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THE READINESS OF MINANG WEAVING TOWARDS HALAL FASHION ADOPTION: A CLUSTERING ANALYSIS OF TOE FRAMEWORK

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ABSTRACT
This research focuses on clustering the readiness of halal practice implementation in Minang weaving businesses, then based on the clusters that are very ready, it is then carried out the identification of the determinant factors of the readiness to implement the Halal Assurance System in Minang weaving businesses. Sampling was conducted using the non-probability sampling technique through purposive sampling from 103MSMEs of weaving in West Sumatra. The results of this research through K-means cluster analysis show that the grouping of Technology, Organization, Environment (TOE) halal adoption in weaving MSMEs consists of 6 readiness groups, namely termination (15 MSMEs), maintenance (43 MSMEs), action (23 MSMEs), preparation (13 MSMEs), contemplation (2 MSMEs), pre-contemplation (7 MSMEs) spread across five cities/regencies in West Sumatra (Sawahlunto City and 50 Cities Regency which consists of 34 MSMEs respectively, 30 MSMEs from Tanah Datar Regency, 3 MSMEs from Sijunjung Regency, and 2 MSMEs from Payakumbuh City). Of the three determinants of TOE adoption tested, MSMEs' perceptions of technology readiness through the dimensions of compatibility and perceived benefits are higher than organizational and environmental factors. This research has theoretical and practical implications through exploration of the TOE model so that the results of this study can become a further research agenda in encouraging halal certification through developing a halal adoption strategy based on HAS 23000 in weaving MSMEs in West Sumatra.
Keywords: *TOE Adoption, K-means Cluster Analysis, Minang Weaving, MSMEs*

1. Introduction

The topic of the halal lifestyle is no longer limited to the Muslim community, as many non-Muslim countries have also paid attention to the halal industry. In addition, the need for halal products refers to the first community's needs and the second one's, hence considered a global trend. At this juncture, the global halal industry market is experiencing growth in both halal food and beverage and clothing sectors, which is humans' basic need. Indonesia occupies the third position in the halal fashion/clothing industry, and its contribution to the whole sector in export activities is ranked ninth worldwide as the highest exporting country to the Organization of Islamic Cooperation country members (Dinar, 2022). The demand for halal fashion also comes from the non-Muslim community, which wants clean-processed clothing. From the supply side, halal fashion producers can fulfil untouched Muslim and non-Muslim markets because they can meet halal standards for manufacturing activities. The increasing number of companies producing halal fashion from various well-known brands in the world today (Sumarliah, Wang, et al., 2021) is a sign that halal fashion guarantees a wider market potential.

Halal sectors represent a large share of the economy in Islamic countries, where modest or halal fashion, food, and services are the three most prominent sectors (B. A. Alserhan, 2010; Hanzaee & Chitsaz, 2011). Halal fashion reflects clothing that complies with Islamic law regarding safety, politeness, cleanliness, and comfort in wearing (Sumarliah, Li, et al., 2021). Modest fashion, from an Islamic point of view, is an emerging phenomenon that offers non-tight and non-transparent clothing covering the body as per religious injunctions and is seen as a thriving industry in the fashion sector (Radwan et al., 2020). Muslim dress is no longer a Muslim identity; it has become a social identity of Indonesian and global communities (Martiana et al., 2018). The concept of halal has a moral dimension and aims primarily at maintaining society and

disseminating good morals and noble values derived from Islamic culture (Jaelani, 2017). In so doing, as part of the halal industry, the halal fashion industry should also show the religious practices of all its stakeholders (Rahman et al., 2017).

The halal fashion industry plays an important role in the global fashion industry. It is growing rapidly and offers a range of products and services that are in line with Islamic principles. According to a report by Thomson Reuters, the number of Muslims worldwide in 2017 reached 1.8 billion, or about 24% of the world's total population. This figure is expected to rise by 70% by 2060, bringing the global Muslim population to 3 billion. Increasing Muslim consumer growth, as well as increased supply of certified halal products, are expected to drive the global halal market to reach $9.71 trillion by 2025.

The halal fashion industry has also attracted the attention of many fashion designers and well-known brands around the world. Several international fashion events such as the London Modest Fashion Festival have featured various famous modest fashion brands. Some famous brands such as H&M, Macy's, and Marks & Spencer have also launched their own halal fashion label. In addition, many local fashion designers and brands have also incorporated traditional fabric design elements and materials that highlight local cultural heritage into their collections. It shows that the halal fashion industry has a huge global appeal, specifically for local products such as embroidery, weaving, and batik.

Weaving is interlacing two systems of yarns, which are interlaced at right angles to each other. The lengthwise threads are called warp; individually, they are known as ends. The crosswise threads are called filling or weft; individually, they are called picks (Jerde, 1992) The basis of woven fabrics is a cross between warp and weft, namely vertical and horizontal threads. It is the basis or base of the weave. Woven fabrics are made using tools. Minang woven fabrics are Indonesia's unique woven products with Minang motifs and are produced in various regions of West Sumatra, i.e., Silungkang woven fabrics, Sikek woven fabrics, Uggan woven fabrics, Kubang woven fabrics, Halaban woven fabrics, Balai Panjang woven fabrics, Solok woven fabrics, and Lintau woven fabrics. Each weaving business, either micro or small, that produces woven, clothes, scarves, and souvenirs with Minang motifs which has unique designs and motifs. Hand-woven products are made using traditional looms instead of machines.

Minang woven has a unique characteristic with Minang motifs that are distinctive based on Minangkabau customs dominated by Islamic culture. In its development, it is identical with nature, as nature is the main source that is important to humans. In addition, the woven motifs adapt to natural motifs and decorative styles from Muslim countries in the Middle East such as Arabia, Egypt, and Syria. The massive development of modest fashion in Indonesia is also created by incorporating traditional design elements and materials that highlight the local Minang cultural heritage. The uniqueness of modest fashion in Indonesia is enriched by Minang woven fabrics that symbolize local wisdom. The process of making woven fabrics also uses a loom instead of a machine (ATBM) which is entirely handmade.

Minang woven fabrics are West Sumatra's superior products supporting tourism and creative economic sectors. Developing a Minang weaving business based on local uniqueness needs to be carried out to make it a global modest fashion. Modest fashion, based on Sharia values, turns out to be a leading halal industry sector with great opportunities and potential to compete globally. In other words, value-added halal fashion products can compete in the global market. It has been in the spotlight in various world fashion houses from Paris, Milan, London, to New York. The massive development of modest fashion in Indonesia in recent years has been created by incorporating traditional design elements and cloth materials that highlight local cultural treasures, e.g., Minang ones. Minang woven fabrics with cloth materials that symbolize local wisdom, typical Minang motifs, and clothing designs enrich the uniqueness of modest fashion and contribute to the modest fashion market in Indonesia.

This research bears urgency to realize four important programs that support national economic growth and empower people. The acceleration of MSMEs in seeking halal-certified products is a determining factor for consumers in buying halal products. Consumers, as users of halal products, and producers, as providers, play an important role in raising awareness of the importance of implementing halal practices (Amarul et al., 2019; Aziz & Chok, 2013; Jannah & Al-Banna, 2021) Many previous researches have addressed halal adoption in the food industry

(Giyanti et al., 2020; Hossain & Quaddus, 2010; Wahyuni et al., 2022). Study related to halal modest fashion has also been found in many regions or countries. However, research that focuses on Minang weaving has never been carried out in previous studies, especially in investigating the factors of technology, organization, and environment which then affect the readiness of companies to adopt halal.

Some previous studies regarding the readiness of small-medium enterprises to implement halal practices and halal certification are as follows: Giyanti et al (2020) develop a measurement model to assess the readiness to implement halal in food-manufacturing SMEs, Wahyuni et al (2022) analyze the level of readiness of food products for halal certification, and (Jannah & Al-Banna (2021) examine food producers' halal awareness.

The urgency of this research can be seen from the phenomenon and several relevant previous research. Since textiles are used as basic materials for clothing, it is necessary to encourage producers in the textile industry to have halal certification. This has been regulated in Law Number 33 of 2014 concerning Guarantees of halal products, stipulated in article 4 that "Imported products, distributed and marketed in Indonesian territory must be halal certified," one of which mentions textile products as goods that require halal certification as used goods. The Ministry of Trade issued a warning to all halal textile industry producers to immediately process their halal certification until October 17, 2026 (Herman, 2023).

Based on previous literature, research related to halal adoption is more often found in the food industry, such as research conducted by Purwanti (2023) to determine the involvement of actors in the global halal fashion industry value chain scheme and to determine the economic conditions of urban communities with the existence of the halal fashion industry. Listyadewi (2023) conducted research that provides a general overview of the implementation of the circular economic paradigm in the development of halal fashion. Furthermore, Abdul Kadir et al (2015) examines the opportunities for the halal fashion industry in Indonesia through development models and strategies that can be implemented. The potential of halal e-commerce in the Muslim fashion sector as an effort to encourage the development of the halal industry in Indonesia was also researched by Rahayu & Ningtyas (2021). The urgency of this research can be seen from the halal study in this study which specifically focuses on the adoption of halal fashion based on local wisdom in West Sumatra, which in this case is Minang weaving. Research related to halal fashion is a study that has only developed in the last three years, so no one has discussed local ethnic-based clothing.

Minang weaving as a type of clothing product that highlights local cultural characteristics needs to have halal certification because as an effort to reach the global market, typical West Sumatran weaving currently generally has a website or social media to support its sales activities, so it does not rule out the possibility that this weaving purchased by traders from Malaysia or other Islamic countries, where the buyer's country of origin requires that products entering and circulating from their country must have halal certification. Apart from that, halal woven products can also be used as halal souvenirs for tourists visiting West Sumatra, considering that West Sumatra is also one of the halal destination provinces in Indonesia.

This research will identify the readiness for halal adoption based on technological, organizational and environmental factors. This current research focuses on clustering the readiness of halal practice implementation in Minang weaving businesses and identifying the determinant factors of the readiness to implement the Halal Assurance System in Minang weaving businesses. Halal production can be interpreted as a production activity in which, during the process, one can guarantee halal product, which includes the supply of raw materials, processing, storage, packaging, distribution, sales, and presentation of products. The readiness of small and medium industries to certify their products as halal cannot be separated from how the producers perceive the benefits of halal certification. Additionally, it is attributed to the industries' organizational management and the influence of consumers and the government on Minang woven producers' intention in certification.

2. Literature Review

Product halalness is an important factor that consumers must pay attention to before deciding to buy a product. It is no longer associated with religion, especially Islam. For example,

non-Muslim consumers in Malaysia are aware of products' halal status. Their awareness of the status is expressed by looking for halal product ingredients and the official halal logo embedded on the product packaging. Accordingly, halalness has become part of the business (Fathoni, 2020).

Halal awareness can be defined as having a special interest, experience, or adequate information about halal foods, drinks, and products and is connected to the informing process to increase Muslims' awareness level about what is allowed to eat, drink, and use/wear. And yet, we have to notice that people must have different awareness levels (Ambali & Bakar, 2013). Halal awareness is defined as having a special interest and experience in halal issues and profits, showing a high understanding level of the religious obligations/rules/regulations which have to be adhered to. Awareness of the products consumed is absolute and must be aligned with Islamic Law, which requires not to separate objects or actions from five values, i.e., halal, haram, syubhat, makruh, and mubah (Shahid et al., 2018)

Halal management correlates to food-producing or manufacturing activities and includes the source of origin, movement, transportation, and distribution from upstream to downstream (N. Ahmad & Shariff, 2016). Currently, the awareness of consuming halal food is spread among Muslims and non-Muslims, and we believe that the first community is familiar with halal products since they wear clothes according to Islamic teachings. In Islam, the halalness concept has a broad and comprehensive meaning and applies to all aspects of people's lives, from diet, behaviour, to clothing. Halal product awareness is determined by positive community action, and a positive perception of halal awareness is referred to as a positive attitude. Consumer preferences can be based on consumer knowledge about products that can increase consumer interest in buying products. Several parties are involved in this transaction (Giyanti et al., 2021)

Indonesia as the country with the largest Muslim population in the world is a potential market for halal products. One way to be able to meet the demand for halal products, MSMEs must register their products to obtain halal certificates from the Food, Drug and Cosmetics Assembly of Indonesia (LPPOM-MUI). Every producer must meet the needs and rights of consumers, including Muslim consumers. Producing halal products is part of the corporate responsibility to Muslim consumers (LPPOM MUI, 2008). In Indonesia, in order to give consumers confidence that the products they consume are halal, then companies need to have the MUI Halal Certification (LPPOM MUI, 2008).

Government regulations related to halal certification are enforced by Act No. 33 of 2014 on the Guarantee of Halal Products. The obligation of halal certification begins in October 2019 for all products circulating and traded in Indonesia, including MSME's products. Based on the data obtained from LPPOM MUI, it is believed that there is a fabric that obtains the halal statute of LPPOM MUI on the category of clothing products, namely KainHalal (LPPOM MUI, 2023)

The treasures of traditional Indonesian culture bring their own style to modest fashion in Indonesia. Several elements of traditional clothing design such as budo clothes, ulos and weaving typical of West Sumatra have emerged as modest fashion creations. In fact, traditional fabric materials such as woven, lurik and batik also adorn modest fashion in (Antaranews, 2023). West Sumatra is one of the provinces in Indonesia that develops creative industries. West Sumatra has great potential, but due to a lack of understanding some sectors are not developing optimally and in a planned way towards creative industries. One of the creative industries that is currently developing in West Sumatra is weaving crafts. Weaving is making cloth using a simple principle, namely by combining threads lengthwise and crosswise. Woven fabrics are usually made from wood fibers, cotton, silk, and others. Three famous regions produced weaves in West Sumatra are the Kenagarian Kubang, the Kenagarian Silungkang in Sawahlunto city, and the Kenagarian Pandai Sikek in Tanah Datar regions. These three weaves have their own characteristics and quality and consist of various unique and interesting motifs to be used as souvenirs or typical souvenirs from West Sumatra.

The implementation of regulatory requirements and laws that have been established by the government, forces SMEs in Indonesia to take care of halal certification of their fashion products, so this research looks at the extent to which Minang MSMEs are ready to adopt halal practices based on technological, organizational and environmental factors. This research investigates halal adoption groupings or clusters based on the three TOE factors in each Minang weaving craft center area in West Sumatra.

Technological, Organizational, and Environmental (TOE) Factors in Halal Adoption

The application of adoption theories allows one to understand, explain, or predict how, why, and the extent to which individuals or organizations will adopt and accept new technology or behavioral change processes (Abdul Hameed et al., 2012). According to (Oliveira & Martins, 2011), theories investigating individuals' or organizations' behavioral aspects are the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and Unified Theory of Acceptance (UTAUT). The three theories measure behavioral aspects at an individual level, whereas at an organizational one, we have the Technological, Organizational, and Environmental (TOE) framework (Eveland & Tornatzky, 1990).

Theoretical background appears from two theoretical schools in innovation management: Diffusion of Innovation (DOI) and Technology-Organization-Environment (TOE). DOI elucidates factors affecting individual decision to adopt and use an innovation (Mohamed et al., 2016; Rogers, 2003), while TOE differentiates three grounds one can refer to determine innovation adoption, i.e., technological context, organizational context, and environmental context. Mohamed et al (2016), (Oliveira & Martins, 2011), (Baker, 2015), and Musa (2014) describe the factors influencing SMEs in halal certification: technological, organizational, and environmental factors. Technological compatibility and perceived benefits of halal are categorized into technological factors. Management support, organizational readiness, halal awareness, and integrity are classified into organizational factors, whereas government support, competitive and consumer pressure, and market demand for halal products belong to environmental ones. These adoption theories, by their very nature, focus on identifying, characterizing, or predicting how, why, and to what extent practitioners will adapt to, change their behaviors, or accept new technology (Abdul Hameed et al., 2012).

Within a halal context, environmental factors, including the government's role in implementing halal standards, are critical, as demonstrated by previous research, that government support influences halal standards (M. iskandar I. Tan et al., 2012; Zailani et al., 2015). Furthermore, other aspects still linked to the government play a crucial role in addressing the key challenge and bringing about a halalness-advocating environment (A. H. Ngah et al., 2014; M. I. Tan et al., 2012) Azmi et al (2018) identify technological compatibility, perceived benefits, organizational context, halal integrity, halal awareness, anticipated economic benefits, and organizational readiness as factors affecting halal standard adoption into practices in Malaysia.

Meanwhile, within an environmental context, several factors, e.g., government support, competitive pressure, consumer pressure, and market orientation, are the main issues. Within the context of applying halal standards by halal food producers, Azmi et al (2018) identify technology, organization, and environment as the three primary aspects. Technological compatibility and perceived benefits impact technological adoption, while top management support, organizational readiness, practice understanding, expected business benefits, and halal integrity influence organizational adoption. Environmental factors encompass government support, competitive pressure, consumer pressure, and the halal market.

Tahir (2016) discussed the factors of producer intention regarding the application of halal standards in terms of technological aspects, reveals that halal certification must go through aggressive and proactive efforts carried out by small and medium enterprises. Organizational aspects in the implementation of halal standards are organizational understanding or awareness regarding halal implementation practices as factors influencing intentions to implement halal standards (Tan et al., 2012). (Tahir, 2016) concludes that small and medium enterprises must ensure that managers have the right information and knowledge about various procedures and implications of halal standards, ensure that the desired results are obtained, and implement various halal procedures in the best possible way. A. Ngah et al. (2017) explain that organizational factors affect small and medium enterprises in implementing halal standards, where organizational readiness has a positive relationship with the intention to adopt halalness. Based on the factors impacting small and medium enterprises in fulfilling halal standards: technological, organizational, and environmental, this study observes the readiness level of Minang woven product producers in West Sumatra related to halal certification.

Technological Factors

Compatibility

Premkumar (2003) argues that research on small businesses pays little attention to the effect of technological aspects, which, inversely, are brought into the spotlight in the studies of organizational adoption Premkumar & Roberts (1999). Perceived benefits, compatibility, complexity, and cost are factors considered to impact technological adoption (Hossain & Quaddus, 2010; Sharma et al., 2005). In adoption decisions, perceived benefits and compatibility are crucial (A. H. Ngah et al., 2014; Tan et al., 2012), the latter of which constitutes the degree to which certain technology is considered compatible with user values, experiences, and potential needs (Rogers, 2003). Companies often integrate new ideas compatible with their operational and business processes (Musa et al., 2016) and deploy available technology to generate halal products and operate on a daily basis. However, to achieve long-run profitability, companies, as potential adopters, must take the need for adopting new technology into account. As the standard body has determined requirements companies must meet, perceived technology does good in operational management activities, such as acceptance, processing, storage, and delivery. Nevertheless, companies need to adjust the adoption of new technology to their capacity. Compatibility is, therefore, a key factor to halal adoption implementation because the value enables companies to perceive technological adoption as a salutary action which is in accordance with halal specifications, system values, and working tasks. Meanwhile, incompatibility hampers organizations from adopting technology and brings on an opportunity loss (Aman et al., 2022).

Perceived Benefits

Perceived benefits are related to the extent to which new technology affords advantages compared to extant ones (Lin & Lin, 2008). Organizations' capacity to accept innovation is influenced by their members' skills and capacity to provide training to elevate member skills or recruit experienced staff (Musa et al., 2016). (A. Ngah et al., 2013) define perceived benefits as to what extent the management admits relative benefits which can be given through halal supply chain services to the company. Within this context, perceived benefits are related to the development of new technology, from which those who adopt it can benefit. Musa (2014) delineates technological benefits as a relative advantage which impacts users' decision to adopt certain technologies. Halal-certified places and restaurants can enhance customer services by employing particular technology, such as verifying halal authenticity using specific app-featured smartphones (Kadir et al., 2015). New technology application is considered useful by operational management in terms of improved productivity, as reported by *Utusan Online*, that the electrical slaughtering process is permissible based on the deliberation of the National Fatwa Council, under the consideration that the country concerned has Muslims as its major population (M. Ahmad, 2012)

Organizational Factors

Top Management Support

Top management plays an essential role in increasing boldness and creativity among organizational members by consistently promoting new ideas (Rhee et al., 2010). Its engagement in extracting support from internal and external organizational resources is imperative in new operational technology adoption. Many studies propose how top management involvement greatly influences project and portfolio performance. In addition to motivating changes for the organizational interest, top management can also prompt changes as a result of new technology adoption in the business operation (Ngah et al., 2019). Within halal standard adoption, management support is considered a supporting factor by companies since managers have the authority to make decisions (Musa et al., 2016). Ahmed et al. (2016) emphasize that top management plays a central role in organizational functions, endorses team decisions, and copes with conflicts which may arise during project implementation. Top management should also be responsible for planning strategies for consultant skills, budget management, implementing teams, and compliance with halal standards. Some factors, such as expected commercial benefits, ethics, top management support, and knowledge of new procedures, are also identified as important contributors to promoted innovation levels (Ngah et al., 2013; Zailani et al., 2015).

Other studies also report that top management support acts as a significant variable within the context of technology and innovation adoption(Ahmed et al., 2016; Diánez-González & Camelo, 2015; Musa, 2014; Musa et al., 2016; Quintana-García & Benavides-Velasco, 2016; Winter & Lasch, 2016). Thus, top management engagement in introducing new operational technology is indispensable to secure support from organizational resources. Besides spurring changes for the sake of organizational benefits, top management can also stimulate adjustment to adopt new technology in business operations (A. Ngah et al., 2019a)

Organizational Readiness

It is instrumental for management which desires to run a halal operation to have a strong commitment and employees with the same desire to exhibit dedication to planning, implementing, and maintaining halal food certification (Ab Talib et al., 2015a). Organizational readiness varies, anchoring on the organization's internal characteristics, properties, and the type of the new technology to be adopted. An organization needs to plan a spectrum of well-coordinated actions to adopt halal standards and consider its operational management capacity. One of the paramount factors related to organizational readiness is the availability of information systems, both external and internal, which can espouse the development of a halal relationship management mechanism with customers and partners (Tan et al., 2012). Organizational properties, internal assets, and the type of new technology to be adopted are factors affecting organizational readiness (Tarmizi et al., 2014). In their study of halal food supply chain adoption among SMEs as food producers, Azmi et al. (2018) state that organizational readiness levels contribute to promoted business performance. One of the pivotal components of organizational readiness is information system availability, external or internal, which helps halal industries cultivate a relationship management mechanism with customers and partners (Tan et al., 2012)

Understanding the Practice

Understanding halal practices can impact halal industry actors' willingness to adopt the Halal Assurance System. It is necessary to understand supporting and hindering factors as this understanding provides us with insight into halal industry dynamics and facilitates us in delivering information to the government (Ngah et al., 2014b). Within the context of food security, industrial actors are required to comply with applicable standards and nurture a deep understanding of Sharia law, ensuring implementation which is in line with the certification institution's requirements, specifically in Malaysia. Halal food producers should be self-equipped with a profound understanding of those requirements to secure their halal status sustainably (HDC, 2010). (Alserhan, 2015) highlights that conventionally, the determination of product halalness is conducted at the end of a production process and requires that the process and materials used have to fulfill Sharia principles.

Halal Awareness

Halal awareness is a special understanding or interest in halal food, beverages, and products and an understanding of events ensuing within the halal context (Ambali & Bakar, 2013). Halal awareness flares up among the Muslim consumer community because of religious obligation, causing a higher demand for halal products. Although the halal concept needs to be considered in terms of product usage, halal supply chain providers record that organizational awareness can be the reason why halal producers do not adopt halal supply chain services (Ngah et al., 2013). Furthermore, the halal concept covers Sharia aspects, cleanliness, sanitation, and safety, allowing halal food to be more acceptable for consumers concerned about food security and a healthy lifestyle (Soltanian et al., 2016). Halal standards also give assurance to Muslims that they can consume certain companies' products safely as the production process comports Sharia principles.

Halal Integrity

Integrity constitutes the commitment to the principles and values which are morally testifiable and applied in thinking and acting (Mills & Boardley, 2016). In food security, integrity includes health, safety, product sources, and ethical perspectives (Bergeaud-Blackler et al., 2016). Halal integrity indicates that a product is halal-guaranteed from the beginning to the end of the

supply chain and detached from activities which deliberately or non-deliberately violate its halal status (Mohamed et al., 2016). Implementing halal integrity must abide by standard requirements from staple materials to end consumption. Alserhan (2015) insists that halal integrity relates to offering a rigid assurance and building a strong relationship with partners to ensure that all products are of high standards and contain no non-halal materials, such as alcohol and pork, in the entire supply chain. Industries today call for more specific halal compliance solutions for their supply chain process to nurture halal product legitimation (Rajagopal et al., 2011). Additionally, companies need to have an integrated system focusing on halalness (Zailani et al., 2015). Halal integrity demands no compromise at any level since consumers have a high demand for halal-certified product quality and guarantee (Jaafar et al., 2011). As such, it is expected that the community with halal integrity maintains a stronger motivation to get involved in halal business (Soltanian et al., 2016). Halal integrity also bolsters halal standards overall and raises awareness of the noteworthiness of halal products.

Expected Business Benefits

Within this study context, halal acceptance levels are measured based on consumer responses. The main aim of business is centered on generating profits. The Muslim community in Malaysia nurtures a serious understanding of halalness. Suki and Salleh (2016) suggest that halal imagery established by retailers influences consumer purchase decisions. Even non-Muslim consumers are apt to act positively toward halal products (Aziz & Chok, 2013). With smooth halal practice implementation as expected, companies can attain competitive performance. It incentivizes them to adopt halal standards and allows them to acquire the knowledge they require to realize business goals.

Entrepreneurial Intensity

According to (Selz, 1992), (Morris & Sexton, 1996), and (Liao & Welsch, 2004), entrepreneurial intensity refers to the level of entrepreneurship or amount of dedication to the entrepreneurial pursuits displayed by a firm. To ensure they can compete in the current unstable economy, businesses need to have staff employees or management teams with strong entrepreneurial intensity ((Gartner et al., 2004; Liao & Welsch, 2004). According to Morris & Sexton (1996), the level of entrepreneurial activity is influenced by factors such as innovation, risk, responsiveness, competitive aggressiveness, and autonomy. The entrepreneurial intensity and various corporate success metrics have statistically significant connections, according to earlier studies (Kuratko et al., 2007; Scheepers et al., 2007). The association is greater when the degree is given more weight than the frequency of entrepreneurship displayed by the organization. Scheepers et al. (2007) reveal that frequency of entrepreneurship refers to the number of times an enterprise acts entrepreneurially (for example, in developing new products or processes), while the degree of entrepreneurship is measured by three sub-dimensions: innovativeness, risktaking, and proactiveness.

Environmental Factors

Competitive Pressure

Competitive pressure is related to different superiority between companies, enabling either to achieve higher than the other. According to (Ngah et al., 2014b) competitive pressure appears from the risk of lost competitive superiority, stimulating companies to adopt and integrate halal supply chain services. Companies often perceive the need to find competitive advantages through halal aspects to deal with ever-increasing market competition (Manzouri et al., 2014). Nonetheless, (Mohammad & Mohiyaddin, 2006) argues that competitive pressure has no significant influence on halal food producers' intention to access halal standard certification. Fischer (2015) also records many local Chinese restaurants with halal certification to attract Muslim customers. Integrity is considered a requisite factor by halal food industries, guaranteeing the halalness of products sold to consumers (Othman et al., 2009). Consistent efforts to promote halal standard practices are also of crucial importance among halal industries to remain competitive.

Consumer Pressure

Consumer pressure is an external pressure type which can affect adoption decisions (Ngah et al., 2014b). In majorly Muslim populated countries, consumer understanding of halal principles encourages them to find food meeting health standards and Sharia law. The perceived importance of religion which impacts this attitude, as posited by Mukhtar & Butt (2012), enables Muslim customers to fulfill their needs. Furthermore, as their religious understanding is enhanced, Muslim customers grow more selective in choosing the products and services they buy or use (Zailani et al., 2015). Giving appropriate responses to consumer demand, food producers, as reported by Ab Talib, et al. (2015), are committed to ensuring that products available in the market are halal-certified without compromising.

Halal Market Demand

Halal industries have a significant market demand. The spawn of the halal concept fosters consumers to select products more selectively as halal-labeled products are proven to be quality (Pahim et al., 2012). The halal market is predicted to have a strong influence in the upcoming decades. The halal product market has a broad potency of growth. Malaysia, as a major Muslim country, has succeeded in establishing a strong industrial foundation, maintains efficient economic management, and is prepared to face the international market at present. The demand for halal-certified food products is ever-increasing, and the two largest markets of halal products are located in Southeast Asia and the Middle East, the major population of which is Muslims (Alam, 2011). Halal food production may have fulfilled the market demand adequately, especially, because halal food products are also consumable for non-Moslems (Jaafar et al., 2011). Halal industries have a significant market demand potency, and the halal concept's popularity impels consumers to choose products more selectively, as indicated in research by Pahim et al. (2012).

3. Research Methods

Population and Sample

The research population included all weaving MSMEs in West Sumatra. Sampling was conducted using the non-probability sampling technique through purposive sampling with the following criteria: weaving MSMEs in West Sumatra which had performed production and marketing as business activities. The sample size referred to the 10-times rule by Hair et al. (2017), requiring 10-times biggest path orienting to latent constructs within a structural model, generating 103 weaving MSMEs samples.

Data Collecting Method

Primary data were collected by distributing questionnaires to 103 weaving MSMEs in West Sumatra, Indonesia. Questionnaire distribution was undertaken through an offline survey or face-to-face meeting with weaving entrepreneurs in five regencies/cities in West Sumatra, i.e., Tanah Datar, Sawahlunto, Sijunjung, Lima Puluh Kota, and Payakumbuh. Questionnaire distribution was carried out at all weaving centers in West Sumatra. Based on initial data, 105 respondents were collected, but 2 questionnaires were eliminated because they did not meet the specified criteria (the SMEs only sold woven products directly or did not carry out production activities). Thus, the data that could be processed for this research were 103 respondents (98.1%). Table 1 points out respondent characteristics in detail.

Table 1 - Respondent Profiles

Characteristics	Category	Freq	%
Gender	Male	10	9,71
	Female	93	90,29
Age	≥78 years	0	0,00
	59 - 77 years	6	85,71
	43 - 58 years	50	714,29
	27 - 42 years	44	628,57
	11 - 26 years	3	42,86
	<10 years	0	0,00
Education	Elementary School	7	12,28
	Junior High School	18	31,58
	Senior High School	56	98,25

Characteristics	Category	Freq	%
	Diploma	5	8,77
	Bachelors Degree	17	29,82
Number of craftsmen	<10 workers	57	55,34
	10 - 29 workers	38	36,89
	30 - 300 workers	8	7,77
Business license	Don't have license	42	40,78
	Have license	61	59,22
Business age	<5 years	15	14,56
	5 - 10 years	29	28,16
	11 - 15 years	17	16,50
	16 – 20 years	10	9,71
	>20 years	32	31,07
Revenue	<2 Million	103	100,00
	2 Million - 15 Million	0	0,00
	16 Million - 50 Million	0	0,00
	>50 Million	0	0,00

Source: Primary Data (2023)

We found 103 companies located in West Sumatra. Table 1 presents evidence that Minang weaving businesses were commonly female-led and micro-scale with a sales turnover of below two million. Most leaders/owners were from Generation X and millennial and senior high school graduates. Some had business licenses, but others did not due to constrained entrepreneur capacity. The businesses had stood for fewer than five to more than 20 years.

Questionnaire and Instrument

A quantitative approach was used. Questions on the questionnaire consisted of two main components: business profiles and respondent perceptions of Technological, Organizational, and Environmental (TOE) adoption. The TOE adoption construct was made up of three variables, i.e., technology, organization, and environment. The technology variable was measured through two dimensions: compatibility and perceived benefits. The organization variable was constructed by seven dimensions, i.e., top management support, organizational readiness, understanding the practice, awareness, integrity, expected business benefits, and entrepreneurial intensity. The environment construct had three dimensions: competitive pressure, consumer pressure, and market demand. TOE adoption perception criteria were measured using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Clustering research commonly used a Likert scale (Falcão et al., 2019; Kohijoki & Marjanen, 2013; Sadiq et al., 2020). Table 2 shows the variable operationalization used to cluster MSME perceptions toward TOE adoption in West Sumatra.

Table 2 - Variable Operationalization

Variable	Items	Sources
TECHNOLOGICAL CONTEXT		
Compatibility	My company will likely adopt new product innovations and the halal standard process.	(Ngah et al., 2014a); (Tan et al., 2012)
	My company's business and process have been conforming to halal standards.	
	New procedures for halal standards are congruent with practices at my company.	
Perceived Benefits	By implementing halal standards, we perceive that our production control will improve.	(A. H. Ngah et al., 2014b); (Tan et al., 2012)
	By adopting halal standards, we perceive that our market share will increase.	
	By applying halal standards, we perceive that our product quality will be enhanced.	
ORGANIZATIONAL CONTEXT		
Top Management Support	Our top management may be interested in implementing halal standards to earn competitive advantages.	Fernando et al. (2015); (Ngah et al., 2014)
	Our top management is itching to invest a certain amount of budget to sustain and implement halal standards.	
	We perceive that our top management pays great attention to the significance of halal standard application.	
Organizational Readiness	Our employees have understood halal standards.	(A. Ngah et al., 2019b)

Variable	Items	Sources
	Our company understands the actual business situation attributed to halal standards.	
	Our company is ready to re-align company policies with strategies for implementing halal standards.	
Understanding the Practice	Our company fully understands the circular letter concerning halal standards.	
	Our company is ready to apply new policies and practices concerning halal standard implementation.	Alam (2011); Marzuki et al. (2012); Mukherjee (2014)
	Our company understands legal aspects to ensure that halal practices are carried out consistent with Sharia principles as required by the regulating authority.	
Halal Awareness	Consumers' increased halal awareness induces my company to adopt halal standards.	
	Cleanliness, sanitation, and safety aspects motivate my company to adopt halal standards.	Alam (2011); Zailani et al. (2015)
	The halal concept triggers Muslim consumers to selectively choose and consume Sharia principle-based products.	
Halal Integrity	Morality and religiosity aspects prompt my company to adopt halal standards.	
	Halal standards direct us to build trust in consumers.	Alam (2011); Zailani et al. (2015)
	Halal products have a strong relationship with consumer needs.	
Expected Business Benefits	Adopting halal standards gives more benefits to our business.	
	Halal standards provide company competitive performance.	Alam (2011); Zailani et al. (2015)
	Ensuring halal standards allows long-term business sustainability.	
Entrepreneurial Intensity	We make the best, time-limitless effort to ensure that our production process is halal.	
	Our company does 'anything' to ensure the halalness of our warehousing products.	Manzouri et al. (2014); (Tan et al., (2012); Zailani et al. (2015)
	We apply the philosophy of doing 'anything' to ensure halal standards/practices.	
	Our company is willing to make significant sacrifices to sustain halal businesses.	
ENVIRONMENTAL CONTEXT		
Competitive Pressure	We will perceive consumer loss due to our competitors if we do not apply halal standards.	
	We perceive that it is of great importance to adopt halal standards to compete with other standards applicable in the market.	Manzouri et al. (2014); (Tan et al., (2012); Zailani et al. (2015)
	We perceive that our company can sustain our business by implementing halal standards.	
Consumer Pressure	Consumers believe halal food fulfills hygiene, sanitation, and food safety requirements.	Manzouri et al. (2014); (Tan et al., (2012); Zailani et al. (2015)
	Consumers require our company to operate by halal requirements.	
	Believed perceptions will determine consumer attitudes.	
Halal Market Demand	The high demand for halal food propels our company to adopt halal standards.	Manzouri et al. (2014); (Tan et al., (2012); Zailani et al. (2015)
	The halal product market has extensive growth with a high market prospect at present and in the future.	
	The Muslim community needs and stresses halal products.	

Source: Primary Data (2023)

Data Analysis Technique

Two test types were used and processed using SPSS, i.e., instrument testing and clustering analysis with the K-Means technique.

Instrument Testing

Validity and reliability were tested to scrutinize if the instrument was made properly to measure variables well. The validity test was carried out using the Pearson correlation analysis with IBM SPSS Statistics 25 and by studying the corrected item-total correlation symbolizing the r-count from the research instrument validation searching output. The r-count was then compared to the t-table as the reference. In this research, to acquire the r-table, we applied the DF = N – 2 formula using sig. 5% with two-way testing. Implementing the formula, we acquired DF = 103 – 2, generating a DF of 101. To acquire the value of sig. 5% from the two-way testing, we applied the formula of sig. 5% = 0.05/2, hence obtaining a significance value of 0.025. We used DF = 101 and α = 0.025 to test the validity, resulting in an r-table of 0.2290. Table 3 demonstrates the results of the validity test of each research variable in the TOE adoption construct.

Table 3 - Results of the Validity Test of the TOE Adoption Construct

Indicator	r count	r table	Description
COMP1	0,471	0,229	Valid
COMP2	0,913		Valid
COMP3	0,882		Valid
PB1	0,934		Valid
PB2	0,924		Valid
PB3	0,910		Valid
TMS1	0,833		Valid
TMS2	0,830		Valid
TMS3	0,804		Valid
RD1	0,802		Valid
RD2	0,854		Valid
RD3	0,712		Valid
UP1	0,713		Valid
UP2	0,659		Valid
UP3	0,726		Valid
AWR1	0,806		Valid
AWR2	0,563		Valid
AWR3	0,536		Valid
AWR4	0,734		Valid
ITG1	0,634		Valid
ITG2	0,826		Valid
ITG3	0,785		Valid
EBB1	0,922		Valid
EBB2	0,919		Valid
EBB3	0,858		Valid
EI1	0,854		Valid
EI2	0,877		Valid
EI3	0,858		Valid
EI4	0,916		Valid
CPP1	0,713		Valid
CPP2	0,424		Valid
CPP3	0,749		Valid
CSP1	0,559		Valid
CSP2	0,484		Valid
CSP3	0,782		Valid
CSP4	0,785		Valid
MD1	0,832		Valid
MD2	0,839		Valid
MD3	0,623		Valid
MD4	0,457		Valid

Source: Primary Data (2023)

After all measurement instruments fulfilled the required validity testing results, we conducted a reliability test to analyze whether the instruments met standards for precision, accuracy, stability, and instrument compatibility to bring to light the research results at different times. Reliability was tested using Cronbach's alpha at a coefficient of reliability > 0.60, and if the coefficient was closer to 1, the reliability level was higher (Ghozali, 2018). Table 4 exhibits the reliability test results of the research measurement instruments.

Table 4 - Results of the Reliability Test of the TOE Adoption Construct

Dimension	Cronbach's Alpha	Description
COMP	0,832	Reliable
PB	0,956	Reliable

Dimension	Cronbach's Alpha	Description
TMS	0,874	Reliable
RD	0,850	Reliable
UP	0,725	Reliable
AWR	0,733	Reliable
ITG	0,801	Reliable
EBB	0,941	Reliable
EI	0,940	Reliable
CPP	0,618	Reliable
CSP	0,736	Reliable
MD	0,784	Reliable

Source: Primary Data (2023)

Clustering Analysis

Grounded on the results of validity and reliability tests, the research instruments fulfilled the required rule of thumb. We then performed clustering analysis with K-Means clustering analysis, in which the number of clusters was chosen a priori (six clusters were selected by the ability to interpret a cluster). After weaving MSMEs' perceptions of TOE adoption were collected, they were characterized by taking technological, organizational, and environmental factors into account.

4. Results and Discussions

Results

Cluster Demography

The mapping of Minang weaving MSME clusters by cluster characteristic is indicated in Table 5.

Table 5 - Cluster Demography

Characteristics	Category	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5		Cluster 6	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Gender	Male	4	9,30	0	0,00	3	13,04	0	0,00	0	0,00	3	20,00
	Female	39	90,70	13	100	20	86,96	2	100,00	7	100,00	12	80,00
Age	≥78 years	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
	59 - 77 years	2	4,65	1	7,69	1	4,35	0	0,00	0	0,00	2	13,33
	43 - 58 years	27	62,79	3	23,08	10	43,48	2	100,00	4	57,14	4	26,67
	27 - 42 years	14	32,56	8	61,54	11	47,83	0	0,00	3	42,86	8	53,33
	11 - 26 years	0	0,00	1	7,69	1	4,35	0	0,00	0	0,00	1	6,67
	<10 years	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Education	Elementary School	2	4,65	1	7,69	2	8,70	0	0,00	2	28,57	0	0,00
	Junior High School	5	11,63	4	30,77	5	21,74	0	0,00	2	28,57	2	13,33
	Senior High School	27	62,79	5	38,46	11	47,83	2	100,00	3	42,86	6	40,00
	Diploma	2	4,65	0	0,00	0	0,00	0	0,00	0,00	0,00	0	0,00
	Bachelors Degree	1	2,33	0	0,00	2	8,70	0	0,00	0,00	0,00	2	13,33
	Elementary School	6	13,95	3	23,08	3	13,04	0	0,00	0,00	0,00	5	33,33
Number of craftsmen	<10 workers	23	53,49	12	92,31	10	43,48	1	50,00	7	100,00	6	40,00
	10 - 29 workers	17	39,53	0	0,00	12	52,17	1	50,00	0	0,00	6	40,00
	30 - 300 workers	5	11,63	1	7,69	1	4,35	0	0,00	0	0,00	3	20,00
Business license	Do not have license	16	37,21	9	69,23	10	43,48	0	0,00	4	57,14	3	20,00
	Have license	27	62,79	4	30,77	13	56,52	2	100,00	3	42,86	12	80,00
Business age	<5 years	3	6,98	3	23,08	3	13,04	1	50,00	0	0,00	5	33,33
	5 - 10 years	13	30,23	2	15,38	11	47,83	0	0,00	1	14,29	2	13,33
	11 - 15 years	9	20,93	3	23,08	3	13,04	1	50,00	0	0,00	1	6,67
	16 - 20 years	5	11,63	0	0,00	0	0,00	0	0,00	1	14,29	4	26,67
	>20 years	13	30,23	5	38,46	6	26,09	0	0,00	5	71,43	3	20,00
Revenue	<2 Million	43	100,00	13	100,00	23	100,00	2	100,00	7	100,00	15	100,00
	2 Million - 15 Million	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
	16 Million - 50 Million	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
	>50 Million	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Number of respondent		43	100,00	13	100,00	23	100,00	2	100,00	7	100,00	15	100,00

Source: Primary Data (2023)

Table 5 points out that female Minang weaving entrepreneurs dominated all clusters, whereas males were seen in clusters 1 (ready) and 3 (moderately ready). In terms of age, Generation X (aged 43-42) in 2023 dominated clusters 1 and 4, but clusters 2 and 4 were dominated by millennial entrepreneurs (aged 27-42). The rest, clusters 3 and 5 were dominated by both generations at an equal portion. Concerning the latest education, all clusters were

dominated by senior and vocational high schools. Regarding the number of craftsmen, all clusters had less than 30 workers. Most of the weaving businesses were already legal entities, earning a monthly turnover of < IDR2 billion. Additionally, the Minang weaving, as shown by their status as hereditary businesses, were more than 20 years old.

The clustering analysis of TOE adoption in this research was performed using K-Means, a non-hierarchical clustering method to cluster data. It used the data mining algorithmic framework, initiated by determining the number of initial clusters desired and inputting the researched objects into the clusters. The centering and clustering results are presented in Table 6, in which respondents' average perceptions of TOE adoption and halal weaving MSMEs in West Sumatra were clustered into six, from very ready to very not ready: cluster 6 contained very ready MSMEs (termination). The MSMEs showed off readiness to adopt halal practices and ensured the continuous halal practice implementation; cluster 1 contained ready MSMEs (maintenance). The weaving MSMEs showed a positive attitude toward halal practices and sustained halal practices in their production activities; cluster 3 contained moderately ready MSMEs (action). The weaving MSMEs took several steps in adopting halal practices related to technological, organizational, and environmental readiness; cluster 2 contained poorly ready MSMEs (preparation). The weaving MSMEs took in mind the benefits of halal practice adoption and intended to apply it; cluster 4 contained not ready MSMEs (contemplation). The weaving MSMEs had experiences of halal adoption practices related to technology, organization, and environment variables yet made no actions; and cluster 5 contained very not ready MSMEs (pre-contemplation). The weaving MSMEs had no awareness of halal practice adoption related to technology, organization, and environment variables.

Table 6 - TOE Adoption Clustering by the Results of K-Means Clustering Analysis

Cluster					
1	2	3	4	5	6
4,03	2,95	3,51	1,95	1,48	4,41
Maintenance	Preparation	Action	Contemplation	Pre Contemplation	Termination

Table 7 demonstrates the number of cluster members generated from TOE adoption clustering on Minang weaving MSMEs in each region of West Sumatra. The majority of weaving MSMEs in West Sumatera, 43 in number, belonged to cluster 1 with the ready category, with 20 MSMEs located in Sawahlunto, 11 in Tanah Datar, nine in Lima Puluh Kota, two in Payakumbuh, and one in Sijunjung. 23 MSMEs were categorized in cluster 3 with the moderately ready category, with 15 MSMEs in Lima Puluh Kota, five in Tanah Datar, two in Sawahlunto, and one in Sijunjung. The halal weaving MSMEs in West Sumatera with the very ready category to adopt TOE were 15 in number, with 11 in Tanah Datar, two in Sawahlunto, one in Sijunjung, and one in Lima Puluh Kota. Cluster 2, with the poorly ready category, was the home for 13 MSMEs, nine of which were in Lima Puluh Kota, three in Sawahlunto, and one in Tanah Datar. Seven MSMEs in cluster 5 were very not ready to adopt TOE, six of which were in Sawahlunto and one in Tanah Datar. Two not-ready MSMEs were located in cluster 4, composed of one MSME in Tanah Datar and another in Sawahlunto.

Table 7 - TOE Adoption Clusters in Each Region of West Sumatera

Cluster	Tanah Datar	Sawahlunto	Sijunjung	50 Kota	Payakumbuh	Total
1	11	20	1	9	2	43
2	1	3	0	9	0	13
3	5	2	1	15	0	23
4	1	1	0	0	0	2
5	1	6	0	0	0	7
6	11	2	1	1	0	15
TOTAL	30	34	3	34	2	103

Source: Primary Data (2023)

In detail, the business or MSME names clustered into six are exhibited in Table 8.

Table 8 - Business Names by TOE Adoption Clusters

Case Number	Business Name	Cluster	Distance
1	Dal Songket	1	,104
2	Luniak Songket	1	,150
3	Wel songket	1	,054

Case Number	Business Name	Cluster	Distance
4	Songket Pak Datuak	4	,196
5	Toko Kerajinan Pandai Sikek Wati	3	,210
6	Weli Songket Pandai Sikek	6	,054
7	Lara Songket	6	,128
8	Indah Karya Songket	1	,176
9	Sabtina songket	3	,060
10	Kelompok Westi	6	,049
11	Ayana collaction	1	,150
12	Limpapeh Gallery	3	,065
13	Songket Tradisional Pandai Sikek Imelda	1	,104
14	Pusako Minang	6	,142
15	Kelompok Linda	6	,118
16	Khadijah Songket	6	,007
17	Toko pandai sikek Art	6	,057
18	Songket Pandai sikek Hendytia	5	,209
19	Sikumbang songket	3	,146
20	Niva Songket	6	,144
21	Hj Fatimah Sayuti	1	,120
22	Gusni Pandai Sikek	6	,173
23	Hj Ratna Rusli	1	,168
24	Kelompok Novia	1	,181
25	Osoik Songket	1	,107
26	Dewi Songket	6	,165
27	Ikonankarasaki songket	3	,235
28	Istana Songket Pandai Sikek	6	,120
29	Satu Karya Songket	1	,002
30	Irmay Songket	1	,141
31	Mimi Songket	1	,116
32	Tenun Kubang H. Ridwan By	1	,175
33	Tenun Syahrial Bustami	3	,203
34	Tenun Balai Panjang Efendi	1	,127
35	Nora Songket	3	,067
36	Susi Songket	3	,056
37	Evi Songket	1	,145
38	Yosi Songket Minang	2	,111
39	Puti Sariau	1	,025
40	Sago Manjulang	1	,147
41	Harlini Songket	1	,095
42	Elza Songket	3	,112
43	Kelompok Demi Vitriani	5	,161
44	Kelompok Yeni Elvira	2	,106
45	Lia Songket	2	,254
46	Rendo songket mutiara terpendam	1	,004
47	Sinta songket	4	,196
48	Kelompok Noviasmi	1	,131
49	Kelompok Eva Moniati	1	,136
50	Kelompok Laili Novita	1	,194
51	Kelompok Nurwaida	1	,181
52	Bina songket	1	,060
53	Kelompok Erlina	2	,191
54	Tenun Zahra	1	,187
55	Songket Yelvi	1	,060
56	Kelompok Ane Mulyani	1	,131
57	Songket Berkat Yakin	1	,060
58	Sri menanti songket	1	,060
59	Ira tenun songket	1	,060
60	Yensi Songket	2	,026
61	Kelompok Seri	3	,115
62	Kelompok Zerlita Elviza	1	,060
63	Remantha	1	,153
64	Kelompok Verawati	1	,131
65	Yudia Songket	3	,276
66	Kelompok Eka Marlina	1	,187
67	Rumah Songket Eka Halaban	3	,187
68	Songket Syakira	3	,210
69	Songket Mardiki Putra	3	,108

Case Number	Business Name	Cluster	Distance
70	Kelompok Mardiana Ningsih	1	,123
71	Vivi Songket	2	,033
72	Kelompok Ainul Mardia	5	,061
73	Kelompok Armailis	5	,125
74	Kelompok Patmi Lestari	1	,067
75	Kelompok Selmayanti	5	,061
76	Kelompok Masda	5	,061
77	Kelompok Fivi Fitriani	1	,060
78	Kelompok Fitrawati	1	,131
79	Kelompok Warni	5	,061
80	Ellen songket	1	,187
81	Dolas songket	6	,083
82	Cici songket	6	,128
83	Tenun perkampungan adat Ramadhani	1	,044
84	Songket Lereng Sago	3	,072
85	Galeri Yarsi Songket	3	,022
86	Mandai Songket	1	,011
87	Rita Songket	2	,159
88	Esi Songket	2	,012
89	Kelompok Melati Aluih	1	,217
90	Desi Songket	2	,122
91	Kelompok Nurlina	2	,057
92	Kelompok Nora Yulfita	3	,273
93	Kelompok Siska Wiyayanti	3	,167
94	Kelompok Novi Febrina	3	,034
95	Kelompok Ermidawati	3	,221
96	Kelompok Maizar	2	,148
97	Kelompok Susi Wijayanti	2	,260
98	Palantay Songket	3	,057
99	Tenun perkampungan adat Susmiati	3	,157
100	Tenun Marni Geneng	3	,171
101	Tenun Rangkiang	6	,544
102	Rumah songket 5 saudara	2	,190
103	Tenun Unggan Lansek Manih	6	,020

Source: Primary Data (2023)

MSME clustering is indicated in Tables 9-14.

Table 9 - Cluster 1 – 43 MSMEs

Case Number	Area (Regency/City/Weaving Brand)	Business Name	TECH	ORG	ENV	TOE
89	Halaban, Kab. 50 Kota	Kelompok Melati Aluih	3.33	4.19	3.92	3.81
50	Kota Sawahlunto	Kelompok Laili Novita	3.67	3.29	4.56	3.84
23	Pandai Sikek, Kab. Tanah Datar	Hj Ratna Rusli	5.00	2.48	4.11	3.86
37	Halaban, Kab. 50 Kota	Evi Songket	3.33	3.90	4.42	3.88
40	Halaban, Kab. 50 Kota	Sago Manjulang	3.00	4.43	4.22	3.88
63	Halaban, Kab. 50 Kota	Remantha	3.67	3.80	4.17	3.88
30	Halaban, Kab. 50 Kota	Irmay Songket	3.67	3.83	4.17	3.89
49	Kota Sawahlunto	Kelompok Eva Moniati	3.67	3.90	4.11	3.89
48	Kota Sawahlunto	Kelompok Noviasmi	3.67	3.48	4.56	3.90
56	Kota Sawahlunto	Kelompok Ane Mulyani	3.67	3.48	4.56	3.90
64	Kota Sawahlunto	Kelompok Verawati	3.67	3.48	4.56	3.90
78	Kota Sawahlunto	Kelompok Fitrawati	3.67	3.48	4.56	3.90
21	Pandai Sikek, Kab. Tanah Datar	Hj Fatimah Sayuti	5.00	3.29	3.44	3.91
31	Balai Panjang, Kota Payakumbuh	Mimi Songket	4.00	4.13	3.61	3.91
1	Pandai Sikek, Kab. Tanah Datar	Dal Songket	3.67	4.67	3.44	3.93
13	Pandai Sikek, Kab. Tanah Datar	Songket Tradisional Pandai Sikek Imelda	3.67	4.67	3.44	3.93
41	Halaban, Kab. 50 Kota	Harlini Songket	4.33	3.67	3.81	3.94
74	Kota Sawahlunto	Kelompok Patmi Lestari	3.67	3.67	4.56	3.96
39	Halaban, Kab. 50 Kota	Puti Sariau	3.67	3.90	4.44	4.01
29	Pandai Sikek, Kab. Tanah Datar	Satu Karya Songket	5.00	3.43	3.67	4.03
46	Kota Sawahlunto	Rendo songket mutiara terpendam	3.67	3.86	4.56	4.03
86	Halaban, Kab. 50 Kota	Mandai Songket	3.17	4.43	4.53	4.04

Case Number	Area (Regency/City/Weaving Brand)	Business Name	TECH	ORG	ENV	TOE
83	Kab. Sijunjung	Tenun perkampungan adat Ramadhani	3.67	4.00	4.56	4.07
3	Pandai Sikek, Kab. Tanah Datar	Wel songket	4.33	4.48	3.44	4.08
52	Kota Sawahlunto	Bina songket	3.67	4.05	4.56	4.09
55	Kota Sawahlunto	Songket Yelvi	3.67	4.05	4.56	4.09
57	Kota Sawahlunto	Songket Berkat Yakin	3.67	4.05	4.56	4.09
58	Kota Sawahlunto	Sri menanti songket	3.67	4.05	4.56	4.09
59	Kota Sawahlunto	Ira tenun songket	3.67	4.05	4.56	4.09
62	Kota Sawahlunto	Kelompok Zerlita Elviza	3.67	4.05	4.56	4.09
77	Kota Sawahlunto	Kelompok Fivi Fitriani	3.67	4.05	4.56	4.09
25	Pandai Sikek, Kab. Tanah Datar	Osoik Songket	5.00	3.52	3.89	4.14
70	Kota Sawahlunto	Kelompok Mardiana Ningsih	3.67	4.24	4.56	4.15
34	Balai Panjang, Kota Payakumbuh	Tenun Balai Panjang Efendi	4.17	3.83	4.47	4.16
2	Pandai Sikek, Kab. Tanah Datar	Luniak Songket	4.33	4.10	4.11	4.18
11	Pandai Sikek, Kab. Tanah Datar	Ayana collaction	4.33	4.10	4.11	4.18
8	Pandai Sikek, Kab. Tanah Datar	Indah Karya Songket	5.00	3.95	3.67	4.21
24	Pandai Sikek, Kab. Tanah Datar	Kelompok Novia	5.00	3.86	3.78	4.21
32	Kubang, Kab. 50 Kota	Tenun Kubang H. Ridwan By	3.67	4.56	4.39	4.21
51	Kota Sawahlunto	Kelompok Nurwaida	5.00	3.86	3.78	4.21
54	Kota Sawahlunto	Tenun Zahra	3.67	4.43	4.56	4.22
66	Kota Sawahlunto	Kelompok Eka Marlina	3.67	4.43	4.56	4.22
80	Kota Sawahlunto	Ellen songket	3.67	4.43	4.56	4.22

Source: Primary Data (2023)

Table 10 - Cluster 2 – 13 MSMEs

Case Number	Area (Regency/City/Weaving Brand)	Business Name	TECH	ORG	ENV	TOE
45	Kota Sawahlunto	Lia Songket	3.00	2.76	2.33	2.70
102	Pandai Sikek, Kab. Tanah Datar	Rumah songket 5 saudara	2.33	2.62	3.33	2.76
96	Halaban, Kab. 50 Kota	Kelompok Maizar	2.33	2.69	3.39	2.80
38	Halaban, Kab. 50 Kota	Yosi Songket Minang	3.17	2.52	2.83	2.84
44	Kota Sawahlunto	Kelompok Yeni Elvira	2.33	2.76	3.44	2.85
60	Halaban, Kab. 50 Kota	Yensi Songket	2.67	3.00	3.11	2.93
88	Halaban, Kab. 50 Kota	Esi Songket	2.67	2.31	3.92	2.96
71	Halaban, Kab. 50 Kota	Vivi Songket	2.17	3.10	3.69	2.99
91	Halaban, Kab. 50 Kota	Kelompok Nurlina	2.83	2.50	3.69	3.01
90	Halaban, Kab. 50 Kota	Desi Songket	2.83	2.92	3.47	3.07
87	Halaban, Kab. 50 Kota	Rita Songket	2.50	3.17	3.67	3.11
53	Kota Sawahlunto	Kelompok Erlina	3.67	3.10	2.67	3.14
97	Halaban, Kab. 50 Kota	Kelompok Susi Wijayanti	2.83	2.86	3.94	3.21

Source: Primary Data (2023)

Table 11 - Cluster 3 – 23 MSMEs

Case Number	Area (Regency/City/Weaving Brand)	Business Name	TECH	ORG	ENV	TOE
65	Halaban, Kab. 50 Kota	Yudia Songket	3.33	2.87	3.50	3.23
92	Halaban, Kab. 50 Kota	Kelompok Nora Yulfita	2.83	3.24	3.64	3.24
27	Pandai Sikek, Kab. Tanah Datar	Ikonankarasaki songket	3.00	3.05	3.78	3.28
95	Halaban, Kab. 50 Kota	Kelompok Ermidawati	3.00	3.14	3.72	3.29
93	Halaban, Kab. 50 Kota	Kelompok Siska Wiyayanti	3.33	3.00	3.69	3.34
69	Halaban, Kab. 50 Kota	Songket Mardiki Putra	3.00	3.26	3.94	3.40
12	Pandai Sikek, Kab. Tanah Datar	Limpapeh Gallery	5.00	2.67	2.67	3.44
84	Halaban, Kab. 50 Kota	Songket Lereng Sago	2.67	4.12	3.53	3.44
9	Pandai Sikek, Kab. Tanah Datar	Sabtina songket	3.67	3.24	3.44	3.45

Case Number	Area (Regency/City/Weaving Brand)	Business Name	TECH	ORG	ENV	TOE
36	Halaban, Kab. 50 Kota	Susi Songket	3.17	3.58	3.61	3.45
98	Kota Sawahlunto	Palantay Songket	2.50	3.61	4.25	3.45
85	Halaban, Kab. 50 Kota	Galeri Yarsi Songket	3.17	3.71	3.58	3.49
94	Halaban, Kab. 50 Kota	Kelompok Novi Febrina	3.50	3.30	3.83	3.54
35	Halaban, Kab. 50 Kota	Nora Songket	3.17	3.45	4.11	3.58
42	Halaban, Kab. 50 Kota	Elza Songket	3.50	3.98	3.39	3.62
61	Kota Sawahlunto	Kelompok Seri	3.67	3.10	4.11	3.62
19	Pandai Sikek, Kab. Tanah Datar	Sikumbang songket	3.67	3.19	4.11	3.66
99	Kab. Sijunjung	Tenun perkampungan adat Susmiati	4.17	3.33	3.50	3.67
100	Kubang, Kab. 50 Kota	Tenun Marni Geneng	3.67	3.74	3.64	3.68
67	Halaban, Kab. 50 Kota	Rumah Songket Eka Halaban	3.67	3.45	3.97	3.70
33	Kubang, Kab. 50 Kota	Tenun Syahrial Bustami	4.67	3.67	2.81	3.71
5	Pandai Sikek, Kab. Tanah Datar	Toko Kerajinan Pandai Sikek Wati	3.67	3.71	3.78	3.72
68	Halaban, Kab. 50 Kota	Songket Syakira	3.67	3.80	3.69	3.72
45	Kota Sawahlunto	Lia Songket	3.00	2.76	2.33	2.70
102	Pandai Sikek, Kab. Tanah Datar	Rumah songket 5 saudara	2.33	2.62	3.33	2.76
96	Halaban, Kab. 50 Kota	Kelompok Maizar	2.33	2.69	3.39	2.80
38	Halaban, Kab. 50 Kota	Yosi Songket Minang	3.17	2.52	2.83	2.84
44	Kota Sawahlunto	Kelompok Yeni Elvira	2.33	2.76	3.44	2.85
60	Halaban, Kab. 50 Kota	Yensi Songket	2.67	3.00	3.11	2.93
88	Halaban, Kab. 50 Kota	Esi Songket	2.67	2.31	3.92	2.96
71	Halaban, Kab. 50 Kota	Vivi Songket	2.17	3.10	3.69	2.99
91	Halaban, Kab. 50 Kota	Kelompok Nurlina	2.83	2.50	3.69	3.01
90	Halaban, Kab. 50 Kota	Desi Songket	2.83	2.92	3.47	3.07
87	Halaban, Kab. 50 Kota	Rita Songket	2.50	3.17	3.67	3.11
53	Kota Sawahlunto	Kelompok Erlina	3.67	3.10	2.67	3.14
97	Halaban, Kab. 50 Kota	Kelompok Susi Wijayanti	2.83	2.86	3.94	3.21

Source: Primary Data (2023)

Table 12 - Cluster 4 – 2 MSMEs

Case Number	Area (Regency/City/Weaving Brand)	Business Name	TECH	ORG	ENV	TOE
47	Kota Sawahlunto	Sinta songket	1.00	1.48	2.78	1.75
4	Pandai Sikek, Kab. Tanah Datar	Songket Pak Datuak	2.33	2.10	2.00	2.14

Source: Primary Data (2023)

Table 13 - Cluster 5 – 7 MSMEs

Case Number	Area (Regency/City/Weaving Brand)	Business Name	TECH	ORG	ENV	TOE
18	Pandai Sikek, Kab. Tanah Datar	Songket Pandai sikek Hendytia	1.67	1.14	1.00	1.27
43	Kota Sawahlunto	Kelompok Demi Vitriani	1.00	1.29	1.67	1.32
72	Kota Sawahlunto	Kelompok Ainul Mardia	1.00	1.29	2.33	1.54
75	Kota Sawahlunto	Kelompok Selmayanti	1.00	1.29	2.33	1.54
76	Kota Sawahlunto	Kelompok Masda	1.00	1.29	2.33	1.54
79	Kota Sawahlunto	Kelompok Warni	1.00	1.29	2.33	1.54
73	Kota Sawahlunto	Kelompok Armailis	1.00	1.48	2.33	1.60

Source: Primary Data (2023)

Table 14 - Cluster 6 – 15 MSMEs

Case Number	Area (Regency/City/Weaving Brand)	Business Name	TECH	ORG	ENV	TOE
22	Pandai Sikek, Kab, Tanah Datar	Gusni Pandai Sikek	4,83	3,76	4,11	4,24
26	Pandai Sikek, Kab, Tanah Datar	Dewi Songket	5,00	3,62	4,11	4,24
20	Pandai Sikek, Kab, Tanah Datar	Niva Songket	5,00	3,24	4,56	4,26
7	Pandai Sikek, Kab, Tanah Datar	Lara Songket	4,33	4,29	4,22	4,28
82	Kota Sawahlunto	Cici songket	3,67	4,62	4,56	4,28
15	Pandai Sikek, Kab, Tanah Datar	Kelompok Linda	5,00	4,10	3,78	4,29
6	Pandai Sikek, Kab, Tanah Datar	Weli Songket Pandai Sikek	5,00	4,29	3,78	4,35
10	Pandai Sikek, Kab, Tanah Datar	Kelompok Westi	5,00	3,52	4,56	4,36
16	Pandai Sikek, Kab, Tanah Datar	Khadijah Songket	5,00	4,43	3,78	4,4
103	Kab, Sijunjung	Tenun Unggan Lansek Manih	3,67	4,62	5,00	4,43
17	Pandai Sikek, Kab, Tanah Datar	Toko pandai sikek Art	5,00	4,62	3,78	4,47
81	Kota Sawahlunto	Dolas songket	3,67	4,81	5,00	4,49
28	Pandai Sikek, Kab, Tanah Datar	Istana Songket Pandai Sikek	5,00	4,81	3,78	4,53
14	Pandai Sikek, Kab, Tanah Datar	Pusako Minang	5,00	4,10	4,56	4,55
101	Kubang, Kab, 50 Kota	Tenun Rangkiang	5,00	4,86	5,00	4,95

Source: Primary Data (2023)

As pointed out in Tables 9-14, which present the mapping of the clusterization of the halal practice implementation readiness of Minang weaving businesses in West Sumatra, cluster 6, comprising 43 MSMEs, was very ready. Table 9-14 also shows the distribution of TOE adoption clusters in each region of West Sumatra. Cluster 1 (Ready) consisted of 43 MSMEs, i.e., 11 MSMEs in Tanah Datar with the highest mean acquired by *Kelompok Novia* and *Indah Karya Songket*, 20 MSMEs in Sawahlunto (*Ellen Songket*), nine MSMEs in Lima Puluh Kota (*Tenun Kubang*), one MSME in Sijunjung (*Tenun Perkampungan Adat Ramadhani*), and two MSMEs in Payakumbuh (*Tenun Balai Panjang Efendi*). Cluster 2 (Poorly Ready) consisted of 13 MSMEs, i.e., one MSME in Tanah Datar (*Rumah Songket 5 Saudara*), three MSMEs in Sawahlunto (*Lia Songket*), and nine MSMEs in Lima Puluh Kota (*Kelompok Mazar*). Cluster 3 (Moderately Ready) was made up of 23 MSMEs, i.e., five MSMEs in Tanah Datar (*Toko Kerajinan Pandai Sikek Wati*), 15 MSMEs in Lima Puluh Kota (*Songket Shakira*), one MSME in Sijunjung (*Tenun Perkampungan Adat Susmiati*), and two MSMEs in Sawahlunto (*Kelompok Seri*). Cluster 4 (Not Ready) was composed of two MSMEs, i.e., one MSME in Tanah Datar (*Songket Pak Datuak*) and one MSME in Sawahlunto (*Sinta Songket*). Cluster 5 (Very Not Ready) comprised seven MSMEs, i.e., six MSMEs in Sawahlunto (*Kelompok Demi Fitriani*) and one MSME in Tanah Datar (*Songket Pandai Sikek Hendytia*). Cluster 6 (Very Ready) consisted of 15 MSMEs, i.e., one MSME in Lima Puluh Kota (*Tenun Rangkiang*), one MSME in Sijunjung (*Tenun Unggan Lansek Manih*), two MSMEs in Sawahlunto (*Dolas Songket*), and 11 MSMEs in Tanah Datar (*Pusako Minang*).

Determinant factors of the halal adoption in Minang weaving businesses were affected by technology, organization, and environment variables. A detailed explanation is suggested in Table 15. Results state that, predicated on the mean, the technology variable, made up of compatibility and perceived benefit dimensions, were more determined by the latter dimension. The results of this study are in line with Lin & Lin (2008) who stated that perceived benefits refer to the extent to which new technology provides advantages compared to previously existing technology. Consistent with these findings, (Ngah et al., 2013) also revealed that technological readiness in halal adoption seen from the extent to which management recognizes the relative advantages provided by halal supply chain services to the company. Furthermore, (Musa et al., 2016) researched the ability of organizations to accept innovation and provide training to improve skills. Talib & Hamid (2014) also found that compatibility problems could arise if different consumers or businesses use different systems, resulting in incompatibilities. These previous researches are consistent with the results of this research even though they were conducted in different sectors, namely in the food manufacturing industry, while this research focuses on the halal woven fashion

sector in West Sumatra. Apart from that, the compatibility dimension also has an important role in adopting halal based on technological readiness (Premkumar & Roberts, 1999; Ranganathan & Jha, 2005; Rogers, 2003; Sharma et al., 2005)

Of the organization variable's seven dimensions (top management support, organizational readiness, understanding the practice, halal awareness, halal integrity, expected business benefits, and entrepreneurial intensity), expected business benefits came with the highest mean. This study aligns with research conducted by Suki & Salleh (2016), which found that the halal image built by retailers influences consumer purchasing decisions. Aziz & Chok (2013) also stated that non-Muslim consumers tend to be positive towards halal products. Zailani et al. (2015) and Ngah et al (2019a) suggested that factors such as expected business benefits, ethics, top management support, and knowledge of new procedures are also important contributors to halal adoption from an organizational readiness perspective. In contrast to previous research which states that top management support has an important role in encouraging organizational courage and creativity in adopting halal (Ahmed et al., 2016; Musa et al., 2016; Rhee et al., 2010; Tan et al., 2012).
Meanwhile, of the environment variable's three dimensions (competitive pressure, consumer pressure, and market demand), the last dimension becomes the key determinant. The results of this study are consistent with Azmi et al. (2018) which states that the strongest factor influencing company performance in the halal food supply chain is halal market demand. Alam (2011) also found that demand for halal products continues to increase in Southeast Asian and Middle Eastern countries, where the majority of the population is Muslim. Furthermore, the halal industry has the potential for large market demand according to Jaafar et al. (2011). This finding is not in line with research conducted by several previous researchers which stated that competitive advantage factors (Manzouri et al., 2014; Othman et al., 2009), and consumer pressure (Talib et al., 2015; Ngah et al., 2014; Zailani et al., 2015) are external environmental factors that influence halal adoption.

Table 15 - Very Ready Cluster Of Msmes (Cluster 6 – Termination) To Adopt Halal Practices

Dimension	Regency Tanah Datar	Regency Tanah Datar	Regency Tanah Datar	Regency Tanah Datar	Sawahlunto City	Regency Tanah Datar	Regency Tanah Datar	Regency Tanah Datar	Regency Tanah Datar	Regency Sijunjung	Regency Tanah Datar	Sawahlunto City	Regency Tanah Datar	Regency Tanah Datar	Regency 50 Kota	Mean
COMP	5,00	5,00	5,00	3,67	2,33	5,00	5,00	5,00	5,00	4,67	5,00	2,33	5,00	5,00	5,00	4,53
PB	4,67	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,07	5,00	5,00	5,00	5,00	5,00	4,98
TMS	5,00	3,67	3,67	5,00	5,00	5,00	5,00	3,67	5,00	4,78	5,00	5,00	5,00	5,00	5,00	4,72
RD	1,00	5,00	1,00	3,67	3,67	2,33	3,67	1,00	5,00	3,59	5,00	3,67	5,00	5,00	5,00	3,57
UP	2,33	1,00	1,00	2,33	3,67	2,33	2,33	1,00	2,33	2,26	3,67	5,00	3,67	2,33	5,00	2,68
AWR	5,00	4,00	4,00	5,00	5,00	5,00	5,00	4,00	5,00	4,83	5,00	5,00	5,00	4,00	4,00	4,66
ITG	5,00	3,67	5,00	5,00	5,00	5,00	5,00	5,00	3,67	4,59	3,67	5,00	5,00	2,33	5,00	4,53
EBB	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00
EI	3,00	3,00	3,00	4,00	5,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,40
CPP	2,33	2,33	3,67	3,67	3,67	2,33	2,33	3,67	2,33	5,00	2,33	5,00	2,33	3,67	5,00	3,31
CSP	5,00	5,00	5,00	4,00	5,00	4,00	4,00	5,00	4,00	5,00	4,00	5,00	4,00	5,00	5,00	4,60
MD	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Discussion

In mapping the clusterization of halal practice implementation readiness in Minang weaving businesses, we considered three variables: Technology, Organization, and Environment (TOE). The technology variable consisted of two dimensions, i.e., compatibility and perceived benefits. Concerning compatibility, Minang weaving MSMEs had the readiness to adopt innovations in products and processes complying with halal standards. Minang weaving MSMEs had guidance for ensuring product halalness. Meanwhile, in terms of perceived benefits, Minang weaving MSMEs perceived that by applying halal standards, production control, market share, and product quality enhanced.

The organization variable was made up of seven dimensions: 1) Top management support: leaders were willing to adopt and invest budget for halal standards, 2) Organizational readiness: MSMEs understood halal standards and business situations and were ready to align strategies for implementing halal standards, 3) Understanding the practices: weaving MSMEs understood policies and legality concerning halal practices, 4) Halal awareness: MSMEs adopted halal standards because of consumer awareness of using halal products corresponding with Islamic sharia principles, 5) Halal integrity: MSMEs applied halal standards by taking into account morality, religiousity, belief, and consumer need, 6) Expected business benefits: MSMEs adopted halal standards to increase benefits, performance, and business sustainability, and 7)

Entrepreneurial intensity: MSMEs maintained relevant philosophy and were willing to make a range of efforts to ensure production processes and product storage which met halal standards. The environment variable was composed of three dimensions, i.e., 1) Competitive pressure: if not implementing halal standards, MSMEs would likely lose their customers and be unable to compete and sustain, 2) Consumer pressure: MSMEs realized that consumers nurtured a belief that halal clothing fulfilled the halal requirements for cleanliness, security, and other aspects, and 3) Halal market demand: MSMEs applied halal standards due to good market outlooks and high consumer demand, especially made by Muslim ones.

Determinant factors of the Halal Assurance System implementation readiness in Minang weaving businesses in West Sumatra related to the technology variable were perceived benefits, with a mean of 4.98 higher than the other dimension, compatibility, with a mean of 4.53. Perceived benefits were referred to as to what extent management admitted perceived relative benefits/uses when the company adopted halal practices. Perceived benefits were presented in four regions: Tanah Datar, Sawahlunto, Sijunjung, and Lima Puluh Kota, all of which perceived the benefits of technological adoption in their readiness for halal practice implementation.

Concerning determinant factors related to the organization variable, of the seven dimensions tested, expected business benefits acquired the highest mean (5.00), while understanding the practice acquired the lowest one (2.68). Expected business benefits showed that if halal practice implementation ran as expected, the company could earn higher benefits, e.g., competitive performance attainment and long-run business sustainability. The understanding of the practice dimension, with the lowest mean, suggested that MSMEs did not understand policies and legality concerning halal practices when it was of great importance for MSME actors to have a sobering understanding of sharia law and ensure that halal practice application was in accord with requirements for halal certification.

Regarding determinant factors in the environment variable, of the three tested dimensions, market demand had the highest mean (5.00), while competitive pressure had the lowest (3.31). It demonstrated that halal Minang weaving had good market prospects and high consumer demand, particularly from Muslim consumers. The low mean of the competitive pressure dimension exhibited that halal weaving business actors had no awareness that not implementing halal standards would make MSMEs lose customers and unable to compete and sustain.

5. Conclusion

The halal lifestyle is no longer confined to the Muslim community, as many non-Muslim countries have also shown interest in the halal industry. The demand for halal fashion is also coming from the non-Muslim community, which is looking for clean-processed clothing. Minang woven fabrics are superior products from West Sumatra that support tourism and creative economic sectors. Referring to the TOE framework used, TOE adoption readiness clusters in weaving MSMEs in West Sumatra are grouped into 6 categories, namely cluster 6 (termination), cluster 1 (maintenance), cluster 3 (action), cluster 2 (preparation), cluster 4 (contemplation), and cluster 5 (pre-contemplation). Cluster 6 as a cluster that is very ready is dominated by 15 MSMEs originating from 11 MSMEs in Tanah Datar Regency, 2 MSMEs in Sawahlunto City, 1 MSME in Sijunjung Regency, and 1 MSME in Payakumbuh City.

The result of this study offers an overview of the preparedness of Minang weaving small and medium-sized enterprises to obtain halal certification, with a focus on their readiness based on the TOE framework. The perceived benefits of the technology variable, expected business benefits of the organization variable, and market demand of the environment variable were identified as determinant factors for the adoption of the halal practices in Minang weaving businesses in West Sumatra. The implementation of halal adoption from TOE perspectives reflects the readiness of Halal Assurance System for halal certification. The Halal Assurance System is a crucial parameter in the selection of consumer goods, including halal modest fashion. It regulates not only the content in halal modest fashion products but also all the processes related to the halal weaving production process.

The findings could help improve comprehension of the current state of affairs and the actions that should be taken by authorized entities to promote halal modest fashion, particularly Minang weaving small and medium-sized enterprises. The results of this study could help

improve comprehension of the current state of affairs and the actions that should be taken by authorized entities to promote halal modest fashion, particularly Minang weaving small and medium-sized enterprises. The next research agenda is important for this termination cluster to develop its business strategy towards HAS 23000, thus, ultimately the MSMEs in this cluster can obtain halal certification. Meanwhile, other clusters that fall into the unprepared category (clusters 2, 4, and 5) provide input for the government to develop further policies. Therefore, MSMEs in those clusters can implement halal practices according to the factors that determine TOE.

This research can be used as a basis for developing MSMEs according to TOE-based cluster characteristics. The results of this research can be used by stakeholders to increase the readiness of SMEs in implementing halal practices and prepare strategies for SMEs to enter the halal market by improving the level of technological readiness in the form of compatibility, organizational readiness by understanding halal practices such as education and socialization of regulations, policies and aspects. legality for MSMEs related to the halal certification process, and environmental readiness to understand the benefits of halal practices as a strategy in suppressing competition in the global market.

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