

# Identification of Challenges and Benefits of Product Certification on Micro, Small, and Medium Enterprises (MSMEs) in Indonesia

**Andri Gandhi, Rahmat Nurcahyo, and Djoko Sihono Gabriel**

Department of Industrial Engineering,  
Faculty of Engineering,  
Universitas Indonesia, Depok, 16424, Indonesia  
gandhiandri@gmail.com, rahmat@eng.ui.ac.id, dsihono@gmail.com

## Abstract

Micro, small, and medium enterprises (MSMEs) in Indonesia are an important factor in the Indonesian economy. The total of MSMEs in Indonesia reaches 64.2 million and MSMEs contribute 60.6% of Indonesia's gross domestic product (GDP). Increasing product competitiveness can be done through the implementation of standards, the fact that MSME products have been standardized on products is that the products are certified (Indonesian National Standard). Total MSMEs that have obtained product certification in Indonesia are only 101 MSMEs out of the total number of MSMEs in Indonesia which reaches 64.2 million. Hence, research is needed identification interest in certification of MSME products in Indonesia according to the challenges and benefits of product certification. To obtain data, this paper undertakes a systemic review of the literature covering the challenges and benefits of product certification on MSMEs in Indonesia to identify how challenges and benefits in the MSMEs, correlates with MSMEs survival improvement in the global competition. The results of the analysis of the obtained factors can be used as a basis for the right strategy to increase the product certification on MSMEs in Indonesia.

## Keywords

Challenges and Benefits, Micro Small and Medium Enterprises (MSMEs), Product Certification, and Literature Review

## 1. Introduction

The growth of the world economic situation which continues to develop towards market openness and economic integration requires Indonesia to continuously strengthen national competitiveness. Increasing the competitiveness of Indonesian national products is closely related to the things mandated by the Law on Standardization and Conformity Assessment, namely increasing the competitiveness of national products using the implementation of standards to compete in the global market (BSN, 2014). The Law states that The National Standardization Agency of Indonesia guides micro, small, and medium enterprises (MSMEs) in implementing standards. MSMEs in Indonesia play a very important and strategic role in the structure of the economy. Apart from playing a role in economic development and employment, MSMEs have been able to make their existence in the Indonesian economy (Bahari and Bestari, 2019).

Micro, small, and medium enterprises (MSMEs) in Indonesia are an important factor in the Indonesian economy (Rudiatin and Ramadhan, 2018). The increasing number of SMEs can support the economy to be stronger (Muhammad and Nurcahyo, 2017). Based on data from the Ministry of Cooperatives and SMEs (2018), MSMEs contributed 97% of the total labor in Indonesia and contributed 61.07% to Indonesia's gross domestic product (GDP). The total of MSMEs in Indonesia in 2018 reaches 64.2 million. The position of MSMEs in the Indonesian economy is the solution to the case of the national economy (Rudiatin and Ramadhan, 2018). MSMEs are implemented to boost income by generating a large number of easier jobs, thus enhancing economic growth. They have also been reported to be generally supporting the local industry (Prasetyo, 2020).

Increasing product competitiveness can be done through the implementation of standards proven by a certificate product (Susanto et al., 2017). Product certification as part of Indonesia product standardization program, aims to protect customers, ensure industrial product quality, and maintain a safe business environment (Saputra and Meyilani, 2015). Certification is generally carried out at large companies to gain wider recognition and improve quality (Clare et al, 2003). The quality needs to be managed so that the product, services, organization, or business could run smoothly in a consistent way. Besides, it may help to optimize operation in an organization towards customers which may increase the competitiveness of a company (Omar et al., 2016). Certification programs aim to establish and convey criteria for environmental management to the outside world. A certification is an informational method that helps market participants organize their interactions (Marx and Cupyers, 2010). In Indonesia, the organization which is in charge to carry out the product certification process is called the Product Certification Body (LSPPro). The product certification process can only be carried out by a Product Certification Body (LSPPro) that has been certified by the National Accreditation Committee (KAN) (Saputra and Meyilani, 2015). Total MSMEs Have Certified Products in Indonesia based on data from the National Standardization Agency of Indonesia (BSN) in 2020.

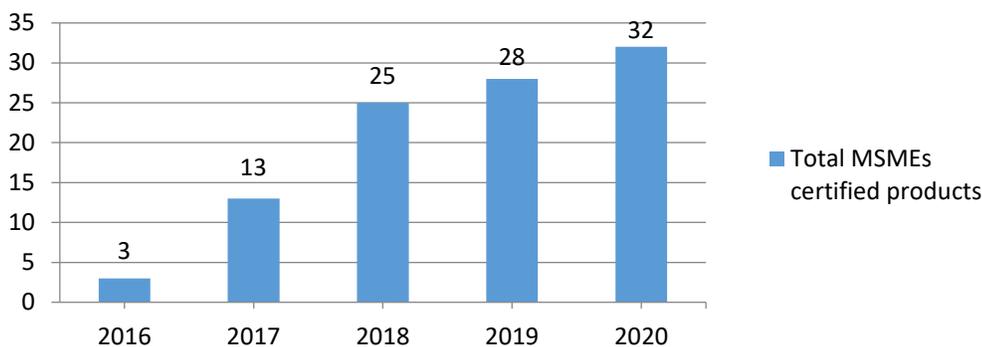


Figure 1. Total MSMEs Have Certified Products in Indonesia

Figure 1 shows the number of MSMEs that have received product certification in Indonesia each year continues to increase, this increase was recorded from 2016 to 2020. The number of MSMEs that have received product certification in 2016 is 3 and up to 2020 is 101.

Micro small and medium enterprises (MSMEs) are one of the driving factors in the economy in Indonesia experiencing challenges in trade (Rudiatin and Ramadhan, 2018). Standardization is one strategy to increase the competitiveness of the country's economy, especially in the free trade era. The Indonesian National Standard (SNI) published by the National Standardization Agency (BSN) of Indonesia is the product national standard used in Indonesia (Susanty et al., 2013). Activities in line with standardization are conformity assessment as a statement that products have met certain requirements, which may include testing, inspection, certification, and accreditation activities (Rosawati et al., 2018).

Micro, small, and medium enterprises (MSMEs) are one of the driving factors in the economy in Indonesia (Bahari and Bestari, 2019). One of the strategies to increase the competitiveness of the country's economy, especially in the era of free trade, is product standardization. This is a challenge in itself for MSMEs, considering that currently there are still many MSMEs that do not have SNI certificates for products (Fahma et al., 2019). The application of standards in MSMEs can provide benefits both in financial and non-financial aspects (Susanto et al., 2017). Consider the importance of product certification for MSMEs. Therefore, it is important to identify the challenges of increasing the interest and benefits of product certification on micro small and medium enterprises (MSMEs) in Indonesia.

### 1.1 Objectives

The study aim to the identification of challenges and benefits of product certification in micro small and medium enterprises (MSMEs) in Indonesia is expected to describe what factors affect the achievement of product certification on micro small and medium enterprises (MSMEs). Analysis of the relationship between each factor that has a role to the MSMEs can increase interest and find out the benefits in product certification.

## 2. Literature Review

### 2.1 Micro Small and Medium Enterprises (MSMEs)

Micro Small and Medium Enterprises (MSMEs) shows that the definition of MSMEs significantly varies from country to country depending on factors such as the country's; the number of workers, the value of fixed assets, production capacity, basic input characteristics, level of technology used, capital employed, management characteristics, economic growth, and MSMEs' unique problems (Eniola and Entebang, 2015). MSMEs sector is a pillar of the national economy of Indonesia. In addition to contributing to labor absorption, this sector also has a role inequitable distribution of income and the community's socio-economic forum (Budiarto et al., 2015). MSMEs in Indonesia are defined as independent productive enterprises, which are run by individuals or companies that are not subsidiaries that owned, run or become both directly or indirectly part of a large enterprise (Triandini, et al., 2014).

The Ministry of Cooperatives and SMEs of Indonesia defines MSMEs based on three main factors; staff headcount, number of assets, and turnover value, also divided MSMEs into three categories (Ridha and Hidayat, 2020). The category of micro is made up of enterprises that employ fewer than five persons, small enterprises with fewer than 20 persons, and medium enterprises with less than 100 persons (Dewi and Mahendrawathi, 2019). The category of MSMEs types in Indonesia is shown in table 1.

Table 1. Specifications of MSMEs in Indonesia

Enterprises Category	Staff Headcount	Total Net Worth	Turnover
Micro-Sized	1-4	≥ IDR 50,000,000	≤ IDR 300,000,000
Small-Sized	5-19	> IDR 50 million - IDR 500 million	> IDR 300 million - IDR 2.5 billion
Medium-Sized	20-99	> IDR 500 million - IDR 10 billion	> IDR 2.5 billion - IDR 50 billion

MSMEs are crucial to the economy in terms of sustainable growth and the largest source of employment (Dewi and Mahendrawathi, 2019). The MSMEs sector is the central point of people's economic development. Based on data from the Ministry of Cooperatives and SMEs (2019), from the total workforce of large businesses to micro-enterprises in 2019 as many as 102.2 million people, around 99.4 million people (97.22%) are in the MSME sector. The number of MSME developments in Indonesia from 2012-2018, based on data from the Ministry for Cooperatives, Small and Medium Enterprises Indonesia (2019) as shown in table 2

Table 2. Number of MSME Developments in Indonesia 2012-2018

Year	Number of MSMEs
2012	55,206,444
2013	56,534,592
2014	57,895,721
2015	59,262,772
2016	61,651,177
2017	62,922,617
2018	64,194,057

### 2.2 Product Certification

One of the strategic aspects that need to be considered in developing MSMEs in Indonesia is by increasing the quality of a product from MSMEs. One way that can be done to maintain and improve product quality is by implementing standards (Susanto et al., 2018). Standardization is a conformity assessment as a statement that products, processes, systems, persons, or institutions have met certain requirements, which may include testing, inspection, certification, and accreditation activities (Rosiawan et al., 2018). Testing: the determination of one or more characteristics of an object according to a procedure. Inspection is the method of examining a product design, product, process, or installation and determining if it complies with particular or general specifications using

professional judgment. A third-party attestation of goods, processes, systems, or personnel is known as certification (Tang et al., 2017). Accreditation is a series of formal recognition activities by the National Accreditation Committee (KAN), which states that an institution or laboratory has the competence and is entitled to carry out a Conformity Assessment (BSN, 2014)

The implementation of product standards by MSMEs must be proven by certification on products produced by MSMEs (BSN, 2018). The implementation of standards based on the Indonesian National Standard (SNI) is proven by having certificates or affixing the SNI Mark or Conformity Mark on the product (Setyoko et al., 2020). Product certification as part of the product standardization policy in Indonesia aims to protect consumers, ensure product quality, and maintain healthy business competition (Saputra and Meyilani, 2015). The purpose of product certification is to provide confidence to all interested parties that a product conforms to the specified requirements by the standard reference. The certification value is the level of confidence and trust given by the Product Certification Body by showing impartiality and competence in meeting certain requirements (ISO/IEC 17065, 2012).

Certification is generally through a third party, the first party is an individual or organization (owner/producer) whose performance will be assessed based on established standards, while the second party (buyer) is an entity with an interest in the results of the assessment of the first party, and the third party is an entity without interest, commercial or certifier. All parties should operate independently of each other (Marx and Cuppers 2010). A third-party certification process ensures that manufacturers and suppliers follow a set of guidelines in order to meet certification goals on a regular basis. Third-party certifications provide the consumer with information about the nature of the production process (Dragusanu et al., 2014). In Indonesia, the organization which is in charge to carry out the product certification process is called the Product Certification Body (LSPro). Only LSPro which has been accredited by the National Accreditation Committee (KAN) is permitted to conduct the product certification process (Saputra and Meyilani, 2015). The producer does not perform certification audits in order to preserve independence from the requirements it sets and the operations requiring certification. It has developed comprehensive methods and criteria to determine whether certifier organizations (certification bodies) are capable of providing independent and professional assessment (certification) services (Halalisan et al., 2013).

Certification is the method of controlling specific aspects of a system in order to provide observers with some assurance that the system follows a collection of accepted laws. The principles and criteria of certification have been likened to a filter. Certification such as a system, pour it through a filter, check inside, and if nothing sticks, it is okay. The filter is most often implemented by an independent party. Residues in the filter indicate noncompliance and require action. Certification does not generally refer to the legal aspects of a system, which is referred to as licensure. Usually, licensure is administered by a governmental entity for public protection purposes and certification by a professional association (Meijaard, et al. 2011). Certification help verifies that products are compliant with a market's regulatory requirements and are safe for consumers (Tang et al., 2017). In support of security accreditation, certification refers to a thorough evaluation of management, operational, and technological security controls in an information system to evaluate the degree to which the controls are applied appropriately, functioning as expected, and achieving the desired result in terms of meeting the system's security requirements (Buszta, 2008). Certification is a series of conformity assessment activities related to providing written guarantees that goods, services, systems, processes, or personalities have met standards and/or regulations (BSN, 2018).

### **2.3 Challenges Product Certification**

The development of MSMEs is influenced by internal and external factors. Internal factors of MSMEs include weak management and entrepreneurial capacity, technical production, and infrastructure. Infrastructure covers access to financial sources, market, information, technology, and infrastructure. The external element is the relationship between business entities who are related to the business, such as upstream and downstream business relationships (Dewi and Mahendrawathi, 2019). Insufficient demand for certified products in global markets, as well as a large gap between existing management standards and certification requirements, are challenges facing certification products in developing countries (Durst et al., 2006). Duggan and Kochen (2016), describe challenges for product certification in developing countries are the large financial costs, different international requirements, infrastructure and facilities, production lots and supply chain, improve structure, and organization. According to Durst et al. (2006), the disparity between developed and developing countries appears to stem from five major constraints: insufficient demand for certified products in global markets, wide gaps between existing management standards and certification requirements, weak ability to formulate appropriate sector policies and ensure their effective implementation,

insufficient capacity to develop national certification standards and certification procedures, and the high direct and indirect costs of obtaining certification in developing countries.

According to Paul (2020), lack of capital, insufficient information, selection of reliable partners and distributors, negotiating power, insufficient resources, lack of knowledge of foreign markets, little international experience, lack of government security, internal marketing problems (such as weak marketing strategies and lack of foreign market knowledge) are the most significant barriers to MSMEs' internationalization. Ernawati et al. (2020) described the challenges product certification face are technical challenges, institutional challenges to access the market, financial challenges to adopting appropriate technology to comply with certification standards, compliance challenges with regulations, documenting, certification cost, and organization. Financial constraints and management issues being detailed as MSME challenges (Rahmman et al., 2016). Financial support, it is found that the lacking of financial support has become a constraint to most MSMEs (Omar et al., 2016; Sedyastuti, 2018).

The low level of utilization of improved technologies by MSMEs is a critical challenge confronting MSMEs in developing countries in enhancing their opportunities and participation in world trade (Ernawati et al., 2020). One of the problems that MSMEs face is a lack of information about the new manufacturing technology and how to perform product quality control (Purwojatmiko and Nurcahyo, 2020). The term "improved technology" refers to the discovery of new techniques or methods, as well as the extension or enhancement of existing techniques or methods used in the development of MSMEs (Prasanna et al., 2019). Low technical capability is pushing MSMEs to adapt their business practices, including operational efficiency and consideration of social and environmental impacts of the manufacturing process, as a result of global competition. MSMEs should be able to apply the appropriate business process practices because the business process is currently a basic part of management (Dewi and Mahendrawathi, 2019; Sedyastuti, 2018).

High costs and a shortage of skilled human capital are two of the most important MSMEs challenges found. A serious problem may be a lack of trained human capital to introduce and sustain certification (Waxin et al., 2019). MSMEs typically have a more informal culture and structure of work in comparison to large enterprises. As a result, there is no clarity regarding how to improve the quality of human resources. Furthermore, there is no clear path about the career plan of the workers that led to a lack of human resource vision in MSMEs (Dewi and Mahendrawathi, 2019). Common challenges are the lack of manpower for the certification process. Overcoming challenges in acquiring and sustaining certification, MSME has to send liable staff to related training and seminars, hire document controller and well-trained and knowledgeable officers (Omar et al., 2016), capacity and training are needed certification (Obidzinski et al., 2014). According to Paul (2020), MSMEs must invest in marketing and human resource development to compete and succeed in a competitive environment.

According to Susanto et al. (2017), product certification for MSMEs faces several obstacles, such as the limited number of SMEs interested in certification, the difficult certification process, and the large cost of testing or certification which is considered expensive and adds to production costs. According to Omar et al., (2016) expensive fees, knowledge and experience deficiencies as well as tedious procedures in the documentation process are product certification of MSMEs challenges. Process application, the certification of quality standard comprise of several steps that need to be followed so that the company could get recognition from the standardization body (Omar et al., 2016).

The product certification process requires certification costs (paid either as a fee for surveillance), certification maintenance costs, and certification programs require data collection and reporting against established standards which can be both costly and time-consuming (Bellchambers et al., 2015). Certification costs are high including annual surveillance costs, certification needs to be based upon the assumption that the producer will become economically viable after certification (Obidzinski et al., 2014). High costs of certification include the time and costs associated with preparing documentation and training employees but also include the costs of internal and external auditors, found that high costs were also a barrier to implementation for small and medium-sized enterprises in the UK and that many of these companies were uncertain about the market benefits of becoming certified (Waxin et al., 2019). Clare et al. (2003) stated the need to identify the influence of organizational size (MSMEs or large companies) in certification.

## 2.4 Benefit Product Certification

According to the International Standards Organization (ISO) (2010), there are several benefits of implementation standards for business activities, which include: cost savings, increased customer satisfaction, access to new markets, increased market share, and environmental benefits. The benefits of implementing standards are an increase in the company's production volume, an increase in product exports, and an increase in company profits (Linthin et al., 2018). The standards' implementation would increase operational performance such as output volume, reliability, and timeliness (Alfredo and Nurcahyo, 2018). Benefit implementation of the standard for MSMEs have boosted the efficiency of business operation, improve quality of the products, attract and retain customers, increase profits, and standards can help cost-effectively (BSI, 2020).

According to Clare et al. (2003), the two most common benefits of certification are increased productivity and access to foreign markets. Certified companies experience improved internal (human resource management, operations management), external (external customer satisfaction, fewer complaints, repeat purchases), better documentation, financial benefits, higher quality employee awareness, better internal communication, and increased operational efficiency. The benefits of applying standards to products are increased productivity, decreased percentage of defects in production, increased worker morale, increased quality of goods produced, and increased consumer confidence. The implementation of standards can provide benefits to consumers, making it easier for consumers to choose products (Susanto et al., 2018). The benefits of product certification are quality assurance, protecting consumers, enhancing corporate image, and increasing competitiveness (Pudjiastuti and Femina, 2010). Increase production volume and increase income (Dragusanu et al., 2014). Certification has had good impacts on the improvement of the quality of the product, improve the quality of organization management, is to provide market advantages and/or improved access (Fujiwara et al., 2015). The certification process is used to validate that a product complies with its applicable standards (Urlakis, 1998).

Product certification can improve market access, price premiums, and reputation as potential incentives. Demand for approved goods higher up the supply chain results in market access. Market demand can result in price premiums. Certification is often used as a risk management and reputation management mechanism when communicating with external stakeholders (Marx and Cuypers, 2010). According to the findings, companies' primary motivations for obtaining product certification are market benefits (particularly retaining market access/share) and good reputation/international recognition (Halalisan et al., 2013). The study shows that the products certified by Indonesian National Standard (SNI) already have attributes such as quality of raw material, the efficiency of the company, product quality, safety in use, and fair price. Most of the respondents agreed that the SNI product can increase competitiveness (Rosawan et al., 2018).

## 3. Methods

The methodology used in this paper analysis of literature review on the subject of the challenges and benefits of product certification on micro small and medium enterprises (MSMEs) in Indonesia, operational or managerial aspect. The paper search comprises online materials from articles in journals. The MSME challenges are not limited to Indonesia MSMEs but also taking into consideration the universal MSME challenges. The article search was selected from the prominent database from journals, namely Web of Sciences, conference papers, Scopus papers, Sciondirect, IEEE Xplore, and Emerald are the scientific databases used for the review process. As a starting point, some books also proved helpful in the research process. The papers selected for the review were analyzed through a theoretical framework developed by the authors. This framework enabled used to describe the research streams and the perspectives through which the right strategy to increase the product certification on MSMEs in Indonesia by the extant scientific literature.

## 4. Data Collection

This paper employed an appropriate methodological approach named Literature Review based on the analysis and collection of the available information about the challenges and benefits of product certification on MSMEs. Furthermore, the chosen methodology favors the relevant studies addressed by providing accurate knowledge of the theme investigated. The methodology used is a research methodology with three-phases and seven steps (Benavides and Verdusco, 2017) as shown in Table 3.

Table 3. Literature Review Phases and Steps in the Research

Phase	Step
<i>Planning</i>	<i>1. Identification of the Research Question</i> Formulate a clear, well-defined research question of an appropriate scope
	<i>2. Research Design</i> State the criteria are going to be used to determine whether or not a study will be included in the search
	<i>3. Literature Review</i> Identified as relevant to the topic and search keywords as challenges and benefits of product certification on MSMEs
<i>Conducting</i>	<i>4. Selection of Literature</i> Start with a title/abstract screening to remove studies that are not related to the topic
	<i>5. Data Extraction from the Selected Literature</i> Data extraction can either be paper-based or computer-assisted. Data extraction forms can be used to record details of information source (title, authors, and publication details) by software computer (spreadsheet)
<i>Reporting</i>	<i>6. Data Synthesis of the Selected Literature</i> Collect factor data of challenges and benefits of product certification on MSMEs
	<i>7. Reporting and Dissemination</i> Make recommendations for solutions of challenges and benefits of product certification on MSMEs

This paper adopts the research methodology of conducting a literature review. Literature review article researching by the methodology chosen, so the research questions could be answered and the objectives accomplished. Qazi et al. (2015), the systematic reviews adopt a replicable and transparent process that minimizes the bias by providing an audit trail of the reviewers plan of action.

## 5. Result and Discussion

Increasing the competitiveness of micro small and medium enterprises (MSMEs) products will be a factor in competing in global trade. Increasing product competitiveness can be implemented through the application of standards (Susanto et al., 2017). Product certification provided by the Product Certification Body is a determinant of product acceptance in trade. However, the number of MSMEs that have obtained product certification in Indonesia according to data National Standardization Agency (BSN) in 2018 is only 41 MSMEs out of the total number of MSMEs in Indonesia which reaches 64.2 million. Meanwhile, the number of MSMEs in Malaysia that have obtained product certification in 2018 according to data government organization such as SME Corporation Malaysia is 155 SMEs from 907,065 MSMEs.

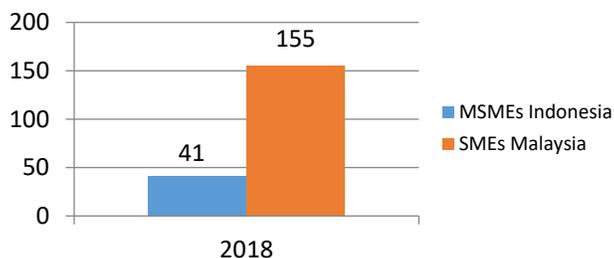


Figure 2. Total MSMEs Have Certified Products in Indonesia and Malaysia in 2018

From Figure 2, the number of MSMEs that have been certified as products in Indonesia is still low when compared to Malaysia. The number of MSMEs that have certified their products in Indonesia must be increased by early identification of the challenges and benefits of product certification for MSMEs. The initial identification of the challenge factors and benefits of product certification at MSMEs in Indonesia serves to map the steps that the Indonesian government must take to increase interest in product certification at MSMEs based on literature reviews.

Previous research in several countries has identified the challenges faced by MSMEs in obtaining product certification so that research in Indonesia is needed to increase interest in product certification in Indonesia MSMEs. Product certification for MSMEs in Indonesia faces several obstacles, such as the limited number of MSMEs interested in certification, certification is costly and time-consuming, the lack of organizational skills, and a lack of technical knowledge (Susanto et al., 2017). Halim and Malim (2012), describe organization capability of MSMEs in Malaysia ranks lowest compared to other types of organizations in Malaysia. Government organizations should be more focused on identifying the needs that can help Malaysians enhance their management capability, and in turn, will help increase productivity and strengthen the national economy. Singh and Wasdani (2016), the major common challenges faced in MSMEs India are accessing finance (difficulty in the provision of collateral or a guarantee, lengthy loan processing, and a lack of knowledge about available schemes). Waxin et al. (2019), lack of qualified human resources to implement and maintain the certification can be a serious challenge. Skills and knowledge development is important not only for the initial implementation of a certification. Waxin et al., (2019) reviewed that a lack of human resources was a more important barrier for successful implementation of certification than a lack of financial resources. Waxin et al., (2019) also found that unfavorable company culture, including inconsistent support from top management, hindered successful implementation.

Challenges and benefits factors of product certification in MSMEs in Indonesia in this research will be identified based on the findings in the literature review, thereby covering the potential factors. Table 4 present the result that the challenge factors that product certification on MSMEs.

Table 4. Challenges of Product Certification on MSMEs

Item	Factors	References
1	Lack of financial resources/capital	Duggan and Kochen (2016), Rahmman, et al. (2016), Omar et al. (2016), Dewi and Mahendrawathi (2019), Sedyastuti (2018), Paul (2020)
2	Lack of certification cost (costs for the documentation process, employee training, auditors, surveillance, and testing)	Obidzinski et al. (2014), Bellchambers et al. (2015), Omar et al., (2016), Susanto et al. (2017), Waxin et al. (2019), Ernawati et al. (2020)
3	Low technological capability	Sedyastuti (2018), Prasanna et al. (2019), Dewi and Mahendrawathi (2019), Purwojatmiko and Nurcahyo (2020), Ernawati et al., (2020)
4	Lack technical production	Prasanna et al. (2019), Dewi and Mahendrawathi (2019), Purwojatmiko and Nurcahyo (2020), Ernawati et al. (2020).
5	Weak management and entrepreneurial capacity/ low organizational capacity	Durst et al. (2006), Dewi and Mahendrawathi (2019), Duggan and Kochen (2016), Ernawati et al. (2020)
6	Lack of number and qualified human resources (implement and maintain the certification)	Obidzinski et al. (2014), Omar et al., 2016), Waxin et al., (2019), Dewi and Mahendrawathi (2019), Paul (2020)
7	Lack of access to the market and networking	Durst et al. (2006), Dewi and Mahendrawathi (2019), Paul (2020), Ernawati et al. (2020)
8	The difficult certification process (certification requirements, documentation, knowledge, and experience)	Durst et al. (2006), Susanto et al. (2017), Ernawati et al. (2020), Omar et al. (2016), Duggan and Kochen (2016)
9	Lack of Infrastructure and facilities	Duggan and Kochen (2016), Dewi and Mahendrawathi (2019)
10	Insufficient information	Dewi and Mahendrawathi (2019), Paul (2020)
11	Lack of protection from the government (regulation)	Paul (2020), Ernawati et al. (2020)
12	Lack of national quality infrastructure (product certification body and testing laboratories)	BSN (2014)

Item	Factors	References
13	Unavailability of product standards (SNI) and certification schemes for the product certification process	Dararizki (2020)
14	Lack product innovation	Sedyastuti (2018)
15	Insufficient demand for certified products in the global market	Durst et al. (2006)
16	Obstruction of the production process supply chain	Duggan and Kochen (2016)

From the results of the identification of challenge factors, a matrix challenge factors that product certification on MSMEs can be carried out which shows that various strategies can be used as a basis to increase the interest of MSMEs in Indonesia to certify their products. Table 5 present the result that the benefit factors that influence product certification on MSMEs.

Table 5. Benefits of Product Certification on MSMEs

Item	Factors	References
1	Increase financial benefits/ company profits	Clare et al. (2003), Pudjiastuti and Femina (2010), Dragusanu et al. (2014), Linthin et al. (2018)
2	Improve of the quality of product	Fujiwara et al., (2015), Saputra and Meyilani (2015), Susanto et al. (2018), Rosiawan et al. (2018), Billah and Purwanggono (2020), Pudjiastuti and Femina, (2010)
3	Increase customer satisfaction (fewer complaints and retain customers)	Clare et al. (2003), Pudjiastuti and Femina (2010), ISO (2010), Susanto et al. (2018).
4	Improve market access	Marx and Cuypers (2010), ISO (2010), Halalisan et al. (2013), Fujiwara et al. (2015)
5	Access to foreign markets/ increase in product exports	Clare et al. (2003), Pudjiastuti and Femina (2010), Susilo (2012), Linthin et al. (2018)
6	Improve the quality of organization management	Clare et al. (2003), Marx and Cuypers (2010), Pudjiastuti and Femina (2010), Fujiwara et al. (2015)
7	Increase company's competitiveness	Pudjiastuti and Femina (2010), Susilo (2012), Saputra and Meyilani (2015), Rosiawan et al. (2018)
8	Enhance good reputation/corporate image	Pudjiastuti and Femina (2010), Marx and Cupyers (2010), Halalisan et al. (2013), Billah and Purwanggono (2020)
9	Increase operational efficiency	Clare et al. (2003), Alfredo and Nurcahyo, (2018), Rosiawan et al. (2018), Pudjiastuti and Femina (2010)
10	Improve operational performances such as production volume	Dragusanu et al. (2014), Linthin et al. (2018), Alfredo and Nurcahyo (2018)
11	Increase productivity	Clare et al. (2003), Susanto et al. (2018), Billah and Purwanggono (2020).
12	Better internal communication and documentation	Clare et al. (2003)
13	Decrease percentage of defects in production	Susanto et al. (2018)

The benefit factors that influence product certification on MSMEs can be used as a basis in determining the right strategy to increase the interest of MSMEs in Indonesia to certify their products. Based on the literature the benefits of product certification for MSMEs are as follows, as follows: increase in financial benefits/company profits, increase customer satisfaction (fewer complaints and retain customers), improve market access, access to foreign markets, improve operational performances such as production volume, increase productivity, increase operational efficiency, improve quality of the product, and improve the quality of organization management.

## 6. Conclusion

This research is preliminary research on the challenges and benefits of product certification on micro, small, and medium enterprises (MSMEs) in Indonesia. Initial identification based on a literature review can be used as a basis in determining the right strategy to increase the interest of MSMEs for their product certification in Indonesia by the Indonesian government and stakeholders. The challenges of product certification in MSMEs in general based on literature studies are lack of financial resources, lack of certification cost, low technological capability, lack of technical production, weak management and organizational capacity, and lack of qualified human resources (implement and maintain the certification). The benefit of product certification in MSMEs in general based on literature studies are Increase financial benefits, improve quality of the product, increase customer satisfaction (fewer complaints and retain customers), improve market access, improve the quality of organization management, and increase the company's competitiveness. For further studies, this research can also be carried out in other methods such as calculating statistically the challenges and benefits of product certification on micro, small, and medium enterprises (MSMEs) in Indonesia.

## Acknowledgements

We would like to thank Pusat Pendidikan dan Pelatihan from Kementerian Riset dan Teknologi/Badan Riset dan Inovasi Nasional for funding this research through the Beasiswa Saintek program.

## References

- Alfredo, El. I., and Nurcahyo, R., The impact of ISO 9001, ISO 14001, and OHSAS 18001 certification on manufacturing industry operational performance, *Proceedings of the International Conference on Industrial Engineering and Operations Management Bandung*, Indonesia, pp. 6-8, 2018.
- Ernawati A., Kim Y., Fisher L. A., and Baral H., Non-state certification of smallholders for sustainable palm oil in Sumatra, Indonesia, *Land Use Policy*, Vol. 99, 2020.
- Badan Standardisasi Nasional (BSN), *National Standardization Strategy 2015 – 2025*, Available: [https://bsn.go.id/uploads/download/Renstra\\_BSN\\_2015-2019\\_Final\\_all1.pdf](https://bsn.go.id/uploads/download/Renstra_BSN_2015-2019_Final_all1.pdf), September, 21, 2020.
- Badan Standardisasi Nasional (BSN), *Government Regulation of the Republic of Indonesia Number 34 of 2018 concerning the Standardization System and National Conformity Assessment*, July 20, 2019.
- Bahari, Y. M., and Bestari, D. K. P., Strategy for Strengthening Micro, Smile, and Medium Enterprises (MSME) in Facing the Free Trade Era, *MIMBAR*, Vol. 35, No. 1, pp. 166-174, 2019.
- Bellchambers, L.M., Phillips B. F., and Ramirez, M.P., From certification to recertification the benefits and challenges of the Marine Stewardship Council (MSC): A case study using lobsters, *Fisheries Research*. <http://dx.doi.org/10.1016/j.fishres.2015.08.029>, 2015.
- Benavides, R. R., and Verduzco-Garza, T., Success factors comparison in the logistics clusters located in East Asia-Pacific, North America, and Western Europe, A systematic literature review, In *Proceedings of the International Conference on Industrial Engineering and Operations Management*, Vol. 2017, No. Oct, pp. 465-479, 2017.
- Billah, M. T., and Purwanggono, B., Projection of Quantitative and Qualitative Benefits of SNI 8303: 2016 Certification of Stamped Batik on MSMEs Batik Merak Manis Solo, *Seminar Nasional Teknik Industri (SENTI) UGM.*, 2020.
- Budiarto, R., Putero, S. H., Suyatna, H., Astuti, P., Saptoadi, H., Ridwan, M. M., and Susilo, B., *MSME Development Between Conceptual and Practical Experience*, UGM PRESS, Sleman, 2018.
- Buszta, K., Challenges in certification and accreditation, *IT Professional*, 10(3), 56-59, 2008.
- BSI Group. *The Small Business Guide to Standards*. Available: <https://www.bsigroup.com/en-GB/standards/who-uses-standards/standards-and-small-business/>, February 7, 2020.
- Clare, Mark Goh, and T. B. Wan., Does ISO 9000 certification improve business performance?, *International Journal of Quality & Reliability Management*, Vol. 20, No. 8, 2003.
- Dararizki, K., *Importance of Standardization & Certification as Formal Evidence of Quality*. Available: <https://www.ukmindonesia.id/baca-artikel/297>, January 24, 2020.
- Duggan D. E. and Kochen M., Small in Scale But Big In Potential: Opportunities and Challenges for Fisheries Certification Of Indonesian Small-Scale Tuna Fisheries, *Marine Policy*, Vol. 67, Pp. 30–39, 2016.
- Dewi, F., and Mahendrawathi, E. R., Business Process Maturity Level of MSMEs in East Java, Indonesia, *Procedia Computer Science*, 161, 1098-1105, 2019.

- Dragusanu, R., Giovannucci, D., and Nunn, N., The Economics Of Fair Trade, *Journal of Economic Perspectives*, 28(3), 217-36, 2014.
- Durst, P. B., McKenzie, P. J., Brown, C. L., and Appanah, S., Challenges facing certification and eco-labelling of forest products in developing countries, *International Forestry Review*, 8(2), 193-200, 2006.
- Eniolaa A. A. and Entebang H., SME Firm Performance - Financial Innovation and Challenges, *Procedia Social and Behavioral Sciences*, 2015.
- Fujiwara T. Awang S. A., Widayanti W.T., Septiana R.M., Hyakumura K. and Sato N., Effects of National Community-Based Forest Certification on Forest Management and Timber Marketing: A Case Study of Gunung Kidul, Yogyakarta, Indonesia, *The International Forestry Review*, Vol. 17, No. 4, pp. 448-460, 2015.
- Halalisan A.F, Marinchescu M., Bopa B., and Abrudan I. V., Chain of Custody certification in Romania: profile and perceptions of FSC certified companies, *The International Forestry Review*, Vol. 15, No. 3, pp. 305-314, 2013.
- Halim, F. A., and Malim, M. R., Comparing the Management Capability of SMEs with other Organizations in Malaysia using Analytic Hierarchy Process (AHP)., *ASEAN entrepreneurship conference*, 264, 2012.
- International Organization for Standardization (ISO), *Assessing Economic Benefits of Consensus-Based Standards - The ISO Methodology*, ISO, Geneva, 2010.
- ISO/IEC 17065:2012, *Conformity assessment – Requirements for bodies certifying products, processes, and services*, ISO Standard, 2012.
- Linthin R. D., Fransiska R. Z., and Trilaksani W., The Study of Standard Application in Tuna Company in DKI Jakarta, *Manajemen IKM*, Vol 2, No 2, pp 39-45, 2018.
- Marx, A., and Cuypers, D., Forest Certification as a Global Environmental Governance Tool: What is the Macro-Effectiveness of the Forest Stewardship Council?, *Regulation & Governance*, 4(4), 408-434, 2010.
- Meijaard E., Sheil D., Guariguata M. R., Nasi R., Sunderland T., and Putzel L., Conceptual model for certification, *Center for International Forestry Research*, Vol 4, 2011.
- Muhammad and Nurcahyo, R., Study Analysis of Productivity Improvement Micro, Small. and Medium Enterprises (MSMEs) Handcraft with Line Balancing Method to Improve and Enhance Sustainable Economic in Depok, Indonesia, *In Proceedings of the International Conference on Industrial Engineering and Operations Management*, Vol. 2017, No. Jul, pp. 585-596, 2017.
- Obidzinski, K., Dermawan, A., Andrianto, A., Komarudin, H., Hernawan, D., Fripp, E., and Cullinane, L., Timber legality verification system and the Voluntary Partnership Agreement in Indonesia: The challenges of the small-scale forestry sector, *Center for International Forestry Research*, Vol. 164, 2014.
- Omar, S. S., Ramlan, R., Rasi, R. Z. R. M., and Ideris, A., Challenges Encountered by SME Manufacturers in Acquiring and Sustaining ISO Certification, International Information Institute (Tokyo), *Information*, 19(8A), 3257, 2016.
- Paul, Justin, SCOPE framework for SMEs: A New Theoretical Lens for Success and Internationalization. *European Management Journal*, No. 38, pp.219-230, 2020.
- Prasanna, R., Jayasundara, J., Naradda Gamage, S., Ekanayake, E., Rajapakshe, P., and Abeyrathne, G., Review Sustainability of SMEs in the Competition: A Systemic Review on Technological Challenges and SME Performance, *Journal of Open Innovation: Technology, Market, and Complexity*, Vol 5, No. 100; doi:10.3390/joitmc5040100, 2019.
- Prasetyo, P. E., The Role of Government Expenditure and Investment for MSME Growth: Empirical Study in Indonesia, *The Journal of Asian Finance, Economics and Business* (JAFEB), 7(10), 471-480, 2020.
- Pudjiastuti, U., and Femina, D. V., Benefits of Certification for Industry in Indonesia, *Journal Standardisasi*, 12(2), 106-117, 2010.
- Purwojatmiko, B. H., and Nurcahyo, R., Total Quality Management Implementation in Small Business: Case Study in Depok, Indonesia, *Proceedings of the 3rd Asia Pacific Conference on Research in Industrial and Systems Engineering 2020*, pp. 328-332. 2020.
- Qazi, A., Quigley, J., and Dickson, A., Supply Chain Risk Management: Systematic Literature Review and a Conceptual Framework for Capturing Interdependencies Between Risks. *In 2015 International Conference on Industrial Engineering and Operations Management (IEOM)*, pp. 1-13, IEEE, 2015.
- Rahman, N. A., Yaacob Z., and Radzi, R. M., The Challenges Among Malaysian SME: A Theoretical Perspective, *World Journal of Social Sciences*, Vol. 6, No. 3, Pp. 124 – 132, 2016.
- Ridha, R., and Nila K. H., Impact of Innovation and Certification to SME Performance in F&B Sector, *Easy Chair*, No. 4280, 2020.
- Rosiawan, M., Singgih, M. L., and Widodo, E., The benefit attributes of the Indonesian National Standard (SNI) product, *EDP Sciences In SHS Web of Conferences*, Vol. 49, p. 01003, 2018.

- Rudiatin, E. and A. I. Ramadhan, Moral and Cultural Strength, Supporting the Indonesian Economy: An Overview of Small and Medium Enterprises, *Journal of Business and Entrepreneurship*, Volume 1, No. 1, 2018.
- Saputra M. A. and Meyilani, R., Business process improvement design of Indonesian National Standard (SNI) product certification, *International Conference on Automation, Cognitive Science, Optics, Micro Electro-Mechanical System, and Information Technology (ICACOMIT)*, pp. 46-51, IEEE, 2015.
- Sedyastuti, K., Analysis of MSME Empowerment and Increasing Competitiveness in the Global Marketplace, *INOBIS: Journal Inovasi Bisnis and Manajemen Indonesia*, 2(1), 117-127, 2018.
- Setyoko, A. T., Achmadi, A., Kristiningrum, E., Susanto, D. A., Lukiawan, R., and Ayundyahrini, M., *Portrait of Standardization and Conformity Assessment in Indonesia and Other Countries*, Deepublish, Sleman, 2020.
- Singh, C., and Wasdani, P, Finance for Micro, Small, and Medium-Sized Enterprises in India: Sources and challenges, *ADBI Working Paper*, 581, 2016.
- Susanty, A., Rinawati, D. I., Purwanggono, B., and Puspitasari, D., Assessing SMEs Batik readiness for SNI adoption (Case Study SMEs Solo and Yogyakarta). *IEEE International Conference on Industrial Engineering and Engineering Management*, pp. 1036-1041, IEEE, 2013.
- Susanto, D. A., Isharyadi, F., and Ritonga M., Economic Benefits of Standards on Small Medium Enterprise Using ISO Methodology, *Journal Standardisasi*, Volume 19, Nomor 1, Pp 25 – 38, 2017.
- Susanto, D. A., Isharyadi, F., and Aliyah, N., The Factors are Affecting Small and Medium Enterprises on Applying Standards Consistent, *Journal Standardisasi*, 18(2), 129-138, 2018.
- Susilo, Y., Strategies to Improve MSMEs Competitiveness in Facing the Implementation of CAFTA and AEC. *Buletin Ekonomi*. Vol. 8, No. 2, pp. 70-170, 2012.
- Tang, F., O'Grady, A., and Clapham, A., Entering the testing and certification industry: A review of job and competency requirements. *IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)*, pp. 158-161, IEEE, 2017.
- Triandini, E., Djunaidy, A., and Siahaan, D., Determining e-commerce adoption level by SMEs in Indonesia based on customer-oriented benefits. *The 1st International Conference on Information Technology, Computer, and Electrical Engineering*, pp. 281-285, IEEE, 2014.
- Urlakis D. M., Regulatory Requirements and The Certification Process, *IEEE Xplore*, Pp 181-183, 1998.
- Waxin, M. F., Knuteson, S. L., and Bartholomew, A., Drivers and Challenges For Implementing ISO 14001 Environmental Management Systems In An Emerging Gulf Arab Country, *Environmental Management*, 63(4), 495-506. DOI 10.1007/s00267-017-0958-5, 2019.

## Biographies

**Andri Gandhi** is a graduate student of Agricultural Engineering, from Gadjah Mada University, who received a scholarship from the Ministry of Research of Technology to continue her studies in a Postgraduate program majoring in Industrial Engineering, Universitas Indonesia. He is also working as a government employee in the National Standardization Agency (BSN) with the System of Implementing Standards and Conformity Assessment Division, He has an interest in the field of quality management system after 5 years of experience in the system of implementing standards product, services, systems, processes, or personal. With experience and competence in the field of the quality management system, he also several times get the opportunity to be mentor MSMEs in Indonesia to get product certification.

**Rahmat Nurcahyo** is a Professor in Industrial Engineering, Universitas Indonesia. He earned a Bachelor of Engineering degree in Mechanical Engineering from Universitas Indonesia, a Master of Engineering Science degree in Industrial Management from the University of New South Wales, Australia, and a Doctoral degree in Strategic Management from Universitas Indonesia. His research interest is management systems, quality management, production system, lean systems, and maintenance management.

**Djoko Sihono Gabriel** is a Professor in Industrial Engineering. Universitas Indonesia. He earned a Bachelor of Engineering (B. Eng.) in Industrial Engineering, Bandung Institute of Technology, Bandung, Indonesia in 1980, the engineer (Ir.) in Industrial Engineering, Bandung Institute of Technology, Bandung, Indonesia in 1981, the master of engineering (M. Eng.) in Industrial Management, Universitas Indonesia, Jakarta, Indonesia in 1995, the doctor (Dr.) in mechanical engineering, Universitas Indonesia, Jakarta, Indonesia in 2015. He is a professor in industrial engineering at Faculty of Engineering, Universitas Indonesia with a major in industrial management, especially in material engineering management.