Analysis of Total Quality Management (TQM) implementation in Small Medium Industries

Thomas Windharyanto Nugroho
Department of Industrial Engineering
University of Indonesia
Jakarta, Indonesia
thomas.windharyanto61@ui.ac.id

Rahmat Nurcahyo
Department of Industrial Engineering
University of Indonesia
Jakarta, Indonesia
rahmat@eng.ui.ac.id

Abstract

This study is based on the large number of small and medium enterprises in the application of Total Quality Management (TQM). The lack of standardization or clarity of the quality system used in SMEs is rather an obstacle for SMEs in maintaining the management system. the purpose of this study is to analyze the application of Total Quality Management (TQM) to small and small industries in the food sector. After knowing the implementation result of Total Quality Management (TQM) in small and medium industry in food industry. The methodology used is taking primary data with questionnaires. This study is an empirical study using population study techniques or often referred to as census techniques in the data. The resulting data will be processed by the method of Structural Equation Model (SEM). The limitation research is the small and medium industries in the food indutries.

Keywords (12 font)
Quality, Total Quality Management, Small Medium Industries, SMEs

1. Introduction

Quality has become one of the most important drivers of today's global competition (Demirbag et al., 2006). Living in the modern world as now requires Indonesia to meet its own needs in addition to exporting superior products and services. Generally the problems that occur in superior products and services is the productivity when generating and quality at the time the product and service is used. (Yuri & Nurcahyo, 2013). Quality has become a key element in the company's survival in a competitive market. The business success lies in the ability of a company to apply the total quality system effectively to maintain the quality of its products and services at a relatively minimal cost (Topalovic, 2015).

It is the fact that it is also a challenge for small and medium enterprises that only compete in the domestic arena in a country territory, or even cover only the city area. In general, large and overseas corporations have almost all the advantages compared to small to medium sized businesses ranging from capital advantages, cost, efficiency, networking, and so on. So it can not be denied that these companies are able to produce very well to produce a quality product.

It is generally accepted that small and medium enterprises (SMEs) play an increasingly important role for the global economy in countries that choose the economic system through which highly productive small businesses (Hill et al., 2002). Small and medium enterprises are a dynamic and growing sector in most economies around the world. Global economic conditions have driven the rise of SMEs

over the past 10-15 years. This is seen not only in Britain, the United States, Australasia and Europe, but also in Africa, Latin America, Korea and Indonesia (Levy & Powell, 2004).

In Indonesia, the small industry has historically been a major player in domestic economic activity, especially as a large provider of employment opportunities (Tambunan, 2009). The small and medium-sized industries have also been recognized as having an important role in Indonesia as an engine for the development and growth of non-oil and gas exports, especially manufacturing in Indonesia (Tambunan, 2006). In ASEAN, small and medium-sized industries make up 92-99% of all commercial enterprises, using 77-97% of the domestic workforce in Indonesia, Thailand and Vietnam, and 58-62% of other ASEAN Countries (ASEAN Economic Community, 2015) . Their export share is even lower: 10-20% in Indonesia, the Philippines and Indonesia Singapore, and about 30% in Thailand and Vietnam (ASEAN Economic Community, 2015). The export value of small and medium industries in Indonesia is still inferior to the countries in ASEAN. According to Aharoni (1994), small and medium industries produce more than 99% of all business entities and employ more than 80% of the total labor force in the country. According to Levy et al. (1999), there is no doubt that the performance of small and medium-sized industries is critical to the economic development of most least developed countries.

Small and Medium Industry has an important role in the national economy. This can be seen by the number of business units that reached 3.4 million units in 2013 and accounted for 90% of the total national industrial units. The development of small and medium industries is targeted to increase the average business unit by 1% or 30 thousand business units per year, and increase the absorption of the average workforce by 3% per year. (Ministry of Industry of the Republic of Indonesia, 2015). In early 2016, the contribution of the small and medium industry sectors to the growth of non-oil and gas industry increased from 57.84 percent to 60.34 percent in the last five years. Furthermore, exports of small and medium industries from January to November 2016 reached USD 24.7 billion or contributed 24.8 percent of total non-oil and gas industry exports. Small and medium industries are also able to absorb the most labor force than other sectors. Labor absorption in this sector at the beginning of 2016 reached 97.22 percent. In 2016, Indonesia's small and medium-sized industries grew by 166 thousand units or an increase of 4.5 percent compared to 2015 and has employed 350,000 workers (www.smeindonesia.org). Based on the qualitative and quantitative criteria of the priority industry, here are ten priority industry groups developed in 2015-2035 (Ministry of Industry of the Republic of Indonesia, 2015):

No.	**Priority Industry Group**	
	List of Industries	***Remark***
1	Food Industry	Mainstay Industry
2	Pharmacy, Cosmetics and Health Equipment Industry	Mainstay Industry
3	Textile, Leather, Footwear and Various Industry	Mainstay Industry
4	Transportation Industry	Mainstay Industry
5	Information and Communication Technology (ICT) Industry	Mainstay Industry
6	Power Plant Industry	Mainstay Industry
7	Capital Goods Industry, Components Industry, Auxiliary Material Industry, and Industrial Services	Supporting Industry
8	Agro-Based Upstream Industry	Upstream Industry
9	Basic Metal And Non-Metallic Mineral Industry	Upstream Industry
10	Oil, Gas, And Coal Based Chemical Industry	Upstream Industry

Integrated quality management is considered by many as an important quality and tool for business performance improvement (Kumar, R., Garg, D., Garg, T. K.,2009). The formal application of quality management systems (ISO 9000 series standards) and TQM are two approaches that have been

demonstrated to provide a quality level of competitive performance (Tannock, J., Krasachol, L., Ruangpermpool, S.,2002). TQM helps companies reduce scrap, rework and costs related to poor quality, warranty and late delivery (Antony, J. and Banuelas, R.,2002). TQM adoption and related methods are less widespread in smaller organizations (Tannock, J., Krasachol, L., Ruangpermpool, S.,2002).

As demonstrated by some empirical studies, the implementation of QM effectively affects firm performance positively (Lushi, I., Mane, A., Kapaj, I., Keco, R. (2016). Companies that implement QM focus on providing more value for their customers and improving process efficiency. In this context, the standard management system (MSS) has enjoyed great success over the past years, in the field of QM (ISO 9001). By the end of 2010 at least 1,109,905 ISO 9001 certificates have been awarded in all 178 countries worldwide, which nearly tripled the number of certificates by the end of 2000 ((Lushi, I., Mane, A., Kapaj, I., Keco, R. (2016).

2. Literature Review

Globalization is a phenomenon that encourages companies at the micro-economic level to improve efficiency in order to be able to compete at the local, national, and international levels. With globalization bringing together markets and international investment competitions, challenges and opportunities for all companies, whether small, medium or large (Lestari, E.P.,2010). Total quality management (TQM) is an integrative organizational-wide philosophy aimed towards continuously improving the quality of products/services and processes in order tomeet or exceed customer expectations (Baird, K., Hu, K. J., Reeve, R.,2011).

The adopting of formal quality management system and of TQM are the two approaches which have been demonstrated to provide competitive levels of quality performance (Tannock, J., Krasachol, L., Ruangpermpool, S.,2002). TQM creates an organisational culture that fosters continuous improvement in everything by everyone at all times, and requires changes in organisational processes, strategic priorities, individual belief, attitudes and behaviours (Shin, D., Kalinowski, J. G. and El-Enein, G. A.,1998). It can be of strategic significance in providing firms with the required edge to survive in today's competitive environment (Chin, K.S., Pun, K.F., Xu, Y., Chan, J.S.F.,2002). Despite its importance, knowledge of the impact of TQM practices in SMEs in developing countries is very limited (Temtime, Z. T., Salomon, G. H., 2002).

The concepts of Total Quality Management (TQM) have come to the fore in recent times, being adopted by organisations as the means of understanding and satisfying the needs and expectations of their customers (Pun, K. F.,2002). TQM represents an integrative approach to pursue customer satisfaction, and has generated a huge amount of interest in many sectors of the economy such as manufacturing, service, government, and education in many countries around the globe (Chin, K.S., Pun, K.F., Xu, Y., Chan, J.S.F, 2002). As in Winston G. Lewis, Kit Fai Pun, Terrence R.M. Lalla, (2006) contend that ISO 9000 is an important part of TQM, and the implementation of both approaches together will lead to organisational success and competitive advantages.

3. Theoritical Background

A leading force in shaping and spreading quality management ideology and practices in modern business management is total quality management (TQM) (Boateng-Okrah, E. and Fening, F.A., 2012). Under the pressure to compete in both domestic and international markets, companies need to create conditions that enable them remain continuously competitive (Mehralian, G., Nazari, J. A., Nooriparto, G., and Rasekh, H. R., 2017). To meet the challenge of this global competition, many businesses have invested substantial resources in adapting and implementing total quality management (TQM) strategies (Demirbag, M., Tatoglu, E., Tekinkus, M., Zaim, S., 2006). Total quality management (TQM) is one of these management philosophies that can helps organizations to achieve the desired performance (Al-Dhaafri, H. S., Al-Swidi, A., 2016). TQM is defined as the holistic approach for continuous improvement in the operations of the organization in order to produce and deliver high quality products and services and satisfy customers needs (Demirbag, M., Tatoglu, E., Tekinkus, M., Zaim, S., 2006).

TQM is the culture of an organization committed to customer satisfaction through continuous improvement. This culture varies from one country to another and between different industries, but has certain essential principles, which can be implemented to secure greater market share, increased profits,

and reduced costs (Kanji, G.K.,Wallace, W., 2000). Management awareness of the importance of TQM, alongside business process reengineering and other continuous improvement techniques was stimulated by the benchmarking movement to seek, study, implement and improve on best practices (Zairi, M.,Ahmed, P.K., 1999). A review of extant literature on TQM and continuous improvement programs identifies 12 common aspects: Committed leadership, adoption and communication of TQM, closer customer relationships, benchmarking, increased training, open organization, employee empowerment, zero defects mentality, flexible manufacturing, process improvement, and measurement (Demirbag, M., Tatoglu, E., Tekinkus, M., Zaim, S., 2006).

The ISO 9001:2000 standard is based on the eight quality management principles (QMPs) that are derived from the collective experience and knowledge of the international experts who participate in ISO Technical Committee, ISO/TC 176, which is responsible for developing and maintaining the ISO 9000 series of standards (Electronic Publication: ISO, 2004). The eight QMPs are elaborated with respect to TQM implementation in SMEs, as follows:

(1) Customer focus: Must understand that their success depends significantly on customers. Therefore, firms should understand and determine customer needs by meeting their requirements and striving to exceed their expectations.
(2) Leadership: Top management must establish unity of purpose and direction. They must create and maintain the internal environment in which people can become fully involved in achieving the organisation's purpose.
(3) Involvement of people: Employees at all levels must be recognised as the essence of the organisation, and strategies must be put in place to ensure their full involvement, so that the organisation can derive maximum benefits from their abilities.
(4) Process approach: A desired result is achieved more efficiently when related resources and activities are managed as a process.
(5) System approach to management: Identifying, understanding and managing a system of interrelated processes for a given objective improves the operational effectiveness and efficiency of firms.
(6) Continual improvement: The "Plan-Do-Check-Act" cycle is applied to processes. The "Plan" establishes the objectives and processes necessary to deliver results in accordance with customer requirements and the organisations policies; the "Do" implements the processes: the "Check" monitors and measures the processes and products against policies, objectives and requirements and reports on the results; and the "Act" takes actions to continually improve process and system performance.
(7) Factual approach to decision making: Effective decisions are based on the analysis of data and information.
(8) Mutually beneficial supplier relationship: Firms and their suppliers are interdependent, and a mutually beneficial relationship would enhance the ability of both to create value.

Total Quality Management is an approach in running a business that seeks to maximize the competitiveness of an organization through continuous improvement of its products, services, labor, processes and environment. To facilitate his understanding, the notion of TQM can be distinguished in two aspects (Fandi, 1995: 4). The first aspect describes what the TQM is and the second aspect discusses how to achieve it. The difference between TQM and other approaches in running a business is a component. This component has ten main elements of TQM (Goestsch and Davis, 1994: 14), each of which will be described as follows:

(1) Customer satisfaction
(2) Organizational commitment
(3) Scientific approach
(4) Long-term commitment
(5) Teamwork
(6) Continuous improvement
(7) Training & education
(8) Controlled Freedom
(9) Unity of purpose

(10) engagement and empowerment

In practice, there are things that must be met as a condition of successful quality management. According to Salaheldin (2008), it is:

(1) Strategic Factors
Strategic factors consist of top management commitment, organizational culture, leadership, continuous improvement, quality objectives and policies, and benchmarking.

(2) Tactical Factors
Tactical factors consist of empowerment of labor, employment involvement, labor training, team building, use of information technology, supplier quality, supplier relationships, assessment of supplier performance.

(3) Operational Factors
Operational factors consist of product and service design, process control, customer relationship management, customer and market knowledge, TQM implementation schedule, resource conservation and utilization, inspection and work checks.

4. Methodology

The first stage of the methodology based on the problems and constraints that exist is to collect the necessary data in research. Data are primary data (questionnaires), as well as secondary data support. Primary data in this research is respondent data. Respondent data is needed to know the responses of respondents about the effect of quality management implementation on organizational performance on SMEs in the field of food and beverages. The number of respondents that we received as many as 234 respondents representing each industry but that included in the category of small and medium industries amounted to 210 industries. Primary data used in this study were obtained from the questionnaire distributed on the sample that has been determined. Prior to the data collection, will be tested reliability and validity of the questionnaire for the questionnaire that made reliable and said valid. Total quisionaire before doing tested reliability and validity is 42 quisionaires but after tested the final quisionaires is 39 quisionaires.Then after verifying the data, the next step is to process data and data analysis. Methods of data analysis were conducted with the aim to interpret and draw conclusions from a number of data collected. So the conclusion drawn is the result of a correct calculation, which is expected to give the right decision result. The method used to analyze survey results is by Structural Equation Modeling (SEM).

5. Result & Discussion

5.1 Construct validity and reliability

Hair et al. (2010) states that the value of construct reliability or commonly expressed by Cronbach Alpha is declared good if its value is ≥ 0.6. If there is a Cronbach Alpha value below 0.6, then there must be a question removed or removed. In Table 1 shows the results of the first reliability test before there are modifications related to the number of questions. The result is as follows:

Table 1. Result of Reliability Test

Item	Variable	Score of Cronbach Alpha	Result of reliability test
Strategic Factors	Management commitment & leadership (M)	0.847	Reliable
	Corporate Culture (B)	0.746	Reliable
	Continuous improvement (CI)	0.749	Reliable
Tactical Factors	Training & education (T)	0.826	Reliable
	Employee involvement & teamwork (KR)	0.803	Reliable
	Supplier management (P)	0.629*	Reliable*
	Communication (K)	0.767	Reliable

Operational Factors	Assessment of achievement, compensation & rewards(R)	0.688*	Reliable*
	Focus on customer satisfaction (F)	0.627*	Reliable*
	Process management and quality data (D)	0.847	Reliable
Performance	Organizational performance (PR)	0.845	Reliable

* The calculation result after the omitted question is invalid

According to Hair et. Al (1998), Ghozali (2004) proposed modeling stages and structural equation analysis into 7 (seven) steps, namely (1) theoretical model development, (2) composing the path diagram, (3) changing the path diagram into equations structural, (4) selecting input matrices for data analysis, (5) assessing model identification, (6) evaluating model estimation, and (7) interpretation of the model.
Prior to calculation by using structural equation analysis, analyzed by using Confirmatory Factor Analysis (CFA). Confirmatory Factor Analysis (CFA) is one form of factor analysis also especially in social research. The main purpose is to test whether the indicators that have been grouped by their latent variables (constructs) consistent in their constructs or not.
At the beginning, researchers have developed hypothetical models based on the theoretical framework or previous research that became the reference. Confirmatory factor analysis is divided into 3 sections consisting of variables affecting strategic factors, variables affecting tactical factors, and variables affecting operational factors. The result of calculation CFA refer to table 2.

Table 2. Result of confirmatory factor analysis

Construct	Variabel	Code	1	2	3	4	5	6	7	8	9	10
Strategic Factors	Quality policy is considered in strategic planning	X1	0.80									
	Top leadership commitment and support for TQM implementation	X2	0.87									
	Top management takes action to implement its quality improvement policy	X3	0.77									
	Top management continues to monitor systems and processes within the organization	X4	-									
	The quality objectives / policies have been started clearly and communicated to all by top management	X5	-									
	Employees conduct their own checks in the workplace	X6		0.64								
	Every employee is committed to satisfy his customers, both internal and external.	X7		0.80								
	Honesty, sincerity and caring become an integral part of everyday business life.	X8		0.57								
	The Company encourages constantly to learn and improve all its services	X9			0.69							

	and processes.							
	The company has a program that aims to find time and cost losses in all internal processes.	X10	0.88					
	The company uses the PDCA cycle extensively for process control and improvement.	X11	0.72					
	Our decision on quality improvement is always based on objective data.	X12		-				
Tactical Factors	Employees have the knowledge and ability	X13		0.78				
	Employees receive quality training organized by the company	X14		0.77				
	Employees are educated in materials related to their specialization and their daily work	X15		0.88				
	Employees take the initiative	X16			0.72			
	Employees participate actively in quality improvement activities	X17			0.85			
	Motivate, support and encourage employees	X18			0.87			
	We are more interested in developing long-term relationships with suppliers than reducing prices.	X19				0.80		
	Clarify if the product specifications are provided by the supplier	X20				0.95		
	Communication systems at the company make all employees are well informed.	X21					0.80	
	Good communication between different functional departments.	X22					0.74	
	Be clearly communicated about the job duties and responsibilities of each employee.	X23					0.74	
Operational Factors	The main competencies needed for each job are well identified	X24						0.68
	Promotion is based on the need more precisely to reward individuals.	X25						0.75
	The company evaluates the level of customer satisfaction	X26						
	Customer satisfaction survey results	X27						

are routinely handled by plant managers.			
Customer-focused strategies and approaches are continually reviewed for further improvement	X28	0.76	
We have standard and documented operating procedures throughout the area	X29		0.83
Quality data is taken and monitored by employees during daily work	X30		0.85
Seven quality tools are effective at solving problems.	X31		0.79
The process of quality data is recorded and analyzed	X32		0.80

Based on the theoretical quality management mentioned above, then will be made the flow diagram of causality relationship between factors. Input graphics created with the AMOS program are as follows:

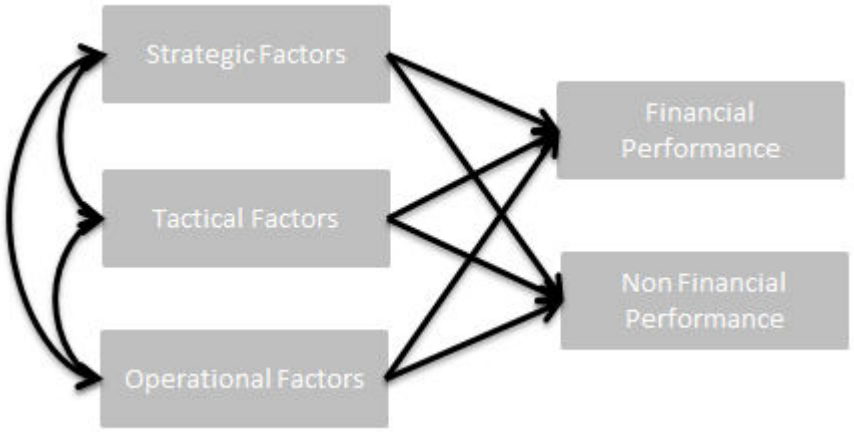

Figure 1. Graph of input quality management flow chart

From the graph above can be identified with:

- Strategic factor constructs (ξ1)
- Tactical factor constructs (ξ2)
- Operational factor constructs (ξ3)
- Financial performance constructs (η2)
- Nonfinancial performance constructs (η3)

Assessing goodness of fit is the main goal in SEM is to know how far the model hypothesized "fit" or match the sample data.

First will be judged goodness of fit criteria based on Chi Square value:

H0: $\Sigma = \Sigma(\theta)$ (model does not match with observation data)

H0: $\Sigma \neq \Sigma(\Theta)$ (model match with observation data)

Decision criterion: H0 rejected if value $(\eta - 1)$ FML $(S, \Sigma(\Theta)) \leq$ X21-α (db), expected probability value is <0.05 (Hair et al 2006: 746)

The result of goodness of fit as seen in Chi-square is 130,034 with df = 58 and probability value is 0,000 which shows that X21-α (db) = 67,2138. This means that the hypothesized model matches the observed data. Model compatibility is also supported by GFI = 0.916, TLI = 0,913, RMSEA = 0,077. The GFI and TLI values are above the value of 0.9 and the RMSEA values are between the 0.03 to 0.08 intervals so the model is said to be suitable for the observed data.

The hypothesized model has met all the required criteria, so there is no need to modify the model. Previously hypothesized models have been well suited for calculations regarding the implementation of quality management that impact on organizational performance that impacts both financially and non financially.

Next will be tested the reliability of each constructed construct. Reability is a measure of internal consistency of indicators as far as the formation variable indicates the degree to which each indicator indicates a common form variable. The value of Construct Reability is at least 0.70 (Ghozali, 1995: 233)

$$\text{Construct Reability} = (\Sigma \lambda ij)\ 2 / (\Sigma \lambda ij)\ 2 + \Sigma \in j \quad (4.1)$$

Sum standardized loading squares for:
Strategic Factor = 1 + 1,195 + 2,415 = 4,61
Tactical factor = 1 + 2.167 + 1.3763 = 4.54
Operational factor = 1 + 0.829 + 1.036 = 2.86
Financial performance = 1 + 1,140 = 2,140
Nonfinancial performance = 1 + 1.075 = 2.075

In the confirmatory factor analysis, the average percentage of Varience Extracted (AVE) values between items or indicators of a latent construct set is a summary of the convergen indicator. AVE is calculated as the total of squares of standardized factor loading divided by the total of quadratic standardizes loading plus the total variance of error. An AVE value equal to or above 0.50 indicates a good convergent. AVE values must be calculated for each latent construct. So in terms of our model then the AVE should be calculated for the latent five constructs. Strategic factors, tactical factors, operational factors, financial performance and nonfinancial performance.

Number of measurement errors (measurement error)
Measurement error = 1 - λi2 (standard loading squared)
To find the sum Σ € j then the calculation is
Strategic factors = (1-1) + (1-1.195) + (1-2,415) = 0 + 0.195 + 1.415 = 1.61
Tactical factor = (1-1) + (1-2,167) + (1-1,373) = 0 + 1,167 + 1,373 = 2,59
Operational factor = (1-1) + (1-0,824) + (1-1,036) = 0 + 0,176 + 0,036) = 0,212
Financial Performance = (1-1) + (1-1,140) = 0 + 0.140 = 0.140
Nonfinancial performance = (1-1) + (1-1.037) = 0 + 1.075 = 0,037

So AVE for latent constructs:
Strategic factor = (4.61) / (4.61 + 1.61) = 4.61 / 6.22 = 0.741
The tactical factor = (4.54) / (4.54 + 2.54) = 4.54 / 7.08 = 0.641
Operational factor = (2.86) / (2.86 + 0.212) = 2.86 / 3.072 = 0.93
Financial performance = (2.14) / (2.14 + 0.140) = 2.14 / 2.28 = 0.93
Nonfinancial performance = (2.075) / (2.075 + 0.037) = 2.075 / 2.112 = 0.098

Then what is done is the sum calculation of the standard loading that is

Strategic factor = 1 + 1.093 + 1,554 = 3,647
Tactical factor = 1,472 + 1,172 + 1 = 2,644
Operational factor = 1 + 0.908 + 1.018 = 2,926
Financial performance = 1 + 1.068 = 2.068
Nonfinancial performance = 1 + 1.037 = 2.037

So Construct Reliability (CR) for latent constructs:
Strategic factor = (3,647) 2 / ((3,647) 2 + 1,61) = 0,892
Tactical factor = (2,644) 2 / ((2,644) 2 + 2,54) = 0,733
Operational factor = (2,926) 2 / ((2,926) 2 + 0,212) = 0,976
Financial performance = (2.068) 2 / (2.068) 2 + 0.140 = 0.968
Nonfinancial performance = (2.037) 2 / (2.037) 2 + 2.07 = 0.667

Thus latent constructs with high reliability are latent constructions. Strategic factors, tactical factors, operational factors and financial performance have values of 0.892, 0.733, 0.976 and 0.968, respectively, which are above 0.70 (as required). While non-financial performance has a value of 0.667 CR whose value is below 0.70 (required).

6. Conclusion

From result of analysis of Structural Equation Modeling (SEM), obtained result that model made is fit and acceptable. This can be seen from the value of GFI, AGFI, and RMSEA that have met the minimum limit. In addition, the value of AVE and some Construct Reability (CR) also meets the minimum value.

From the calculation of CR, it can be concluded that:

1. Most of the IKM in Indonesia have implemented TQM. This can be seen from the high value of CR obtained. Of the 5 latent constructs, only 1 latent construct has CR value less than 0.70.
2. The largest CR value is in the Operational Factor, which is 0.976. This means that operational factors give results that small and medium industries have implemented quality management in their organizational processes.
3. The smallest CR value is in Non Financial Performance, which is 0.667. This means that the lack of because it has not been thinking until the development of new products because it is still focused on the development of the industry.

From the results of the discussion in the previous chapter, the results show that small and medium industries spread across Java island for operational factors are very strong. This shows that in the activities of the organization, the organization directly and indirectly has been paying attention in terms of quality. In daily production operations, employee activities show concern for quality. This has an impact on the company's financial performance. But it does not have a significant impact on nonfinancial performance. This is due to the small and medium industries focus on the development of existing products today and have not come to think of new product innovation. Small and medium industries are still focused on the development of the company to improve in terms of revenue and production capacity.

The current research focuses on small and medium industries that do not limit the field of industry it runs. From this research can be further research to be more specific in the field of industry such as food industry, or other industries where more focus on one business area. Then for the data obtained can be more so it will be more valid again the results obtained. This study still lacks in terms of the chosen method. Further research can use other methods that can produce more detailed and in-depth research.

7. Acknowledgements

Supported by Hibah PITTA 2018 Universitas Indonesia contact number 2514/UN2.R3.1/HKP.05.00/2018

8. References

Demirbag, M., Tatoglu, E., Tekinkus, M. and Zaim, S. (2006). *An analysis of the relationship between TQM implementation and organizational performance evidence from Turkish SMEs*. Journal of Manufacturing Technology Management, Vol. 17 No. 6, pp. 829-847.

Yuri, T., Nurcahyo, R. (2013). *TQM Manajemen Kualitas Total dalam Prespektif Teknik Industri*. Jakarta: Indeks.

Topalovic, S. (2015). *The implementation of total quality management in order to improve production performance and enhancing the level of customer satisfaction*. Procedia Technol, pp 1016 - 1022.

Hill, J., Nancorrow, C. and Wright, L.T. (2002). *Lifecycles and crisis points in SMEs: a case approach*. Marketing Intelligence & Planning, Vol. 20 No. 6, pp. 261-369.

Levy,M., Powell, P. (2004). *Strategies for Growth in SMEs: The Role of Information and Information Systems*. Butterworth-Heinemann.

Tambunan, T. (2009). *Export-oriented small and medium industry clusters in Indonesia*. Journal of Enterprising Communities: People and Places in the Global Economy, Vol. 3, pp. 25-58.

Tambunan, T. (2008). *Development of SME in ASEAN with Reference to Indonesia and Thailand*. Chulalongkorn Journal of Economics, pp. 53-83.

ASEAN SME Policy Index 2014 : *Towards Competitive and Innovative ASEAN SMEs*. Jakarta : Economic Research Institute for ASEAN and East Asia.

Aharoni, Y. (1994). *How Small Firms Can Achieve Competitive Advantages in an Interdependent World*. in Agmon, T. & Drobbnick, R. Ed.Small Firms in Global Competition, N.Y., Oxford University Press.

Levy, Brian, Albert Berry and Jeffrey Nugent (eds.) (1999), *Fulfilling the Export Potential of Small and Medium Firms*, Boston: Kluwer Academic Publishers.

Ministry of Industry Republic of Indonesia (2015). Industry Facts & Figures.

Electronic Publication : www.smeindonesia.org

Kumar, R., Garg, D., Garg, T. K. (2009). Total quality management in Indian industries: relevance, analysis and directions. The TQM Journal, Vol. 21, pp. 607-622.

Tannock, J., Krasachol, L., Ruangpermpool, S. (2002). The development of total management in Thai manufacturing SMEs: A case study approach. International Journal of Quality & Reliability Management, Vol. 19, pp 380-395.

Antony, J. and Banuelas, R. (2002). Key ingredients for the effective implementation of Six Sigma program. Measuring Business Excellence, Vol. 6 No. 4, pp. 20-27.

Lushi, I., Mane, A., Kapaj, I., Keco, R. (2016). A Literature Review on ISO 9001 Standards. European Journal of Business, Economics and Accountancy, Vol. 4 pp. 81-85.

Lestari, E.P.(2010).”Penguatan Ekonomi Industri Kecil dan Menengah Melalui Platform Klaster Industri”. Unpublished.

Baird, K., Hu, K. J., Reeve, R. (2011). The relationships between organizational culture, total quality management practices and operational performance. International Journal of Operattions & Production Management, Vol. 31 No. 7, pp. 799-814.

Tannock, J., Krasachol, L., Ruangpermpool, S. (2002). The development of total management in Thai manufacturing SMEs: A case study approach. International Journal of Quality & Reliability Management, Vol. 19, pp 380-395.

Shin, D., Kalinowski, J. G. and El-Enein, G. A. (1998). Critical implementation issues in total quality management. SAM Advanced Management Journal.Vol. 63 No. 1, pp. 10-14.

Chin, K.S., Pun, K.F., Xu, Y., Chan, J.S.F (2002). An AHP based study of critical factors for TQM implementation in Shanghai manufacturing industries. Technovation, pp. 707-715.

Temtime, Z. T., Salomon, G. H. (2002). Total Quality Management and the Planning Behavior of SMEs in Developing Economies. The TQM Magazine, Vol. 14, No.3, pp. 181-191.

Pun, K. F. (2002). Development of an Integrated total quality management and performance measuremeny system for self-assessment: A method. Total Quality Management, Vol. 13, No. 6, pp. 759-777.

Winston G. Lewis, Kit Fai Pun, Terrence R.M. Lalla, (2006) "Empirical investigation of the hard and soft criteria of TQM in ISO 9001 certified small and medium-sized enterprises", International Journal of Quality & Reliability Management, Vol. 23 Issue: 8, pp.964-985

Boateng-Okrah, E. and Fening, F.A.(2012). TQM implementation: a case of a mining company in Ghana. Benchmarking: An International Journal. Vol. 19 No. 6, pp. 743-759

Mehralian, G., Nazari, J. A., Nooriparto, G., and Rasekh, H. R.(2017). TQM and organizational performance using the balanced scorecard approach. International Journal of Productivity and Performance Management, Vol. 66 Issue: 1, pp.111-125.

Demirbag, M., Tatoglu, E., Tekinkus, M., Zaim, S. (2006). An analysis of the relationship between TQM implementation and organizational performance. Journal of Manufacturing Technology Management, Vol. 17, pp. 829-847.

Al-Dhaafri, H. S., Al-Swidi, A. (2016). The impact of total quality management and enterpreneurial orientation on organizational performance . International Journal of Quality & Reliability Management, Vol. 33, pp. 597-614.

Kanji, G.K.,Wallace, W. (2000). Business excellence through customer satisfaction. Total Quality Management , Vol. 11 No. 7, pp. 979-987.

Zairi, M.,Ahmed, P.K. (1999). Benchmarking maturity as we approach the millennium. Total Quality Management, Vol. 10, pp. 810-816.

Electronic Publication: ISO 2004

Biographies

Thomas Windharyanto Nugroho, ST is currently student Master Degree in Industrial Engineering Department, University of Indonesia. He holds a Bachelor of Engineering degree in Industrial Engineering from Universitas Indonesia. Mr. Thomas was born on Bantul, 30rd of January, 1986 and currently works in PT. Frisian Flag Indonesia as Performance Excellence Facilitator. His research and job area are analyst Total Quality Management implementation in Small Medium Industries for the completion of his Master Degree.

Dr. Ir. Rahmat Nurcahyo, M.Eng.Sc. is currently active as academic staff in Industrial Engineering Department, University of Indonesia. Mr. Rahmat was born in Jakarta, June 2nd 1969. He started his higher education in Mechanical Engineering, University of Indonesia and graduated in 1993. Then, he continued his study in University of New South Wales and obtain his master degree (M.Eng.Sc.) in 1995. Now, he is a candidate of doctoral degree in Faculty of Economics, University of Indonesia. Mr. Rahmat has taught several courses in Industrial Engineering UI, including Industrial Pshycology, Industrial Economy, and Total Quality Management. Mr. Rahmat is International Register of Certificated Auditors and a member of Ikatan Sarjana Teknik Industri dan Manajemen Industri Indonesia (ISTMI).