

ISO 9001 Quality Management System: A Categorization of Motives and Benefits

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Abstract - The ISO 9001 as a reference in implementing the quality management system is expected to improve companies' performance significantly. This study examines the motive (expectation) and benefit (realization) of ISO 9001 certification using a systematic literature review and the Delphi method. A systematic literature review is conducted to identify the motives and benefits of companies obtaining ISO 9001 certification. Subsequently, the Delphi method is employed to categorize the certification motives and benefits for the following survey. Thirty-five motive and forty-nine benefit statements are identified from extant studies. Initial content analysis is utilized on the compiled statements, followed by the Delphi method to map the statements into categories and validate the initial analysis. Six motives and seven benefits categories are created and confirmed by twenty-two experts experienced in ISO 9001's implementation. The Motive categories are (1) Marketing Strategies, (2) Quality Management, (3) Financial/Cost Strategies, (4) Operational Planning & Control, (5) Customer Requirement, and (6) External Relationship; the Benefit categories are (1) Quality Improvement, (2) Financial Benefit, (3) Operational Improvement, (4) Relationship Management Improvement, (5) Marketing Benefit, (6) Customer Satisfaction, and (7) People Engagement.

Keywords: Benefit; ISO 9001; Motive; Quality Management

I. INTRODUCTION

According to [1], quality is the level at which a series of characteristics of a product/output can meet the requirements. The requirements here can mean the requirements given by the customer or the requirements that have been adjusted to the applicable standards.

ISO is an organization that stands for International Organization for Standardization, founded in 1947 and has its headquarters in Switzerland. This organization is an international standard-setting body consisting of representatives from the national standardization bodies of each country [2].

ISO 9001 is the most quality management system that is widely adopted in the world [3]. Since it was first published in 1987, ISO 9001 certification has been implemented in many companies and organizations

globally and in Indonesia in particular. More than eight hundred thousand companies and organizations from 190 countries have been ISO 9001 certified [4].

ISO 9001: 2015 has become a leading industry standard for eliminating waste, increasing productivity and efficiency, providing greater customer satisfaction, and streamlining the daily routine of organizations [5]. Organizations are motivated to obtain ISO 9001 certification because the potential benefits reach all internal and external aspects of their operations [6]

The ISO 9001 certification shows positive results regarding the relationship between internal motives, the implementation process, and the results of adopting ISO 9001 in terms of operational performance [7]. The motives and benefits of ISO 9001 certification will have satisfactory results when it is linked with the marketing objectives [6]. Other research stated that motivation to obtain certification affects the implementation performance of ISO 9001 and varies according to the company's size [8]. Implementing the ISO 9001 quality management system can effectively solve internal company problems and achieve high-quality standards.

The reasons for ISO 9000 certification can be divided into three categories which are "developmental," "non-developmental," and "mixed" [9]. Other studies state that motives for obtaining ISO 9001 certifications are classified into external and internal [8] [7]. Moreover, the benefit of ISO 9001 certification can be categorized into operational, managerial, and strategic [10] and also as internal and external benefits [11] [12] [13].

Despite the above references, only limited research has been conducted to categorize motives and benefits of ISO 9001 certification; specifically, the one focuses on the content. Thus, this study endeavors to identify and categorize the certification motives and benefits of ISO 9001: 2015 certification. By categorizing the motives and benefits of ISO 9001:2015 certification, it can be a starting point to examine the gap between the motives and benefits of ISO 9001:2015 certification and the correlation between quality management principle implementation and benefits.

II. RESEARCH METHODOLOGY

The selection of variables was obtained through a systematic literature review (SLR) [14]. Based on the SLR result, we focused on the motive for ISO 9001 certification and the benefits of ISO 9001 certification.

We then selected indicators related to the motive and benefit of ISO 9001 certification from the literature. The motive and benefits indicators obtained through SLR will be grouped into several categories through the Delphi method. Experts will categorize several indicators into categories based on their expertise. The categories that are used as references in the Delphi study are obtained through qualitative analysis in the form of content analysis. According to [15], content analysis is a research method that can be applied in qualitative, quantitative, and sometimes mixed research frameworks using various analytical techniques to generate findings and put them into context. The determined consensus level will confirm the Delphi results. If not achieving the consensus level, another round of Delphi studies can be conducted to reach an acceptable consensus.

In terms of population, for the initial research using the Delphi method to determine the categories of motives and benefits, the population studied were company workers/employees who had more than five years of experience in implementing the ISO 9001 quality management system.

III. RESULTS

A. Systematic Literature Review (SLR)

From the systematic literature review (SLR) conducted, we obtained about 203 articles taken from a combination of the Scopus and Tandfonline databases, using “Quality”, “ISO 9001”, “Motive”, and “Benefit” keywords. We then made limitations for research articles in the scope of 2015 - 2020 until 116 articles were obtained. Then a review in terms of the title and abstract was carried out so that only 12 articles could be selected which have relevance and suitability.

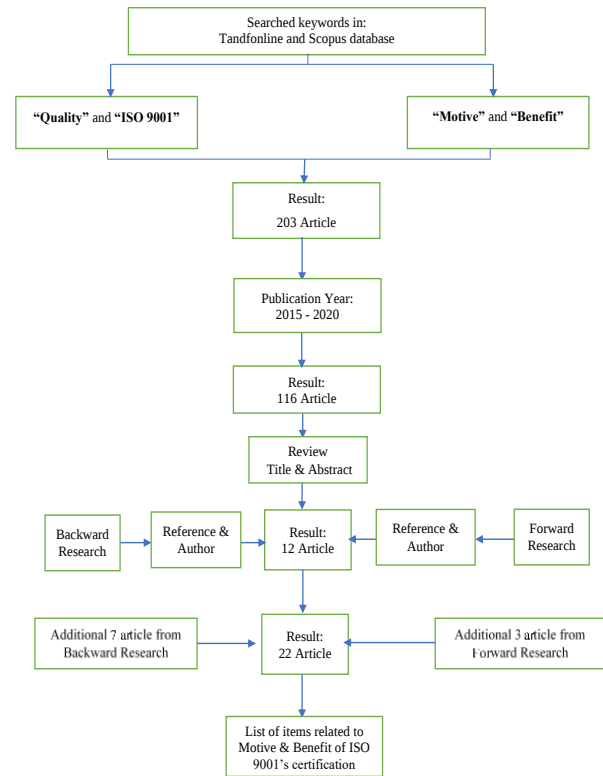


Fig.1. Flow Process of Systematic Literature Review

We then conducted a backward and forward search based on the selected articles. This search results in 7 additional articles from backward research and 3 additional articles from the forward research, so a total of 22 articles are collected as shown in TABLE I. Figure 1 shows the systematic literature review stages in detail.

From the 22 articles, we observed the motives and benefits obtained from ISO 9001 certification. Through this observation, 62 motive indicators and 102 indicators of benefits obtained from the ISO 9001 certification were collected from [6], [7], [8], [16] [17], [10], [13],[17], [18] [19], [20]. We then eliminated the similarity of indicators from each motive and benefits to obtain 35 motives and 49 benefits, later becoming indicators in this study.

TABLE I
 RESULT OF SYSTEMATIC LITERATURE REVIEW

No	Title	Year of Publication
1	Implementation, advantages and management of ISO 9001 in the construction industry [18].	2020
.2	Examining the implementation of ISO 9001 in Indonesian construction companies [16]	2015
3	ISO 9001 standard: Developing and validating a survey instrument [20].	2020

No	Title	Year of Publication
4	ISO 9001:2008: A factorial analysis of its advantages and implementation for construction firms [17]	2017
5	Developing and validating a model of ISO 9001 effectiveness gap: empirical evidence from China [21].	2019
6	The effects of implementing ISO 9001 in the Spanish construction industry [22].	2018
7	Assessment of ISO 9001:2015 implementation factors based on AHP: Case study in Brazilian automotive sector [5]	2018
8	The influence of motivations and other factors on the results of implementing ISO 9001 standards [23].	2018
9	The ISO 9001:2015 quality management system standard: Companies' drivers, benefits, and barriers to its implementation [19].	2019
10	Investigation of TQM implementation: empirical study in Brazilian ISO 9001-registered SMEs [24].	2019
11	ISO 9001 certification and failure risk any relationship [25].	2018
12	The differences in the financial performance of manufacturing companies in Indonesia before and after IO 9000 implementation [23].	2018
13	Inhibiting factors of implementing total quality management on construction sites [26].	2004
14	An empirical study of the motives and benefits of ISO 9000 certification: the UAE experience [6].	2007
15	Analysis of ISO 9001 certification benefits in Brazilian companies [10].	2020
16	ISO 9000 Performance in Japanese Industries [8].	2004
17	Empirical evidence about ISO 9001 and ISO 9004 in Italian companies [13].	2017
18	The roles of firms' motives in affecting the outcomes of ISO 9000 adoption [7].	2011
19	The true motives behind ISO 9000 certification: Their effect on the overall certification benefits and long term contribution towards TQM [27].	2002
20	The impact of ISO 9000 certification on firms' financial performance [28].	2015
21	Organisational culture and quality management system implementation in Indonesian construction companies [29].	2016
22	Motivations related to the quality management system and benefits of its implementation in the company: state of the art [30].	2020

We then conducted a content analysis to determine the motive and benefits categories for the certification. We categorize the motives of ISO 9001 certification into six categories consisting of "External Relations (ER)", "Operational Planning and Control (OPC)", "Marketing Strategy (MS)", "Cost / Financial Strategy (CFS)", "Quality Management (QM)", and "Customer Requirement (CR)". Meanwhile, for the benefit of ISO 9001 certification, we categorize it into seven categories consisting of "Financial Benefits (FB)", "Quality Improvement (QI)", "Relationship Management Improvement (RMI)", "Customer Satisfaction (CS)", "People Engagement (PE)", "Marketing Benefits (MB)", and "Operational Improvement (OI)". Definition of the each category of Motives and Benefits can be seen in TABLE II.

TABLE II
 DESCRIPTION OF MOTIVE AND BENEFIT CATEGORIES

MOTIVE	
<u>Motive Categories</u>	<u>Description</u>
Quality Management	The activities on establishing quality policies and quality objectives and the managing process to achieve the quality objective.
Customer Requirement	Need or expectation that is stated, generally implied, or obligatory by customer
Financial/Cost Strategies	Deployment of appropriate methods and tools fosters the development of a consistent, systematic approach for addressing financial and economic objectives.
External Relationship	Relationships which are managed by organization with all of its interested parties to optimize their performance in order to achieve sustained success.
Operational Planning & Control	Planning of activities & resources, controlling of process implementation, and maintaining documented information needed by firm/organization to meet requirements for the provision of product/service
Marketing Strategies	Strategy to gain new customers, customer maintaining, market share increment, and increasing sales growth
BENEFIT	
<u>Benefit Categories</u>	<u>Description</u>
Quality Improvement	The ability increments to fulfill quality requirements, which causes a beneficial change in quality performance.

Financial Benefit	The revenue gain, decrease in the cost of goods sold/sales revenue, and an increase in the asset turnover ratios of the certified firms /organization
Customer Satisfaction	The customers' perception of the degree to which the expectations have been fulfilled
People Engagement	The feeling of being involved from people at all levels throughout the firms /organization could enhance the ability to create and deliver value to the stakeholder
Marketing Benefit	The achieved competitive gains by the increase of market share and sales volume
Operational Improvement	The positive impact of operations and supply chain activities on the operational performance of firms/organizations.
Relationship Management Improvement	The capability increments to create value through responding to the opportunities and constraints for interested parties and by sharing resources and competence and managing quality-related risks

B. Delphi Method

We then utilized the Delphi method to group each indicator into motives and benefits categories based on the literature review results. The survey was designed and administered in an electronic format using the Proven by users platform and shared with potential expert respondents via email, Whatsapp application, and LinkedIn social media platforms. The consensus level of the Delphi study was determined to be above 60%. This rule is following some previous research using the Delphi technique. The result obtained from five respondents gave a similar assessment for the requested indicator more than 60% proportional answers [31].

Thirty-five motive indicators are associated with six categories of motives, and forty-nine benefit indicators are associated with seven categories of benefits derived from a systematic literature review. Expert respondents for the Delphi study were determined to have more than five years of experience in work related to ISO 9001 certification or implementation. TABLE III describes the respondent data involved in the Delphi (first and second round) and their job positions in each company.

The Delphi was initially carried out to sixteen respondents. However, one respondent was eliminated from under five years of experience related to ISO 9001 certification, so there were only fifteen respondents. Most of the experts had over ten years of experience (11 of 15 experts), and most of them were in the QA-QC Manager position (5 of 15 experts).

In this first round of Delphi study, from thirty-five motive indicators, five are associated with ER category, four indicators with OPC category, ten indicators with MS category, two indicators with FCS category, and three indicators with QM and four indicators with CR

category. In comparison, the rest of the seven motive indicators were not achieving consensus level. From seven, six indicators have achieved 60% value while the other one achieved 53.33%. We found that from 4 of 5 indicators achieving 60% value on some category, the other was 40%. This 60:40 percentage value mostly happened in the OPC and the QM category. We also found that three indicators were achieving 100% value on the MS motive category. They are "Following the behavior of markets" [8], "Using it as a promotional and/or marketing tool" [7], and "Developing marketing strategies" [8]. All indicators that fall into the MS category were overall consensus and achieving above 73% value.

TABLE III
 RESPONDENT DATA PROFILE OF DELPHI METHOD SURVEY

Experience	Delphi Round			
	Round 1 (n = 15)		Round 2 (n = 7)	
5 -10 years	4		2	
>10 years	11		5	
Delphi Round	Position			
	QA-QC Manager	QA-QC Lead/ Coordinator	QA-QC engineer/ Auditor/ Specialist	Others
Round 1	5	4	3	3
Round 2	1	3	3	

Five of the forty-nine benefit indicators are associated with the FB category, eight with QI. From that six benefit indicators, only one indicator achieved 53.33% while the others achieved 60%. Unlike motive indicators, on the benefit indicator with 60% value on some category, the other is mainly scattered on two or three other categories. Only one benefit indicator has a 60:40 percent value which falls onto QI and PE category. Since the overall consensus has not been achieved, the second round of Delphi is needed to be conducted. We also found that three benefit indicators achieved 100% value, one in the FB category and the other in the CS category. They are "Reduced Internal costs" [6] from the FB category, "Better customer service [6]" and "Customer satisfaction has increased" [17] from the CS category.

We found that the consensus level might not be achieved in the 1st round since some experts were unclear on some category descriptions. This result shows that some motive indicators consecutively have 60 and 40 percentage values in OPC and QM categories. At this point, experts might be indecisive about selecting between the two categories since the description were less convincing for related indicators. We then decided to make revisions related to category descriptions so that they became sharper and more accurate.

After that, the second-round Delphi was then conducted for only indicators which consensus was not reached. The survey conveyed to seven other respondents with the same expert criteria. Three of the seven experts surveyed had a QA-QC Lead/Coordinator position in their company, where three others were working as QA-QC Engineer/Auditor/Specialist, and the rest was a QA-QC Manager. Most of them had more than 10 years of experience (5 of 7 respondents), and the others had 5 – 10 years of experience. The second round Delphi results were successfully reaching consensus level and even above 70% for all indicators. Five of them were categorized as OPC from seven motive indicators, where the other two as QM. While for benefit indicators, two from six indicators were categorized as QI, one as PE, two as MB, and the rest as OI. Categorized motive and benefits indicators based on the Delphi study can be seen on TABLE IV and V.

TABLE IV
 ISO 9001 CERTIFICATION MOTIVES – DELPHI RESULT

Categories	Indicators
ER	Improving relations with communities [19]
	Avoiding potential export barriers [19]
	Gaining preferred supplier status [7]
	Complying with the industry policies or regulations [7]
	Being a role model to suppliers [6]
OPC	Improving corporate procedures and organizational standards [8]
	Providing a foundation for continuous improvement [7]
	Having better control of operations of the business [7]
	Building a foundation for a systematic management [7]
	For the betterment of the company's overall management system [16]
	Controlling project activities effectively and efficiently [16]
	Improving productivity and/or efficiency [6]
	Top management decision [6]
MS	Improving communication within the organization [6]
	Direct entry to new market [6]
	Requisite in competing in the sector [6]
	Following the behavior of markets [8]
	Enhancing international competitiveness [8]
	Developing marketing strategies [8]
	Using the Standard as a marketing tool [19]
	Improving the company prestige (e.g., image, reputation) [16]
	Using it as a promotional and/or marketing tool, [7]
	Our competitors are ISO 9001 certified [7]
FCS	Matching competitor's actions [7]
	Reducing the cost of Customer complaints [8]

Categories	Indicators
QM	Using it as a basis for internal cost reduction [6]
	Improving product/service quality [8]
	Realizing the company's strategy for pursuing quality [7]
	Reducing incidents, rejection, and complaints [6]
CR	Minimizing the poor quality of construction process and products [16]
	Satisfying customer requests [8]
	External motives To meet customer's demands [7]
	Demand and/or pressure from customers [6]
PE	Fulfilling clients requests as part of the bidding process [16]

TABLE V
 ISO 9001 CERTIFICATION BENEFITS – DELPHI RESULT

Categories	Indicators
FB	Reduced Internal costs [6]
	Improved profitability [6]
	Improvements in the cost savings [10]
	Reducing inspection cost [8]
	Reducing the cost of reworks and waste [8]
QI	Improvements in the business processes quality [10]
	Quality of services and products increased [17]
	Less remedial work is required [17]
	Ease in identifying quality issues,
	Improvement in defective work at an early stage [18]
	Supplier's quality improved [6]
	Reduction in incidents, rejections, and complaints [6]
RMI	Improvements in employee awareness of quality management [6]
	Reducing quality cost [8]
	Improving supplier relationship [6]
	Established and/or improved mutual cooperation [8]
CS	Increasing foreign buyers' confidence in firm's management ability [8]
	Better customer service [6]
	Reducing customer complaints [8]
PE	Customer satisfaction has increased [17]
	Employees are increasingly integrated into the continuous improvement culture [20]
	Development and innovation in work [18]
	Professional teamwork [18]
	Satisfaction of employees [18]
	Improving employee morale and skills [8]
	Good communication in the different departments [17]
	Better working environment [6]
	Improvements in the motivation of the employees [10]

Categories	Indicators
MB	Global market contacts are increased [17]
	Increased the ratio of winning new projects [17]
	Expansion to international markets [6]
	Effective promotional and/or marketing tool [6]
	Speeding new product introduction [8]
	Enhancing price bargaining position with foreign buyers [8]
	Enhancing corporate reputation overseas [8]
	Enhancing corporate reputation overseas [8]
	Increment in the ratio of captivation new projects [18]
	Increase in prestige and reputation of the company [13]
	Developed business [18]
	Increased market reputation [18]
OI	Improving the capacity of machinery and equipment [8]
	Reducing delivery time [8]
	Reducing process variance [8]
	Reduction in material wastage [17]
	Optimization of resource usage [17]
	Elimination of redundancy or unnecessary work [6]
	Increased productivity and/or efficiency [6]
	Improvements in the documentation processes [10]
	Reducing process variance [8]

IV. DISCUSSION

The Delphi study was conducted in two rounds as some motive and benefits indicators were not reaching the necessary consensus (60%). Based on the first-round result, we revised descriptions of the categories to improve accuracy and explain them clearly. The experts confirmed five motive indicators in the OPC and two in QM categories from the second round. The experts confirmed two indicators in each QI and MB category in benefit categories and one indicator in each PE and OI category.

Delphi results show that the MS category of certification motives has the most indicators, and each indicator reaches above 73% consensus. Moreover, the MB category of the certification benefits represents the largest number of indicators related to the certification benefits.

V. CONCLUSION

This study aims to identify and categorize the indicators related to the motive and benefit of ISO 9001 certification. A systematic literature review has been conducted to collect the articles connected to ISO 9001

Quality Management System. The indicators of ISO 9001 certification motive and benefit were also compiled from selected articles. From content analysis, the motives of ISO 9001 certification can be categorized into “External Relations (ER)”, “Operational Planning and Control (OPC)”, “Marketing Strategy (MS)”, “Cost / Financial Strategy (CFS)”, “Quality Management (QM)”, and “Customer Requirement (CR)”. Meanwhile, for the benefit of ISO 9001 certification, we can categorize into “Financial Benefits (FB)”, “Quality Improvement (QI)”, “Relationship Management Improvement (RMI)”, “Customer Satisfaction (CS)”, “People Engagement (PE)”, “Marketing Benefits (MB)”, and “Operational Improvement (OI)”

Using two rounds of Delphi, the motive and benefit of the ISO 9001 certification have been categorized and confirmed by ISO 9001 experts. Thirty-five motive indicators have been categorized into six categories, and forty-nine benefit indicators are categorized into seven. From the categorization, “Marketing Strategies” contains most motive indicators with ten indicators, which “Marketing Benefits” has the most indicators that fall into the category with twelve indicators. This Delphi result will be used as the basis for further research via a survey. The relationship between motives and certification benefits will be examined to determine company satisfaction with ISO 9001: 2015 certification. Furthermore, this study will be used in examining the correlation between certification benefit and the Quality Management Principle implementation of the ISO 9000 standard.

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