

A systematic literature review of Total Quality Management (TQM) implementation in the organization

Permana, A.^{a*}, Purba, H.H.^b, Rizkiyah, N.D.^c

^aIndustrial Engineering Department, Mercu Buana University, Jl. Meruya Selatan No. 1, Jakarta 11610, Indonesia.

^{a1}adi.permana_ap@yahoo.com, ^{a2}humiras.hardi@mercubuana.ac.id, ^{a3}nyimas.desy@mercubuana.ac.id

Abstract: In today's market situation and complex business environment, organization must be able to deliver the customer's requirement and the expectations which are critical to the satisfaction such as high product quality, faster delivery and competitive cost. Organization need to apply a comprehensive concept and method on managing those requirements. The concept of Total Quality Management (TQM) is considered as one of a popular concept used to manage the quality of product and services comprehensively. This research is to observe is this concept and method still relevant to be use and effectively improved the business performance as well as customer satisfaction. It is a systematic literature review to the literatures from many industry sectors that were collected and reviewed in detail. The result show that this concept is still being used by many organizations around the world and its successfully help the organization to improve their competitiveness, business growth and the sustainability as well as increase employee's morale.

Key words: TQM, business improvement, business competitiveness.

1. Introduction

In the dynamic market situation and a competitiveness as well as a highly changeable and complex business environment (Eltawy & Galliar, 2017). Organizations are continuing facing the changes, globalization, fast technological advances, competition, disruptive business models, emerging new markets, where its constantly changes – are the challenges for the organizations both for big or small size organization (Žitkienė & Deksnys, 2018).

Organization must be ready to adapt to this situation that required a very demanding in product or service quality, faster delivery and a competitive price. Organization must re-think their focus on a new model is not on how much they are making but on how well they are meeting customer's requirements

(George & Weimerskirch, 1998). Organizations around the world have used quality strategically to win customers (Oakland, 2003). Customer needs is continuing to evolve in line with the diversification of lifestyles, and high quality and functionality are expected of every product (Kaname, 2003).

The quality perception is different between one and another, including the definition of the quality itself as described in the Table 1 (Zairi, 1991).

No matter what is the definition, quality must be delivered to the customer and it must be maintained to satisfy the customer and sustain the business.

Organization need to apply a comprehensive concept on how they can maintain the level of satisfaction of their customer by delivering best quality of their products and services. The organization need

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Table 1. Definition of quality.

| | |
|--------------------------------|--|
| Transcendent definition | This means quality is hard to define, sometimes it's blurred. It's like I can't define it, but I know when I see it |
| Product based definition | This means quality is about measured how good is the product. Its about how does the product works. |
| User based definition | This means quality is about how product fulfill the customer needs and their expectations |
| Manufacturing based definition | This means quality is how the product meeting the specification. |
| Value based definition | This means quality is about comparison level between costs and price. What cost/price will be acceptable in this case. |

to establish a strategy that will focus to improve business activities to overcome the competition as well as improved the competitive advantage (Kantardjieva, 2015). Organization need to consider on Total Quality Management concept (TQM) to overcome those challenges. TQM is widely used by many organization around the world and its successfully applied and beneficial the organization significantly. It is clearly recognized that the very important aspect of rebuilding Japanese quality after world war II is the use of the concept quality management (Dahlggaard et al., 2002).

The evolution timeline of Total Quality Management has breakdown into four stages (Dahlggaard et al., 2002). It categorized as follows: (1) Quality inspection, (2) Quality control, (3) Quality assurance, and (4) Total Quality Management.

It start in 1910 in Ford Motor Company where it started employed inspector to check the product quality. About 20 years later, in 1920-1930s, a statistical process control is being used as well as sampling product to be inspect thanks to the method developed by Shewhart & Dodge-Roming. In this era, control chart is used to distinguish two types of variation in the process, random variation and assigned variation. The third stage of quality assurance is started about 1950s later to guarantee the product by providing such a confidence to assure that the product or service will meeting customers' expectation. The final stage of TQM was started in

1980s, TQM are clearly involves an understanding and implementation concept of quality management, in every aspect and area of organization. Since then, Deming, Juran and Crosby have had big contribution towards the continuous development of the TQM until the present.

TQM approach is focusing to improve effectiveness of the processes and the responsiveness in meeting the customer requirement as part of organization excellence goals in achieving customer satisfaction (Ramlawati & Putra, 2018).

To ensure the effectiveness of the concept implementation in the organization, all of the components must be work together as a team. Each part, each activity, each person in the organization affects and is in turn affected by others (Oakland, 2003). TQM as a philosophy for modern competitiveness and discussed the various contributions in the area of quality management which have propelled its prominence to today's levels of competitiveness (Zairi, 1991).

TQM implementation can be divide into 3 stages (Fitriani, 2019): (1) preparation stage, (2) Planning stage and (3) Execution stage.

Those 3 stages must be implemented well with the commitment from management and employees involvement and others factor such as training and communication (Kumar & Shanmuganathan, 2019).

Table 2. The development of TQM.

| | |
|----------------------------|---|
| Quality Inspection (1910s) | Quality is started by doing a basic sorting of product quality and identify the problem source |
| Quality Control (1920s) | In this period, the process is controlled by the use of data analysis and statistic control approach, and improved in quality planning |
| Quality Assurance (1950s) | This is a period where quality planning and audits is performed as well as the use of quality risk assessment through FMEA |
| TQM (1980s) | Managing the quality comprehensively started with management commitment, employee involmenet, focus to customer and continuous improvement culture to improve quality |

TQM must be viewed as a longterm process, the vision to continually looking into the future, not only have to meet short term target, organization must plan for their existence in the future (Rogers, 2013).

2. Methodology

This study is considering of 4 stages as described on the Figure 1. It consist of collecting of the predefined papers, journal and some textbooks, did some quick review and made the shortlisted papers to continue in dept review and classified it into 4 grouping.

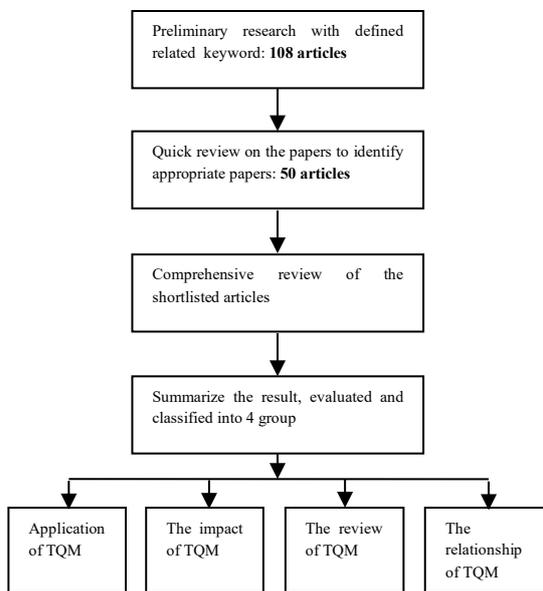


Figure 1. Study framework.

3. Result and Discussion

In depth review to about 50 papers was completely done. An evaluation is considering the research object as well as the result of each paper. The complete list of the paper had been reviewed are shown in the Table 3. There are 4 groups of papers were classified; Application of TQM, the impact of TQM, review of TQM and relationship of TQM.

The application of TQM in the organization was appear in some papers with multiple organization sector are using TQM succesfully. Kumar & Shanmuganathan, (2019) developed a standard reliable instrument that can be used to measure the TQM implementation in an automotive component manufacturing company. The result shown that

TQM has significantly influences the organizational commitment as well as the overall performance.

In Thailand, Sivalai & Rojniruttikul (2018) did a measurement the greatest factor affecting to the TQM in rail way company, the results determined that organizational culture give the biggest impact. Bunglowala & Asthana (2016) found that TQM is can be implemented well in education sector, they concluded that the teaching and learning procedure are more effective and its improved the overall quality.

Arifin (2016) did a research in financial sector (banking) where He concluded that TQM is significantly improved the overall performance of the company. Talib & Rahman (2015) did an observation in service industry to study the TQM application, beside the benefit of TQM, they also observed that lack of communication and lack of management commitment were the top barrier in TQM implementation.

The impact of TQM are showed by many researchers such as Santos et al., (2019) did a research in Brazillian electricity distribution company where he observed that implementation of TQM is helped the company in improving the order scheduling by 12% and reduce unproductive visit by 22%. Sari & Firdaus (2018) made another research of TQM implementation in SME (Small Medium Enterprise) sector in Indonesia, where they concluded that TQM implementation can improve the competitive advantage of the SME. Similarly, Nugroho & Nurcahyo (2018) also did a research in SME in Indonesia where they concluded that TQM implementation can improve the financial performance of SME.

Sabet et al., (2014) did a study in UK manufacture company an they concluded that TQM is successfully improve the overall performance and it can be combined with Six Sigma to improve product quality.

It also the same with the result of observation in Nigeria where TQM is improve the customer satisfaction Mercy & Taiye, (2015). In hotel industry, TQM also significantly improve the organization competitive advantage as it confirmed by research study by Yeng et al., (2018) in Malaysian's hotel.

In Indonesia, Dewi et al., (2015) did an observation in education sector where they conclude that TQM has a significant effect on student satisfaction. While Sukardi (2016) worked with dept. store in

Table 3. Existing list of articles reviewed.

| Nr | Paper Identity | Research object | Result |
|----|---------------------------------------|----------------------------------|--|
| 1 | Santos et al., 2019 | Electricity distribution company | TQM implementation result: there was a reduction of 12% in the “Orders After Deadline” (OAD) and 22% in the “Unproductive Visits” (UVI) indicators |
| 2 | Busu, 2019 | Energy sector | TQM model starts with staff motivation, given the significant result between the staff motivation and the organization’s performance |
| 3 | Garcia-Alcaraz et al., 2019 | Manufacturing sector | Concluded that HR plays an important role in the TQM implementation process, which guarantees to obtain the operational benefits that are measured through the quality indices in a product, a continuous process improvement, reduction of costs, and waste and better labor security for employees |
| 4 | Antunes et al., 2018 | Education sector (school) | TQM is allows to obtain a significant competitive edge including in the education sector |
| 5 | Sousa-Mendes et al., 2016 | Medical device (SME) | The findings of this study are very important in providing insights for medical device SMEs as they can evaluate their current practices and re-allocate reasonable resources to improve their TQM performance |
| 6 | Vukomanovic et al., 2014 | Construction industry | The study observe that effective EFQM (TQM) implementation is requires an approach that manages the enabler and result criteria separately |
| 7 | Suarez-Barraza & Ablanedo-Rosas, 2014 | Manufacturing industry | 5S practice proved to be a significant driver for a TQM philosophy and the success of TQM implementation |
| 8 | Hasan et al., 2018 | Education sector (school) | TQM implementation is successfully solved the problem related to the primary education system in Bangladesh |
| 9 | Bigliardi & Galati, 2014 | R&D environment | A successful implementation of the TQM in R&D area can be achieved only through the effective balance between two perspectives: the customer focus and the product quality |
| 10 | Yeng et al., 2018 | Hotel | TQM implementation is improve the knowledge of employees in quality management and the organization competitive advantage |
| 11 | Nugroho & Nurcahyo, 2018 | SME sector | TQM implementation is impacted to company’s financial result thanks to improvement in quality |
| 12 | Yang & Tsai, 2014 | Business sector | TQM strategy and tools can be applied in the Investment management industry. |
| 13 | Sainis et al., 2017 | SME sector | The quantitative survey results showed that the quality culture and performance appraisal elements, were the most valued elements for the implementation of TQM |
| 14 | Small et al., 2017 | Electrical sector | The implementation of TQM improved productivity increases of 2 to 3%, which also increased as the project progressed with proactive management involvement |
| 15 | Mitreva et al., 2016 | Food sector | The study showed that the application of TQM in the processing food company is increased effectiveness and efficiency |
| 16 | Gómez-López et al., 2016 | Manufacturing sector | The results show that the most important motivations that drive firms to implement the TQM through the EFQM are internal motivations |
| 17 | Kiruthiga, 2016 | Construction sector | It observed some factors that affecting to the TQM implementation as well as the concept acceptance, they are: lack of knowledge, Employee’s motivation and the culture |
| 18 | Kim, 2016 | Manufacturing sector | TQM can be started with good leadership, focus on customer and better process management. An improvement in quality will increase customer satisfaction |
| 19 | Alanazi, 2020 | Business sector | The study observed the importance for managers and practitioners in implementation of successful TQM practices to achieve the main goal. |
| 20 | Kuo, 2016 | Manufacturing sector | The results shown that TQM implementation is contributed to a positive effect on Customer capital |
| 21 | Nicolaou & Kentas, 2017 | Healthcare industry | TQM failure reasons are a considerable issue and have to be studied in depth. |
| 22 | Prajogo & Brown, 2004 | Business sector | The study findings show the strong links between TQM practices and quality performance of the firm |
| 23 | Balasubramanian, 2016 | Healthcare industry | The result shown some barriers in TQM implementation are the social culture, mentality & leadership style |

(Table 1 continued on the next page)

(Table 1 continued from the previous page)

| Nr | Paper Identity | Research object | Result |
|----|---------------------------|---------------------------|---|
| 24 | Sader et al., 2017 | Manufacturing sector | The implementation of TQM is contributed by awareness and requirement of industry 4.0 where the technologies and big data approach are improved quality assurance and quality control |
| 25 | Steiber & Alänge, 2013 | Technology | The TQM concept is required to be updated, the brand 'TQM' is still associated with quality and continuous improvement. A re-branding strategy might therefore be necessary since TQM now is broadly used in many areas |
| 26 | Sadikoglu & Olcay, 2014 | Manufacturing sector | This study has shown that different TQM practices significantly affect different performance outcomes. primary obstacles were lack of employee involvement, awareness and commitment of the employees, inappropriate firm structure, and lack of the resources |
| 27 | Sukdeo et al., 2017 | Manufacturing sector | The TQM implementation is significantly contributed to organization performance, improved product quality, employee and customer satisfaction as well as supplier performance |
| 28 | Morath & Doluschitz, 2009 | Food industry | The study observed positive correlation between the fulfilment of the requirements of TQM and the financial success of the companies could be verified statistically. The company also tend to use TQM in terms of improving the quality issues happened in the company |
| 29 | Tervonen et al., 2009 | Manufacturing sector | The study observed that rather than merely imitating TQM procedures, companies must focusing their efforts on creating a culture within which these procedures can thrive |
| 30 | Kumar et al., 2009 | Business sector | The findings reported that the expected TQM-oriented characteristics of PMs and PMS are perceived appropriate and the traditional ones are not felt appropriate |
| 31 | Haffar et al., 2013 | Manufacturing sector | The findings from this study demonstrate that the group and adhocracy culture types have a positive impact on the successful implementation of TQM |
| 32 | Sari & Firdaus, 2018 | SME sector | The research concludes that TQM implementation can improve the competitive advantage of SME |
| 33 | Dewi et al., 2015 | Education sector (school) | The result concluded that TQM is have a positive correlation and affecting significantly to the student satisfaction level |
| 34 | Houston, 2007 | Education sector (school) | The study resulted that TQM is not fully matched with the substance of higher education due to ist complexity. However, it more fruitful to explore the development of locally appropriate systemic approaches to improving quality in and of higher education. |
| 35 | Phan et al., 2019 | Manufacturing sector | The result concluded that there are positive correlation between TQM implementation and JIT production concept on improving the performance |
| 36 | Sweis et al., 2019 | Business sector | The result shown where TQM implementation is improve customer satisfaction that leads to increasing in customer order/demand, it means that will increase sales and profit |
| 37 | Mercy & Taiye, 2015 | Service industry | The result concluded that TQM implementation is directly impacted in increasing of customer satisfaction |
| 38 | V. Kumar et al., 2016 | Pharmaceutical industry | TQM is a holistic methodology towards the general change of an organisation. The theory of TQM has tended to be fruitful in all fields provided that the management has enough potential to actualize it |
| 39 | Musenze & Thomas, 2020 | Local government | The study observed that a valid and reliable instrument has been developed and recommended for use in the assessment of TQM practices in the service sector with explicit focus on local government |
| 40 | Neyestani & Juanzon, 2016 | Construction sector | The result of the study is defined the performance measurement (KPI) to evaluate the TQM implementation linked to the Balance score card approach |
| 41 | Ngambi & Nkemkiafu, 2015 | Manufacturing sector | The result concluded that good TQM implementation will increase the performance of the organization especially improve the financial performance |
| 42 | Tesfaye & Kitaw, 2017 | Manufacturing sector | The result concluded that the TQM implementation and JIT will enable the companies to produce a higher quality of product, lower cost and faster lead time |
| 43 | Sutrisno, 2019 | SME sector | The result concluded that TQM are significantly improved operational performance of the company, increase customer satisfaction as well as substantially increased product quality. In the end, it will improve an organization competitive advantage and business sustainability |

(Table 1 continued on the next page)

(Table 1 continued from the previous page)

| Nr | Paper Identity | Research object | Result |
|----|-----------------------------|----------------------|---|
| 44 | Lawrence & McCollough, 2004 | Education sector | The result indicates that while many universities have been successfully applying TQM in support and administrative functions, TQM has not migrated into the classroom to any significant extent at many of these institutions |
| 45 | Sukardi, 2016 | Dept. store | TQM is significantly improved customer satisfaction with following contributor variables: Focus to customer, focus on quality, team work and employees involvement |
| 46 | Green, 2006 | Business sector | What six-sigma process brings to TQM is a methodology for disciplined quality management. Six-sigma strengthens TQM efforts through a strategic approach that emphasizes strong executive involvement, bottom-line accountability, extensive practical training, and personnel devoted to getting worthwhile improvement projects carried out |
| 47 | Sila & Walczak, 2017 | Manufacturing sector | Based on the ANN results, we can also conclude that the contextual factors for obtaining ISO certification and implementing TQM have a positive effect on F&M results |
| 48 | Benzaquen et al., 2019 | Manufacturing sector | The average values have shown that, in practice, the best results in the eight TQM success factors are valid in the organizations of the private health sector that have implemented a QMS |
| 49 | Mensah et al., 2012 | Business sector | The study concluded that 3 factors that critical in implementing TPM successfully are: (1) top management commitment, (2) empowerment and involvement of employees, resource availability, (3) competition and increased customer awareness, and a well-functioning quality network |
| 50 | Sabet et al., 2014 | Manufacturing sector | The study observed that implementing TQM in company has generally been successful, however, it can be combined with other concept such as Six Sigma to improve the product quality |

Indonesia to determine the impact of TQM where he found that TQM is significantly improved the customer satisfaction and He also realize that there are some key factors in implemented TQM which are focus to customer, quality obsession, team work and employee involvement. Houston, (2007) Did some research in New Zealand higher education and concluded TQM is not fully matched with the substance of higher education due to its complexity. However, it more fruitful to explore the development of locally appropriate systemic approaches to improving quality in and of higher education.

Some researcher did a comprehensive review and evaluation on the TQM implementation in the organization where most of them were observed that TQM is successfully improved the organization performance and its competitive advantages.

Sweis et al. (2019) did an observation in some organization with different sector in Jordan, they observed that The result shown where TQM implementation is improve customer satisfaction that leads to increasing in customer order/demand, it means that will increase sales and profit. Kumar et al. (2016) did a same study, they focus on one of the pharmaceutical organization in India, they found that

TQM is a holistic methodology towards the general change of an organization, the theory of TQM has tended to be fruitful in all fields provided that the management has enough potential to actualize it.

Similarly in Indonesia, Sutrisno (2019) did study in one of SME and concluded that TQM are significantly improved operational performance of the company, increase customer satisfaction as well as substantially increased product quality. These improvement will increase an organization competitive advantage and business sustainability.

The last grouping was study the relationship of TQM with organization vision in some industries. Kantardjieva (2015) did a research in some industries sector in Greece where she found the relationship between the TQM and the strategic management, in this process, she found that the quality is a key success factor, so the business is must focused on the implementation of a quality programs such as TQM.

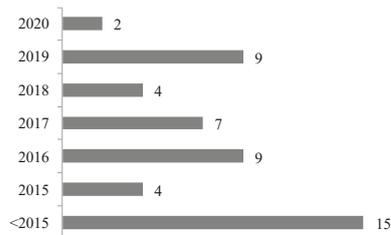
In India construction firm, Kiruthiga (2016) observe the relationship of lack knowledge, lack motivation and culture issues as the top barrier in implementing of TQM where it was given an input to the management

to create the correct strategy in ensuring the TQM is implemented well in the organization.

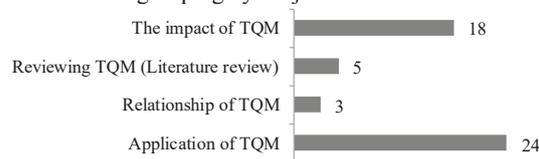
The source of literature mapping is as describe in the Figure 2.

According to the papers mapping on Figure 2, there are 50 papers reviewed in total, 35 papers are published in the last 5 years (2015-2020) where it only 15 papers published more than 5 years ago, it classified into 4 group object variable: Application of

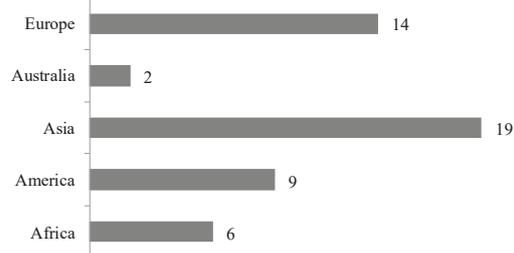
a. Year of publication.



b. Publication grouping by subject area.



c. Publication grouping by continent area of author.



d. Publication grouping by country of author.

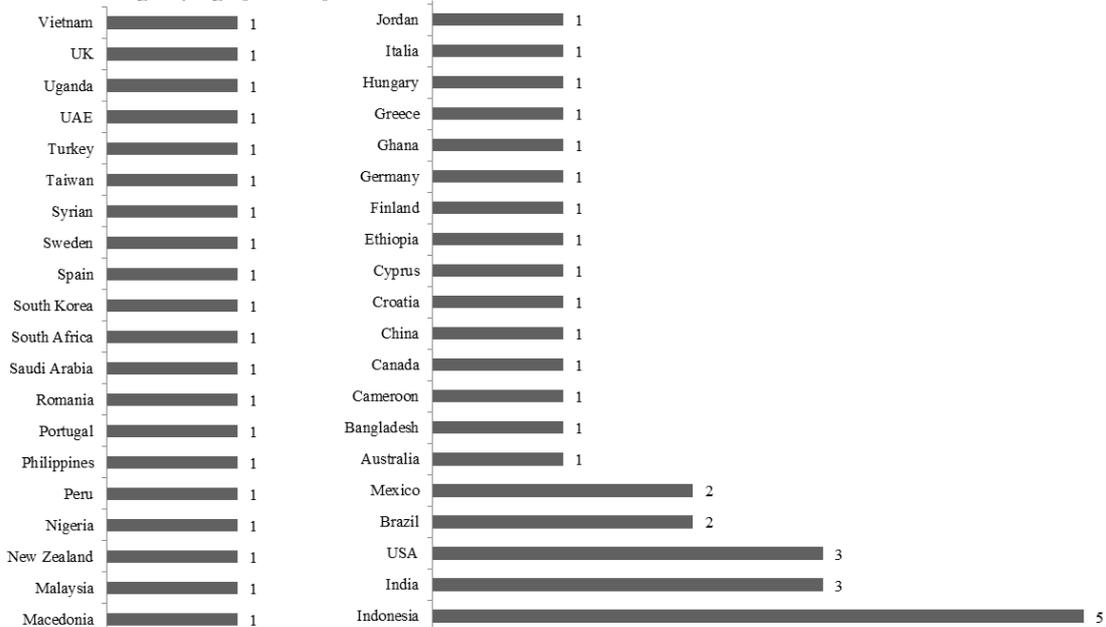


Figure 2. Literature's mapping. (continued on next page).

e. Publication grouping by research object (sector).

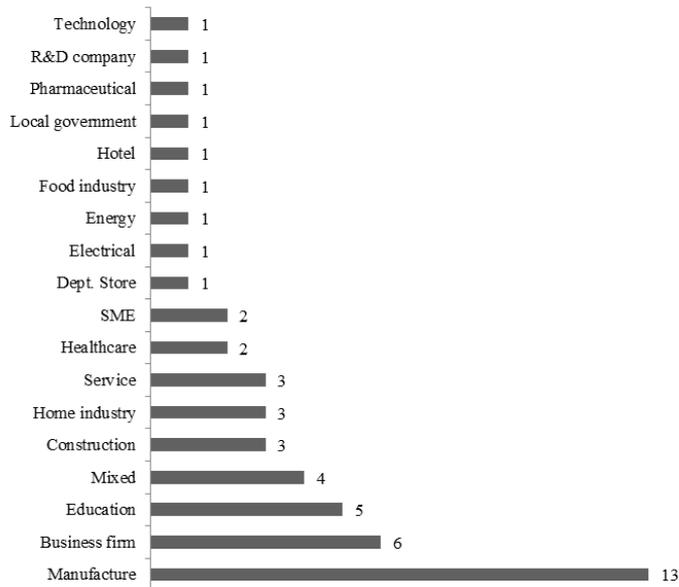


Figure 2. Literature’s mapping. (continued from previous page)

TQM, the impact of TQM, the review of TQM and the relationship of TQM. The papers were spreading into 5 continents (Asia, Africa, America, Australia & Europe) where it came from 40 countries around the world.

The papers were spreading into 18 different industries sector from manufacturing, construction, oil & gas, hotel, education until to SME level. Most of the researcher from those 50 papers were observed the linkage between the implementation of TQM with the increment a competitive advantage of the organization as well as it increased customer

satisfaction. A clear of TQM advantage can be seen in the Figure 3. A TQM relationship framework:

From relationship framework on Figure 3, we can see that TQM is one of the good concept to be use in the organization as a strategic approach which is suitable for many industries sector and still popular to be use in today situation while it still compatible with new management standard such as ISO 9001 and also with today’s market situation.

Here we can see that TQM is widely used in many industries sector as well as used in so many countries around the world. TQM also still popular

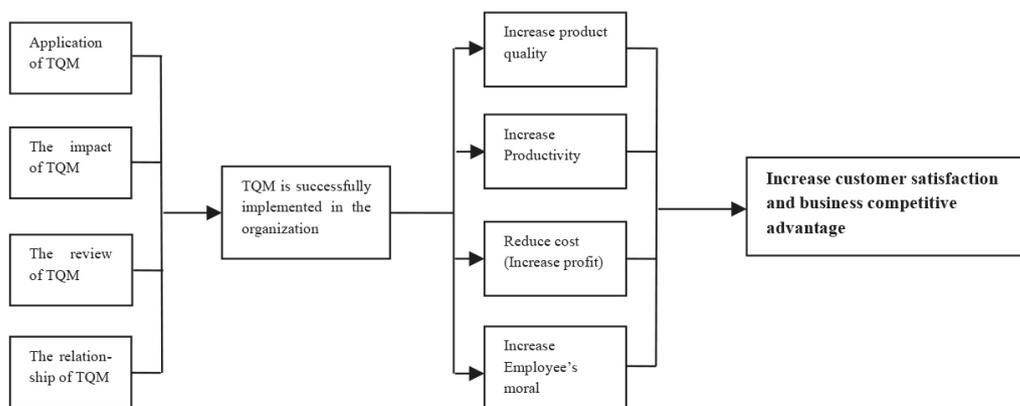


Figure 3. TQM Relationship framework.

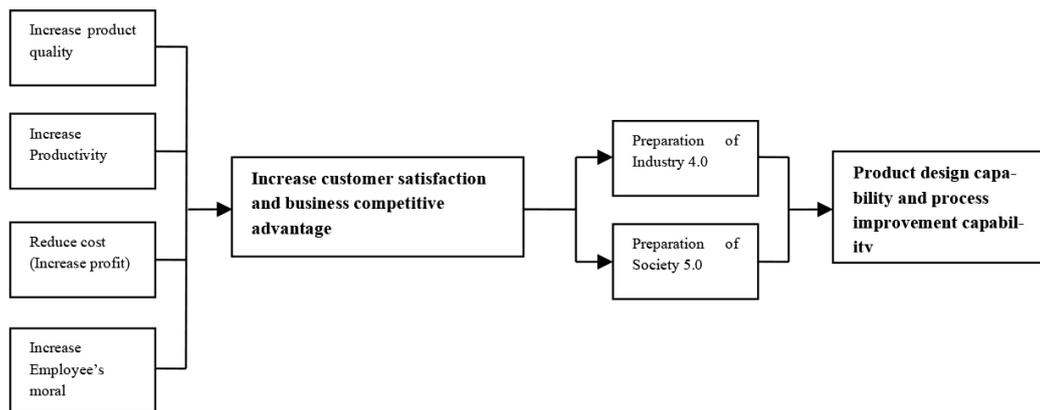


Figure 4. Future research framework.

in today's era where it shows on the publication of the research paper in last 5 years where it confirmed that researchers are still interested to observe the TQM implementation in the organization and also confirmed that TQM is still being used and still compatible with today's business environment with rapid and quick changing (agile).

For the further research on TQM framework in the future, it can be improved continuously and adapted to the preparation of industry 4.0 implementation as well as society 5.0. These will improve the product design capability and process improvement capability where it will be beneficial to the organization (Figure 4).

4. Conclusion

Total Quality Management (TQM) is still widely used in many industries sector as well as used in so many countries around the world. One of the most reasons why TQM is still suitable on this today's situation is the fact that TQM is focused to increase customer satisfaction on improving the quality of product, quality of service and overall quality of the

organization to deliver the best product or service solution to the customer. Another reason is because TQM is implemented with total commitment from the management as well as total involvement from employees where it becomes a solid concept that is simple to understand and easy to implement.

Furthermore, it requires the standard measurement method to determine the level or score of the TQM implementation in the organization since it must be quantifiable to do continuous improvement as it needs to compete in today's business situation.

In addition, it is strongly recommended to continue the further study on the several industries sector especially for the new start-up industries such as e-commerce or digital start-up to ensure that TQM is still suitable on those new industries sector.

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