose of this study is to determine the influence of quality culture on service quality and the role of infrastructure quality as a mediating variable. The research findings are that quality culture has a positive and significant effect on service quality, quality culture has a positive and significant effect on infrastructure quality, infrastructure quality has a positive and significant effect on service quality, infrastructure quality also partially mediates between quality culture and service quality. Educational institutions need to improve the quality culture of school services so, they can provide comfort and satisfaction to students in obtaining knowledge and can develop students' personalities and abilities towards a better life.

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