

# DEVELOPMENT MODEL QUALITY MANAGEMENT SYSTEM (QMS) FOR PUMPKINS PRODUCT SMALL MEDIUM INDUSTRIES (SMIs) IN DILI-TIMOR LESTE

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**Abstract:** Quality Management System (QMS) is a system that contains an outline of the policies and procedures needed to improve and control processes which will ultimately lead to increased business performance. Therefore, quality management system is very important for every industry that wants to survive in the existing competition, especially for small medium industries (SMIs). So far, only large companies have been able to implement QMS well. Even though currently the number of SMIs in Timor Leste. This research will develop a quality management system model which can later be applied by SMIs. The development of the QMS model is carried out by creating indicators from the variables that make up the QMS, namely the interface (I/F) Supplier, Interface (I/F) Top Down and interface (I/F) Customer. To find out at what level the implementation of quality management system by small medium industries will be a maturity level is also created based on the indicators that form the quality management system.

**Key Words :** Quality Management System (QMS), Small Industries Medium (SMIs), Interface (I/F) Supplier, Interface (I/F) Top Down and Interface (I/F) Customer.

## 1. Introduction

The aim of implementing a Quality Management System (QMS) in an organization is to manage various activities with a systematic approach and continuously improve effectiveness in accordance with international standards that prioritize stakeholder needs. The main key to a quality policy is achieving permanent satisfaction and stakeholder trust. (Soetanto and Haryadi, 2016) analyze the Management System from the structural aspect, which is a network of interdependent work relationships between central activities within the company, and provides insight into the processes that allow changes to occur in the system. (Widyanto, 2020) implementation of the Along with increasingly intense six sigma quality improvement program is demonstrated through the improvement of the capability process in producing products leading to zero defects. *Quality Management System defines how an organization implements quality management practices consistently to meet customer and market needs. Quality Management System implementation is still dominated by large companies. There are still very few SMIs that implement a Quality Management System, even though the reality is that large companies require the involvement of their suppliers to support the implementation of their Quality Management System.* (Al-Shabibi, 2019) to test the application of Total Quality Management (TQM) in SMIs, by enabling measuring progress in overcoming obstacles, and facing challenges that test the TQM practice-performance relationship by investigating the

impact of TQM practices on SMIs performance. A broader approach in improving organizational quality is Total Quality Management and community participation which is important in identifying raw materials that will be made into products to support the progress of small medium industries in the village with the aim of being a breakthrough in the progress of a region or nation. Continuously to get results, namely obtaining good performance (Fandy and Gregorius, 2005). Judging from the definition (Juran and Gryna, 2014) states that quality is fitness for use. Quality is the degree or level of characteristics inherent in a product that meets requirements or desires. (Taskov, 2015) To build a management team in designing and implementing a Total Quality Management system for small and medium industries with all the advantages and disadvantages as well as its application in practice. Meanwhile, conventionally, quality usually describes the direct characteristics of a product, such as: appearance, reliability, ease of use, aesthetics, and so on. (Vincent, 2015) states that quality is anything that is able to fulfill customer desires or needs. (Montgomery, 2013) defines quality as something related to one or more desirable characteristics that a product or service must have. Concept quality has evolved over time involves small medium industries in carrying out nano paracticles regarding work roles in employing and expressing themselves physically, cognitively, emotionally while carrying out their role as small medium industries. Quality control is a technique and planned activity or action carried out to achieve, maintain and improve the quality of a

product and service so that it conforms to predetermined quality standards and can meet consumer satisfaction. (Amaral and Pecas, 2019) said that the era of globalization has changed small medium industries with the marked progress of industry 4.0 technology and society 5.0, which can provide guarantees for product safety and quality by proactively preventing errors before they occur in the process of making a product. (Nazmi and Izwaan, 2023) empirical studies showing that ISO certification has no effect on performance continue to raise doubts about the effectiveness of quality management systems on performance.

The decentralization of the Central Government means that Regional Governments have not developed small medium industries in the regions and on the other hand, Regional small medium industries are one of the business motors for encouraging regional economic growth that involves regional communities. (Mendrofa, 2022) Companies everywhere will definitely face intense global competition, very fast developments in the technological and digital world and changes that cannot be controlled, so every company is required to adapt to existing developments and changes *Most suppliers are small and medium industries, so SMIs must be proactive in facing global competition and must be more efficient and effective to survive in the business environment.* (Malik dkk, 2019). The results of the research showed that there were positive and significant effects of the Total Quality Management (TQM) on the competitive advantage, the Total Quality Management (TQM) on the firm performance, on the competitive advantage and the competitive advantage on the firm performance. (Oliveira et al, 2017) quality management is closely related to the strategic management of an organization, it is surprising that the 2015 version of ISO 9001 the reference standard for the implementation of Quality Management Systems (QMS) does not have a mandatory requirement to link quality management with organizational strategy. (Ulhaq et al, 2022) the resulting product must always be checked for compliance with the established standards, so that the damage that occurs to the product can be reduced and eliminated. This study aims to analyze the quality control of raw materials using the seven tools method on sweet bread products. One way to achieve this is by adopting QMS principles. Implementing a Quality Management System can help SMIs to utilize their resources effectively and efficiently, thereby focusing more on market needs and expectations. Implementation in SMIs varies depending on size, resources and quality experience. But there are at least 2 main problems, namely financial limitations and technical resources (Lee and Oakes, 2015). (Adrianto et al, 2012) with the existence of the Malcolm Baldrige National Quality Award (MBNQA) and also European Quality Award, it is hoped that it will be able to encourage and motivate companies, both those that are already successful and those that are developing, to always improve quality and performance, as well as being the key to power.

(Vivas et al, 2016) analysis related to the results of research on the quality of development in the career of Industrial Engineering of higher learning was obtained, proving that there are still weaknesses that can affect academic excellence, so it requires constant effort on the part of the institutions, which can be realized through research projects aimed at maintaining self-control of quality in universities.

Customer satisfaction depends on the quality of service that serves them, in this case improving strategies both in the service system and presentation so that consumers do not turn to other products (Arman, 2022). (Poniman and Utomo, 2020) which is engaged in the sale and service of office equipment maintenance, winning business competition company must create a strategy that can improve the quality of service to consumers. (Garry, 2014) era of post financial crisis, Chinese manufactures are facing a more complicatedly global market, their core competitiveness of low cost and low price cannot be kept on any more, so they are called for transforming and upgrading strongly and urgently.

Small medium Industries is a sector that plays a strategic role in driving the movement of the national economy (Bahkri, 2020). (Zhao, 2023) investigated the quality management system in an organization helps achieve environmental innovation and sustainable development goals One of the sectors that plays an important role in economic growth and development in Timor Leste is the small medium Industries (SMIs) sector. This is an opportunity for the Industries to prioritize consumer needs and desires and meet consumer expectations. To fulfill this, Industries must pay attention to aspects of regulations, processes, human resources and the environment in producing products and services, small and medium Industries development policies as an effort to face the era of free trade (Nu'man, 2005) therefore , the products produced by Industries must have high quality in order to compete in the global market. (Nnamdi, 2018) The globalization of production systems must overcome limitations arising from the variability and complexity resulting from globalization and technological progress. Global competition does not only apply to large and multinational companies, but also to small industries. The complexity of industrial competition means that every company must always try to improve its quality in order to achieve consumer satisfaction. The traditional management applied by many companies is no longer able to handle quality problems and service needs. Small medium industries must improve themselves by improving the quality of the products they produce and empowering the community. This process is very important for the progress of small medium industries in a region or country (Nwabuokie, 2018).

The Ministry of Industry aims to make SMIs more competitive in facing the free trade era of the Asean-China Free Trade Area and the Asean-China Free Trade Area, where the Timor Leste government has given freedom to Telemor Companies from Vietnam, Telecomcel from Indonesia to compete with Timor Telecom companies. This collaboration can encourage Timor Leste SMIs to maintain and improve company efficiency. Based on this, SMIs need to implement QMS in order to survive in global competition and maintain quality and community involvement needs to be considered, and the important role of small and medium industries encourages many countries including Timor Leste to continue making efforts to develop small and medium industries. There are 3 (three) fundamental reasons for a new country which was founded in 1976 and then received international legitimacy on 20 May 2002 in viewing the importance of the existence of small and medium industries, namely: (1) The performance of small medium industries tends to be based on a workforce that productive, (2) Increased productivity through investment and changes in technology used by small and medium industries,

(3) Excellence and flexibility in large industries. Quality management system (QMS) or also known as Quality Management System is the company's ability to maintain quality, products or services offered. QMS questions the difference with Quality Assurance (QA) and Quality Control (QC).

(Fadhil et al, 2018) explains the strategy for developing a quality management system for the Gayo coffee agroindustry using a Soft Systems Methodology approach. Clearly, these three things have different roles and responsibilities, even though they are in the same division based on the 2015 ISO 9001 standardization. Quality control cannot be achieved without the use of methodical, fair and efficient interfaces. Management systems to ensure the sequence of interface processes, the continuity of quality control, and the efficacy of quality linking between different interfaces in practical work must be implemented consistently. exactly according to the steps (Borisov, 2018). (Rizqi et al, 2022) maximum quality control carried out at this time is still lacking, so that products are often found that are not in accordance with the specified quality.

## 2. Research Result

### 2.1 Development of QMS Model for Small medium industries

The current QMS model is in accordance with the process approach model in the ISO 9000 standard. The image below shows the process model from ISO 9001:2015 consisting of four main parts included in the ISO 9001:2000 quality management system standard. Therefore, this QMS development design was carried out by referring to the existing QMS model, which consists of Customer Requirements which then become input for the company to carry out Measurement Analysis and Improvement, Management Responsibility, Resource Management, and Product Realization and the resulting output must meet the Customer. Satisfaction. The model development carried out then added the interface (I/F) Supplier whose indicators consist of supplier compliance with materials ordered by the company. From a company perspective, interface (I/F) Top Down was developed which contains indicators that involve employees (men) in setting direction and meeting customer expectations (improving control processes, reducing waste, reducing costs, increasing market share, facilitating training and increase morale. If all the indicators in the interface (I/F) top Down have been met, the next step is to fulfill the interface (I/F) customer which is the output of the company (producing good products in terms of quality, cost, fulfillment time, safety and security). maintaining relationships with customers) so as to fulfill customer satisfaction. Quality Management System (QMS) indicators that are in accordance with SMIs are as follows:

#### ▪ Interface (I/F) Supplier

- a. The quality of the material provided is very good (S1).
- b. The price of the material provided is very appropriate(S2).
- c. Material delivery time is always on time (S3).
- d. Supplier meets changes in quantities and delivery times very well (S4).
- e. Suppliers always respond well to every complaint submitted by the company (S5).
- f. Suppliers always improve the quality of services and products delivered (S6).

- g. Suppliers always maintain good relations with the company (S7).
- h. Suppliers always do inovasi terhadap material (S8).

#### ▪ Interface (I/F) Top Down

- a. Company leaders always promote product quality to consumers (P1).
- b. Leaders communicate and re-emphasize quality to all employees (P2).
- c. There is always useful information in improving product quality(P3).
- d. Planning for quality improvement is carried out very well (P4).
- e. There are resources to carry out quality improvements (P5).
- f. All employees are involved in quality planning (P6).
- g. All employees are involved in quality improvement teamwork (P7).
- h. All employees are challenged to make improvements and innovations (P8).
- i. All employees are trained in quality improvement skills (P9).
- j. All employees are recognized for quality improvement (P10).
- k. The company always motivates employees (P11).
- l. The company manages human resources (P12).
- m. Customers are the main focus in process planning for producing products and services (P13).
- n. Companies control quality directly in producing goods and services (P14).
- o. The company also includes suppliers in quality improvement (P15).
- p. The company involves marketing, accounting, administrative services, etc. in improving its processes to meet or exceed customer requirements (P16).
- q. There is continuous improvement in product and service processes (P17).
- r. There is continuous improvement in support services (P18).
- s. There is continuous improvement in terms of suppliers (P19).
- t. The company always maintains good relations with customers (P20).
- u. The company always responds well to customer complaints (P21).
- v. The company always provides the right information to customers (P22).
- w. The company knows the indicators of customer satisfaction (P23).
- x. The company always makes customers satisfied with its products and services (P24).
- y. The company always prioritizes customer satisfaction (P25).

#### ▪ Interface (I/F) Customer

- a. Customers are very satisfied with the quality of the products provided (C1).
- b. Customers do not question the price of the company's products (C2).
- c. Customers rarely complain about the company's product delivery time (C3).
- d. Customers always get products that suit their needs (C4).
- e. No products are returned by customers to the company (C5).
- f. Customers always get products with the expected quality and also get the best service from the company (C6).

- g. Customers are satisfied with the products and services provided by the company (C7).
- h. Customers always find product innovation from the company (C8).

Indicators in the Supplier interface (I/F), Company Interface (I/F) and Customer interface (I/F) are related to each other. One example of this relationship is if the quality of the material provided is very good (Supplier indicator) and the company leadership always promotes product quality to consumers (Top Down or Company indicator) then customers will be very satisfied with the quality of the product provided (customer indicator).

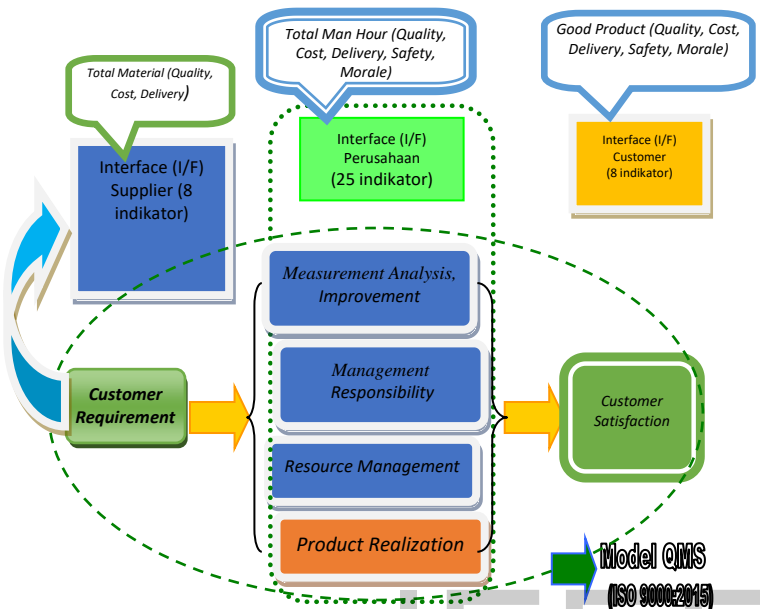


Figure 1. Quality Management System Development Framework

➤ **Quality Management System for Small Medium Industries**

The QMS model that is suitable for SMIs consists of 3 variables, namely interface (I/F) Supplier, interface (I/F) Company and interface (I/F) Customer. For each variable, there are several quality management system indicators that must be met by SMIs in order to be said to be SMIs that have a quality management system. The QMS model for SMIs in this research is as in Figure 3 below.

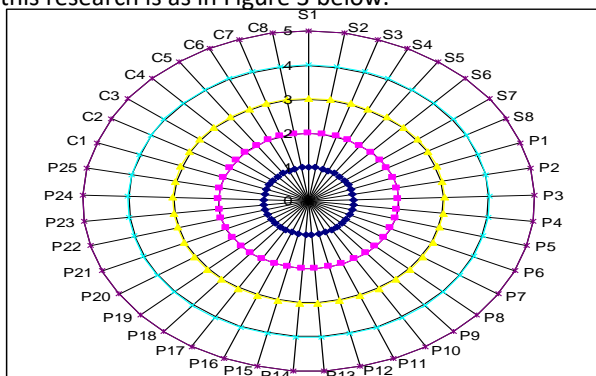


Figure 2. QMS model for Small Medium Industries

Fulfillment of these indicators will definitely be different for each SMIs (depending on the resources owned by the SMIs and also the understanding of the SMIs owner and management regarding the quality management system. Therefore, from this QMS model an assessment can be made using the maturity model in order to know how where is the implementation of QMS by the SMIs.

Table 1. QMS Maturity Level for small medium industries

Level	Interface (I/F) Supplier	Interface (I/F) Perusahaan	Interface (I/F) Customer
1 (AdHoc)	At least if you can meet the S1, S2 indicators	At least if it can meet indicators P3, P4 and P5	At least if it can meet the C3 indicator
2 (Initial)	At least if it can meet the S3 indicators	At least if it can meet indicators P1, P22 and P23	At least if it can meet indicators C2, C4
3 (Repeatable)	At least if it can meet the S4 indicator	At least if it can meet indicators P2, P11, P12, P13, P14, P15, P24	At least if it can meet indicators C1, C5
4 (Managed)	At least if it can meet the indicators S5, S7	At least if it can fulfill indicators P6, P7, P9, P10, P21, P25	At least if it can meet indicators C6, C7
5 (Optimized)	At least if it can meet the S6, S8 indicators	At a minimum, if you can meet the indicators P8, P16, P17, P18, P19, P20	At least if it can meet the C8 indicator

**3. Pumpkin for Product**

Pumpkin fruit is a food that contains chemical components such as water, protein, fat and fiber. Timor pumpkin fruit has not been properly processed into a good product. Based on Timor pumpkin trials conducted by (Benjamin, 2024) it was stated that Timor pumpkin fruit can make noodle because it tastes very good if consumed by everyone, but no one has managed this pumpkin fruit into a product, (Vakenzuela et al., 2011) that pumpkin can be used as a traditional medicine to cure several diseases such as diabetes, hypertension, tumors, immune modulation, and antibacterial. This pumpkin plant has high adaptability to environmental conditions, so this plant can grow both in lowland and highland areas, whether with high, medium or low rainfall.



Figure 3. Pumpkin Timor

**4. Conclusion**

The conclusions of this research are as follows:

1. The problem experienced by SMIs in improving the quality of the products and services they produce is that they do not have good management (who understand the quality and service management system) so that most SMIs do not have good quality standards.

2. The obstacles or obstacles experienced by SMIs in implementing a quality management system is a lack of knowledge about the quality management system (not yet having good management).
3. Quality variables that are appropriate and important for SMIs in achieving quality standards are r interface (I/F) Supplier, interface (I/F) Company and interface (I/F) Customer. Interface (I/F) Supplier consists of the supplier's fulfillment of the materials ordered by the company (both in terms of quality, cost and delivery). Interface (I/F) Top Down consists of involving employees (men) in setting direction and meeting customer expectations (improving control processes, reducing waste, reducing costs, increasing market share, facilitating training and increasing morale/work ethic). Interface (I/F) Customer consists of producing good products both in terms of quality, cost, fulfillment time, safety and maintaining relationships with customers. for each SMIs depending on the resources owned by the SMIs and also the understanding of the SMIs owner and management regarding the quality management system. Therefore, from this QMS model an assessment can be made using the maturity model in order to know how where is the implementation of QMS by the Small medium industries.

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