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To cite this article: Arfan Bakhtiar, Aditya Nugraha, Hery Suliantoro & Darminto Pujotomo (2023) The effect of quality management system (ISO 9001) on operational performance of various organizations in Indonesia, Cogent Business & Management, 10:2, 2203304, DOI: [10.1080/23311975.2023.2203304](https://doi.org/10.1080/23311975.2023.2203304)

To link to this article: <https://doi.org/10.1080/23311975.2023.2203304>



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Published online: 26 Apr 2023.



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Received: 16 November 2022  
Accepted: 12 April 2023

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Reviewing editor:  
Peide Liu, Shandong University of Finance and Economics, China

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## OPERATIONS MANAGEMENT | RESEARCH ARTICLE

# The effect of quality management system (ISO 9001) on operational performance of various organizations in Indonesia

Arfan Bakhtiar<sup>1\*</sup>, Aditya Nugraha<sup>1</sup>, Hery Suliantoro<sup>1</sup> and Darminto Pujotomo<sup>1</sup>

**Abstract:** An organization improves its performance by implementing ISO 9001, but there are not many scientific journals that discuss this. The purpose of this article is to examine the effect of the quality management system (ISO) 9001 on organizational performance to achieve business sustainability. This study examines four variables, namely ISO 9001 certification planning, organizational commitment, application of procedures on organizational performance and quality culture as mediating variable. Data collection was conducted in the form of a survey by e-mailing the questionnaire to 1000 ISO 9001 certified organizations selected using the purpose sampling technique. This research used a closed questionnaire and a Likert scale of 1–5. Data calculation utilized a Partial Least Squares (PLS) analysis to distinguish outer and inner model analyses, as well as to test the hypotheses. The results show that ISO 9001 certification planning, organizational commitment, and application of procedures have a significant effect on quality culture. ISO 9001 certification planning and organizational commitment do not have a significant effect on operational performance, but the application of procedures and quality

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### PUBLIC INTEREST STATEMENT

This paper discusses how the standard quality management system (ISO 9001) affects the company's operational performance. ISO 9001 is very popular and widely applied in various industrial sectors and organizations, is encouraged by various motives of company development. Generally, two motives are to be found, namely internal driven and external driven. Internally driven motives are caused more by the awareness of the organization or company to improve performance. Externally driven motives are caused by external demands, such as consumers and regulations. This paper focuses the analysis on the implementation of ISO 9001 in relation to operational performance, both directly or indirectly. The three-criterion used are certification planning, organizational commitment and application of procedures. Based on the results of data processing, it is evidenced that the three-criterion tend to affect operating performance through quality culture as a moderator variable.



culture significantly influence operational performance. It is clear that an increase in organizational performance greatly influences by ISO 9001 implementation and a quality culture as a mediating variable.

**Subjects: Production Systems; Quality Control & Reliability; Business, Management and Accounting; Industry & Industrial Studies**

**Keywords: quality management; certification planning; ISO 9001; organizational performance; procedure application; quality culture**

### 1. Background

ISO 9001 is the most internationally recognized standard adopted by many organizations as a reference in developing a quality management system (Zeng et al., 2005). The benefits of implementing it include increasing customer trust and satisfaction through a well-organized and systematic quality assurance, well-documented and neat systems, improving the quality of employee performance, and creating a positive work culture. Consumer trust and satisfaction will increase when a third party (certification agency) has guaranteed that a company's business or production processes have implemented a quality management system in a systematic and consistent manner. Consistent implementation of quality management will also improve employee performance and build a positive quality culture. Many studies indicate the need for further studies of ISO benefits application of operational performance in developing countries (Nurchahyo et al., 2021). A study conducted by Nurchahyo et al. (2021) in 50 automotive component manufacturing industries in Indonesia suggested that the application of ISO 9001 was able to improve operational performance. This fact encourages researchers to examine the wider context of business organizations in Indonesia. Motivation in the application of ISO 9001 is often claimed to be a factor that has a significant effect on business success (Barbosa et al., 2022; Eccles et al., 2014). The external motivation in this application takes the forms of desire to achieve marketing benefits, meet customer expectations, and competitive pressure. However, organizations based on internal motivation to implement ISO 9001 will get greater benefits due to the desire to improve product quality and achieve continuous improvement (Ben Arab, 2021; Willar et al., 2015).

To satisfy the stakeholders of an organization, especially shareholders, it is important to investigate the effect of ISO 9001 on organizational performance. Hence, the implementation of ISO 9001 should be able to improve performance in various aspects, for example, financial, customer satisfaction, positive impact on society and the environment (Nurchahyo et al., 2021). Sustainable organizational performance ultimately provides organizations with the ability to be more effective in facing competition and demands from stakeholders. The ability to become an organization with sustainable performance is determined by several factors.

Research has consistently stated that planning is essential to achieve a successful implementation of ISO 9001 because it has a significant positive relationship with operational performance (Feng et al., 2008). However, many organizations, especially small businesses, do not receive the full benefits of ISO 9000 certification due to inadequate plans (A. van der Wiele et al., 2001; T. van der Wiele & Brown, 2002). The ISO 9000 series standard specifically refers to the need for commitment from all members of the organization, especially senior management, which is the initial requirement to achieve the expected performance. Organizational commitment is significantly related to the effective implementation of each quality initiative. Several investigations have concluded that organizational commitment has a positive effect on operational performance (Grethchen & Christine, 2012). It is worth noting that the lack of commitment of employees and managers is the most common problem faced by small medium enterprises (SMEs) in applying ISO 9000 certification (Brown et al., 1998). This article seeks for the recommendation of establishing sustainable organizational performance by calculating the effect of ISO 9001 certification

planning, organizational commitment, and application of procedures on organizational performance and using quality culture as a mediating variable

## 2. Literature review

The ISO 9001 certification planning is the first phase in formulating the steps of ISO 9001 implementation. Among the essential things to do is identify quality aspects for the improvement the quality of work (Bakhtiar, 2012). These aspects include clarity about the sequence and the provision of duties, the implementation of documentation with the recording of data and recording of employment activities as evidence of the implementation of ISO 9001 within the organization, and the establishment of standard procedures for organizing work activities undertaken by members of the organization (Feng et al., 2008).

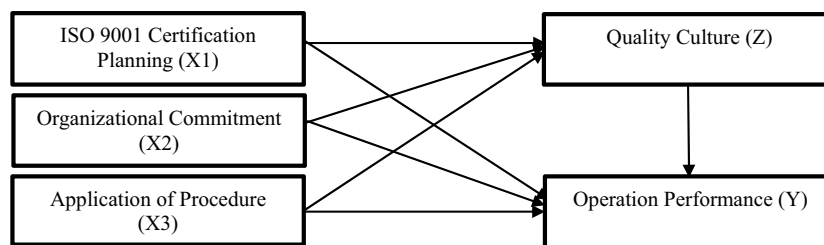
Implementing the procedure is an important requirement of ISO 9001. Therefore, standard procedures must be made clearly and easily applied to manage all quality work activities (Adem & Viridi, 2021). Several stages carried out as a form of application of procedures include internal audits on a regular basis with ensure compliance to ISO 9001 standards, and the application of corrective action to solve problems within the organization so that the process can be performed more effectively (Pivka, 2004; Severo et al., 2015). Operational performance is seen from internal organization operations such as productivity, product quality, and customer satisfaction (Sumaedi & Rakhmawati, 2017; Valmohammadi & Roshanzamir, 2015). There are four indicators that reflect effective organizational performance. First, quality improvement on the goods or services produced. Second, productivity, i.e., an increase in employee work productivity in terms of effectiveness (number and quality) and efficiency (time and energy) (Terziovski & Power, 2007). Third, the cost, i.e., a reduction in the costs felt by the organization along with an increase in the performance. Finally, there is the employee morale.

Quality culture is a subset of organizational culture (Cavallone & Palumbo, 2021). The establishment of a quality culture in the organization is reflected in the President's Quality Award and the Malcom Baldrige National Quality Award (MBNQA) criteria (Johnson, 2000). As a Quality Award, the criteria assessed reflect the implementation of Total Quality Management (TQM) in a business activity. The quality management system (ISO 9001) is a standard that helps companies effectively implement TQM, so that the criteria in the MBNQA are related to the successful implementation of the quality management system standard itself. The first criterion is the support of top management for quality in the form of active participation from top management in conducting inspections and controlling overall work activities and leadership as indicators of successful implementation of quality within the organization. The second criterion is strategic planning for quality, and management needs to have an operational plan which clearly describes aspects of quality. The third one, customer focus. It is characterized by a form that states customer satisfaction with the services provided and an effective process within the organization to handle customer complaints (Tedjokusumo, 2005). Fourth, quality training conducted by management on the concept of quality improvement on a regular basis. This should be consistently evaluated for continuous improvement. The fifth aspect is recognition, through incentive or reward, to employees who have contributed to quality improvement. The sixth aspect includes the process of involving and empowering employees in decision-making and problem solving (Bravi et al., 2019). The seventh criterion is quality improvement teamwork. It is characterized by openness and decision-making based on the results of a joint consensus (Barata et al., 2013). The eighth indicator is measurement and analysis. The operational of this indicator could be in the form of detailed recording and measurement of work results using quality measurement tools to carry out continuous improvement. Finally, the ninth criterion is quality assurance. In addition, quality assurance describes activities to maintain the quality of work results by identifying standard objectives, collecting data for continuous improvement, and conducting quality audits (Alawag et al., 2020; Ramchander & Nadar, 2021).

There are three indicators used for ISO 9001 certification planning variables such as identifying aspects of quality, implementation of documentation and standard procedure creation (Feng et al.,

**Figure 1. Conceptual model of relationship between ISO 9001, quality culture, and operational performance.**

Note: Modified from Semuel & Zulkarnain (2011).



2008). For organizational commitment variables, the researchers use three indicators such as affective commitment, ongoing commitment and normative commitment (Meyer & Allen, 1997). In the application of procedure variable, there are three indicators that are calculated, namely periodic audits, following the standard procedure and application of corrective action (Feng et al., 2008).

### 3. Research method

#### 3.1. Conceptual Model of Research

Based on the literature in the previous section, the conceptual model of the relationship between ISO 9001, quality culture, and operational performance was developed as shown in Figure 1. There are 10 hypotheses proposed as follows: ISO 9001 certification planning has a significant effect on quality culture (H1), ISO 9001 certification planning has a significant effect on operational performance (H2), organizational commitment has a significant effect on quality culture (H3), organizational commitment has a significant effect on operational performance (H4), the application of procedures has a significant effect on quality culture (H5), the application of procedures has a significant effect on operational performance (H6), quality culture has a significant effect on operational performance (H7), ISO 9001 certification planning has a significant effect on operational performance by mediating quality culture (H8), organizational commitment has a significant effect on operational performance by mediating quality culture (H9), and the implementation of procedures has a significant effect on operational performance with mediation of quality culture (H10). The research variables and indicators can be seen in Table 1.

#### 3.2. Data collection and analysis method

Data collection was carried out in the form of surveys by sending questionnaires via email. The expected questionnaire returns should be at least 5 times the number of indicators of all latent variables, which is 110. The questionnaire was tested for validity and reliability testing with SPSS 16.0 software. The validity test refers to the total correlation value of the corrected item, while the reliability test refers to the Cronbach's alpha value. The PLS analysis was performed with SmartPLS 3.0 software. The operational procedure of smartPLS is as follows: data input of questionnaire distribution, arrangement of path diagram (measurement model and structural model), outer model analysis, inner model analysis, and hypothesis testing.

### 4. Result and discussion

#### 4.1. Characteristics of the respondents

The questionnaire distribution period is 3 months. The criteria of the respondents in this study are expected to have positions at the management level or be part of the ISO 9001 representative management within the organization. The research respondents are 1000 of companies in Indonesia that have received ISO 9001 certificates for all sectors. Company size and how long ISO 9001 has been implemented are not criteria for selecting respondents. The researcher uses data from companies that have implemented ISO 9001. There were as many as 1,000 pieces of questionnaire were distributed. However, only 212 of them successfully returned and those who met the criteria were only 175 or 17.5% of the total 1000 planned distributed questionnaires.

**Table 1. Research variables and indicators**

Variables	Indicators	Sources
ISO 9001 certification planning (X1)	Identify aspects of quality (X11)	Feng et al. (2006)
	Implementation of documentation (X12)	
	Standard procedure creation (X13)	
Organizational commitment (X2)	Affective commitment (X21)	Meyer and Allen (1997)
	Ongoing commitment (X22)	
	Normative commitment (X23)	
Application of procedures (X3)	Periodic audit (X31)	Feng et al. (2006)
	Follow the standard procedure (X32)	
	Application of corrective action (X33)	
Quality culture (Z)	Top management support for quality (Z1)	Johnson (2000)
	Strategic planning for quality (Z2)	
	Customer focus (Z3)	
	Quality training (Z4)	
	Recognition (Z5)	
	Empowerment and involvement (Z6)	
	Quality improvement teamwork (Z7)	
	Measurement and analysis (Z8)	
	Quality assurance (Z9)	
Operational performance (Y)	Quality (Y1)	Feng et al. (2006)
	Productivity (Y2)	
	Cost (Y3)	
	Employee morale (Y4)	

Note: Source: Analysis Result, 2022.

#### 4.2. Path diagrams of measurement models and structural models

Path diagrams of measurement models and structural models that are used by the researchers are shown in Figure 2.

#### 4.3. Hypotheses testing

The acceptance criteria for the hypotheses are *t* statistics greater than 1.96 and the *p* value is less than 0.05. The result of the path coefficient calculation is shown in Table 2.

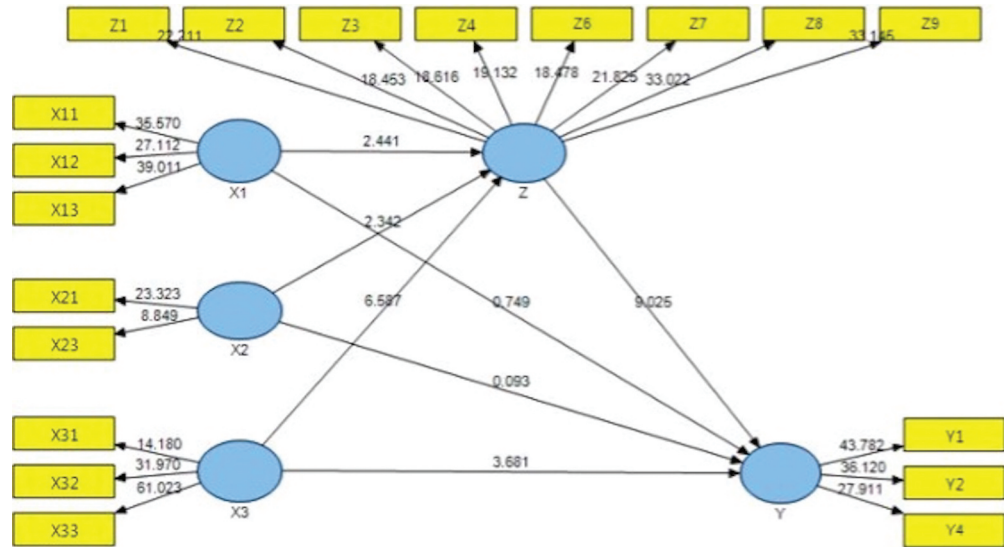
From the calculation results that are displayed in Table 2, it can be described several data interpretation and analysis related to direct effect calculation. The following is the detail information based on the results.

##### 4.3.1. Hypothesis 1: The planning of ISO 9001 certification has a significant effect on quality culture

Hypothesis 1 is accepted because the statistic *t* is 2.441 and *p* value is 0.022 with a path coefficient value of 0.196. These results show that the planning of ISO 9001 certification has a significant effect on quality culture with positive value relationship. The acceptance of this hypothesis is consistent with research which states that the benefits of ISO 9000 certification in addition to being able to improve the internal operations of the organization also form a quality culture (Bravi

**Figure 2. Path diagrams (measurement models and structural models).**

Note: Source: Data Processing Result, 2022.



**Table 2. Result of path coefficient calculation**

Path	Original sample	Sample mean	Standard deviation	t Statistics	p Values
X1 -> Z	0.196	0.2	0.085	2.441	0.022
X1 -> Y	-0.053	-0.057	0.072	0.749	0.465
X2 -> Z	0.141	0.145	0.06	2.342	0.018
X2 -> Y	0.005	0.011	0.05	0.093	0.922
X3 -> Z	0.554	0.55	0.089	6.587	0
X3 -> Y	0.268	0.266	0.075	3.681	0
Z -> Y	0.669	0.67	0.078	9.025	0

Note: Source: Analysis Result, 2022.

et al., 2019; Rogala & Wawak, 2021), in line with research which states that the application of ISO 9001 is a step forward in TQM practices proven to offer increased performance and encourage the creation of a quality culture.

**4.3.2. Hypothesis 2: Planning for ISO 9001 certification has a significant effect on operational performance**

Hypothesis 2 is rejected because the statistic *t* is 0.749 and the *p* value is 0.465 with a value of the path coefficient -0.053. These results show that the ISO 9001 certification planning does not have a significant effect on operational performance. The rejection of this hypothesis is consistent with research stating that ISO 9000 certification in Singapore has no impact on quality management practices and quality results (Quazi & Padibjo, 1998), also in line with research stating that 50% of respondents of 100 survey responses consider ISO 9000 certification to have no clear effect on quality improvement (Zeng et al., 2005). Meanwhile, the rejection of this hypothesis is different from research that states that ISO 9000 certification planning has a positive effect on operational performance (Feng et al., 2008). Furthermore, it is also different from research that states that ISO 9001 certification can provide internal benefits that are greater than external benefits (Ismaylis & Moschidis, 2015).

**4.3.3. Hypothesis 3: Organizational commitment has a significant effect on quality culture**

Hypothesis 3 was accepted due to the statistical *t* of 2.342 and the *p* value is 0.018 with the path coefficient value of 0.141. These results show that organizational commitment has a significant

effect on quality culture with a positive value relationship. The adoption of this hypothesis confirms that research that recommends organizational commitment is significantly related to the effective implementation of any quality initiative (Feng et al., 2008).

**4.3.4. Hypothesis 4: Organizational commitment has a significant effect on operational performance**

Hypothesis 4 was rejected because the statistic *t* was equal to 0.093 and *p* value is 0.922 with a coefficient value of 0.005. These results show that organizational commitment does not have a significant effect on operational performance. The rejection of this hypothesis is in line with research stating that lack of commitment from employees and managers is the most common problem faced by SMEs in applying ISO 9000 certification (T. van der Wiele & Brown, 2002). Meanwhile, the rejection of this hypothesis is different from research that states that organizational commitment has a positive effect on operational performance (Feng et al., 2008).

**4.3.5. Hypothesis 5: The application of procedures has a significant effect on the quality culture**

Hypothesis 5 is accepted because the statistic *t* is 6.587 and the *p* value is 0 with a path coefficient value of 0.554. These results show that the application of procedures has a culture of significant effect on a quality with a positive relationship. Acceptance of this hypothesis is in line with research stating that internal audit influences changes in quality culture (Mail Pratikto et al., 2014).

**4.3.6. Hypothesis 6: The application of procedures has a significant effect on operational performance**

Hypothesis 6 is accepted because the statistical *t* is 3.681 and a *p* value is 0 with the path coefficient value of 0.268. These results show that the implementation of procedures has a significant effect on the operational performance of a positive value relationship. Acceptance of this hypothesis is consistent with research that states that the application of the procedure has a positive effect on operational performance (Feng et al., 2008), in line with research indicating that quality audit provides added value in the process of improving efficiency and effectiveness (Pivka, 2004).

**4.3.7. Hypothesis 7: Quality culture has a significant effect on operational performance**

Hypothesis 7 is accepted because the statistic *t* is 9.025 and the *p* value is 0 with a value of the path coefficient value of 0.669. These results show that the quality culture has a significant effect on operational performance with a positive relationship. The acceptance of this hypothesis is consistent with research that states that there is a rather strong correlation between quality and performance practices (Ilkay & Aslan, 2012), according to research which states that quality culture produces a significant positive influence on organizational effectiveness (Johnson, 2000).

Table 3 below describes detail information on indirect effect calculation. Total hypotheses are 10, the 7 of direct effect calculation is displayed in Table 2 and the rest of 3 hypotheses of indirect effect calculation is shown below.

Table 3. Result of indirect effect calculation					
Path	Original sample	Sample mean	Standard deviation	t Statistics	p Values
X1 →Z → Y	0.131	0.133	0.059	2.235	0.026
X2 → Z → Y	0.094	0.096	0.04	2.385	0.017
X3 →Z →Y	0.37	0.37	0.077	4.789	0

Note: Source: Analysis Result, 2022.



**Table 4. Result of calculation of total effect**

Path	Original sample	Sample mean	Standard deviation	t Statistics	p Values
X1 → Y	0.078	0.076	0.087	0.904	0.366
X2 → Y	0.099	0.107	0.063	1.568	0.118
X3 → Y	0.638	0.635	0.084	7.572	0

Note: Source: Analysis Result, 2022.

**4.3.8. Hypothesis 8: Planning for ISO 9001 certification has a significant effect on operational performance by mediating quality culture**

Hypothesis 8 is accepted because the statistic *t* is 2.235 and *p* value is 0.026 with a path coefficient value of 0.131. These results prove that the planning of ISO 9001 certification has a significant effect on operational performance by facilitating positive value quality culture.

**4.3.9. Hypothesis 9: Organizational commitment has a significant effect on operational performance by mediating quality culture**

Hypothesis 9 was accepted due to the statistical *t* of 2.385 and the *p* value of 0.017 with the path coefficient of 0.094. These results demonstrate that organizational commitment has a significant effect on operational performance through the mediation of a positive culture of quality.

**4.3.10. Hypothesis 10: The application of procedures has a significant effect on operational performance by mediating the quality culture**

Hypothesis 10 is accepted because the statistic *t* is 4.789 and *p* value is 0 with a path coefficient value of 0.390. These results prove that the application of procedures has a significant effect on operational performance by mediating a quality culture with a positive relationship.

The acceptance of these three hypotheses involves a quality culture as a mediator for achieving the successful implementation of ISO 9001 within the organization in line with research stating that culture is the catalyst for maintaining quality management within the organization (Maull et al., 2001), in line with research stating that quality culture quality is an important part of the corporate culture to succeed in terms of quality that requires the company to meet customer needs with the goods and services produced and develop a culture that places quality in everything (Barbosa et al., 2022; Solomon et al., 2017), in line also with research stating that ISO certification 9000 can be a means for organizations to facilitate quality culture so as to produce a significant positive impact on business benefits (Fonseca, 2015; Terziovski & Power, 2007).

The mediating effect is summarized via quasi-mediating and fully mediating by looking at changes in the total effect value. If the results of the calculation of the total effect experience a significant change from the results of the calculation of the indirect effect, then the mediation effect is fully mediated (Hartono & Abdillah, 2014). The results of the calculation of the total effect are shown in Table 4.

Table 4 displays information of total effect calculation. It is clear that three aspects of analysis could be pointed out.

- The influence of quality culture is fully mediated in the relationship of ISO 9001 (X1) certification planning to operational performance (Y) due to a change of significance marked by the total effect of *t* statistics of 0.904 and *p* value of 0.366.
- The influence of quality culture is fully mediation in the relationship of organizational commitment (X2) to operational performance (Y) because of a significant change in the value of the total *t* statistic effect of 1.568 and a *p* value of 0.118.

- The influence of quality culture is quasi mediation in the relationship of the application of procedures (X3) to operational performance (Y) because there is no significant change in the value of the total  $t$  statistic effect of 7.572 and a  $p$  value of 0.

Planning for ISO 9001 certification has a significant influence on quality culture with a positive relationship. However, planning for ISO 9001 certification does not have a significant effect on operational performance. These results emphasize the importance of planning in an effort to achieve successful implementation of ISO 9001 (Feng et al., 2008). Many organizations, especially small businesses, fail to fully benefit from ISO 9000 certification due to inadequate plans (Mears & Voehl, 1995). Therefore, related planning needs to be mitigated so that the business environment becomes more receptive when ISO 9001 is implemented (Esgarrancho & Carlos, 2020). Based on research results, planning for ISO 9001 certification in an organization could be conducted by identifying quality aspects, implementing documentation, and developing standard procedures.

Organizational commitment has a significant influence on quality culture with a positive relationship. However, organizational commitment does not have a significant effect on operational performance. These results emphasize the importance of commitment to the organization, especially senior management commitment which is the initial condition for achieving the expected performance from the implementation of ISO 9001 (ISO, 2000). Organizational commitment is significantly related to the effective implementation of any quality initiative (Samson & Terziowski, 1999). Organizational leaders need to be vigilant because the lack of commitment from employees and managers is the problem most often faced, especially by SMEs in ISO 9000 certification (Brown et al., 1998). This study recommends that all organizational members need to have commitments in implementing ISO 9001, namely affective commitment and normative commitment.

#### **4.4. Managerial limitations and implications**

Several limitations in this study need to be mentioned. First, the number of research samples is determined randomly and not through calculations using certain formulas with regard to the number of existing populations. Therefore, the ability of research results to represent the population is still limited. Furthermore, the sample is limited in the Indonesian territory, which includes developing countries. Although it could be used as a reference for other developing countries, the ability to generalize the research results to other countries is still limited. Second, this study uses a perception measure on the ISO 9001 quality management system, quality culture, and operational performance with the criteria of the research respondents holding positions at the management level or part of the ISO 9001 representative management in the organization. However, the results of the research obtained are still subjective. Third, this study focuses on the ISO 9001 quality management system, which is divided into ISO 9001 certification planning, organizational commitment, and the application of quality procedures and culture as variables that affect the performance of ISO 9001 implementation. Meanwhile, organizational characteristics such as organizational size, organization length adopting ISO 9001, motivation for certification, etc. have not been involved to determine the effect on the performance of the implementation of ISO 9001.

The results of this study have significant theoretical and managerial implications. First, in contrast to previous research, this research model integrates the ISO 9001 quality management system, which is divided into ISO 9001 certification planning, organizational commitment, and application of procedures with a culture of quality and operational performance. Based on the test results, it is clear that the model built has a good performance and is declared valid so that it should be acknowledged by other researchers and organizational managements. Second, there are still few previous studies that focus on examining the impact of implementing ISO 9001 on operational performance mediated by quality culture. The main implication of the research results shows the essential result that the impact of implementing ISO 9001 on operational performance is fully mediated by a quality culture. Therefore, these results provide an explanation for organizations that do not feel the benefits of ISO 9001 certification so that the formation of a quality culture is needed. Third, the main implications for management are that the implementation of

the ISO 9001 quality management system will improve operational performance if the quality culture in the organization is well formed. Overall, the implementation of ISO 9001 should be conducted with adequate planning, supported by full commitment of all members of the organization, and the implementation of procedures that are consistently capable of forming a quality culture in the organization. Therefore, these implementations guarantee organizational success in an effort to achieve improvements in operational performance.

### 5. Conclusion: future policy implications

It is vivid that this article calculates the effect of ISO 9001 implementation on organizational performance. The first summary recommends that the planning of ISO 9001 certification has a significant influence on quality culture with a positive value relationship. However, planning for ISO 9001 certification does not have a significant effect on operational performance. Based on the results of the study, the planning of ISO 9001 certification in an organization can be done by identifying quality aspects, the implementation of documentation, and the establishing of standard procedures. Second, organizational commitment has a significant influence on quality culture with positive relationships. However, organizational commitment does not have a significant effect on operational performance. Based on the results of the study, the commitment that must be possessed by all members of the organization in implementing ISO 9001 is an affective commitment and normative commitment. Third, the application of procedures has a significant effect on quality culture with a positive value relationship. In addition, the application of procedures has a significant effect on operational performance with a positive value relationship. Therefore, the application of ISO 9001 procedures in an organization can be carried out by periodic auditing, following standard procedures, and applying corrective actions.

Fourth, quality culture has a significant influence on operational performance with a positive value relationship. Furthermore, quality culture has succeeded in becoming a mediator in the relationship between ISO 9001 certification planning, organizational commitment, and implementation of procedures with operational performance. Quality culture is prominent in an organization to support the implementation of ISO 9001 such as top management support for quality, strategic planning for quality, customer focus, quality training, empowerment and involvement, quality improvement teamwork, measurement and analysis, and quality assurance. Fifth, the influence of quality culture is fully mediated in the relationship of ISO 9001 certification planning to operational performance and the relationship of organizational commitment to operational performance. These results are marked by an insignificant influence if they are not mediated by a quality culture. Meanwhile, the influence of quality culture is pseudo-mediation in relation to the application of procedures to operational performance. These results are marked by a significant influence if not mediated by a quality culture. In summary, sustainable organizational performance could be well addressed if stakeholders fully accommodate the detailed prescription given according to the research result.

#### Acknowledgments

This research was financially supported by The Faculty of Engineering, Diponegoro University, Indonesia, through Strategic Research Grant 2022.

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#### Disclosure statement

No potential conflict of interest was reported by the authors.

#### Citation information

Cite this article as: The effect of quality management system (ISO 9001) on operational performance of various organizations in Indonesia, Arfan Bakhtiar, Aditya Nugraha, Hery Suliantoro & Darminto Pujotomo, *Cogent Business & Management* (2023), 10: 2203304.

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