

Interorganizational Knowledge Transfer Practices Toward MSMEs 4.0: A Proposed Conceptual Framework

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ABSTRACT

As a pillar of the Indonesian economy, Micro Small and Medium-Sized Enterprises (MSMEs) are not only a dominant contributor to Gross Domestic Product (GDP), but also absorb domestic workers up to 97 percent in 2020. In the Industrial Revolution 4.0 era, MSMEs are faced with challenges that arise due to the massive use of digital technology. To be able to win the competition, MSMEs are required not only to have high performance and competitiveness, but also and to have the readiness to compete in current business competition. In other words, becoming an MSMEs 4.0 is an important decision. To realize it, collaboration with external parties through a knowledge transfer mechanism is needed, one of which is collaboration with higher education. This paper discusses the proposed conceptual framework of knowledge transfer from universities to MSMEs toward MSMEs 4.0. The discussion includes the concept of MSMEs 4.0 and how to become MSMEs 4.0, previous conceptual and empirical studies knowledge transfer practices from universities to MSMEs, and a proposed conceptual framework on inter-organizational knowledge transfer involving universities and MSMEs toward MSME 4.0. The discussion ends with conclusions and suggestions for future research development.

Keywords: Industry 4.0, MSMEs 4.0, interorganizational knowledge transfer, competitiveness

1. INTRODUCTION

As the pillar of Indonesian economy, MSMEs are expected to survive and have a competitive advantage. The Industrial Revolution 4.0 and Society 5.0 which are loaded with the use of digital technology in all aspects of company and community activities raise challenges and opportunities for MSMEs. The success of MSMEs in surviving and winning the competition is largely determined by the readiness of MSMEs in responding to changes that occur. Becoming MSMEs 4.0 is a decision that absolutely must be considered and implemented in order to win the existing business competition. MSMEs 4.0 can be understood as MSMEs that familiar with the world of digital technology and are able to adapt to a very dynamic digital technology ecosystem (Fajria, 2020). This condition is certainly not an easy thing for MSMEs in Indonesia considering that there are still many MSMEs that face various internal and external problems, especially those related to the competence of human resources with a quite low digital literacy level, and the existence of external problems, one of which is related to the digital gap among regions in Indonesia (Kurniadi, 2021; Jelita, 2021; Adiningsih, 2019).

The study by Fidela et al. (2020) found that the low capacity of human resources and the lack of mastery of knowledge and technology are one of the inhibiting factors for business development and competitive advantage achievement for MSMEs in Indonesia. To overcome these problems, collaboration with external parties, one of which is higher education through an interorganizational knowledge transfer mechanism, is needed. Milagres and Burcharth (2019) define interorganizational knowledge transfer as a process by which collaborating organizations learn from each other. The process of creating and controlling the movement of knowledge both within and outside organizational boundaries is an important factor in creating and maintaining a company's competitive advantage (Marchiori & Franco, 2020). Therefore, interorganizational knowledge transfer become an important topic in the field of organizational cooperation research (Battistella et al., 2016; Marchiori & Franco, 2020).

Facing the turbulent business environment and the highly dynamic and unpredictable business competition, interorganizational knowledge transfer is one of the dominant sources for companies in developing sustainable competitive advantages, including MSMEs (Edvardsson, 2009). Previous studies found that external knowledge's source has important and significant implications for company's performance and competitiveness. Some of these implications include increasing innovation capabilities (Jansen et al., 2005), competency development and human resource performance (Lane et al., 2001), and sales growth and return on equity (Zahra et al., 2000). Increasing the competence and capability of MSMEs in responding to various changes that occur due to the Industrial Revolution 4.0 and Society 5.0 is also very much needed for the creation of MSMEs 4.0 that are highly competitive and able to adapt to changes that occur, especially the massive application of digital technology in all aspects of life.

This paper discusses the proposed conceptual framework for interorganizational knowledge transfer toward MSMEs 4.0. The knowledge transfer process in fact might occur in two directions, namely from universities to MSMEs and from MSMEs to universities, however this paper focus on the knowledge transfer from universities to MSMEs considering the important role of universities as sources and producers of knowledge (Goransson & Grundenius, 2011). The paper is organized as follow: the discussion will include discussion on conceptual understanding of MSMEs 4.0 and how to become MSMEs 4.0, knowledge transfer practices from universities to MSMEs, empirical studies on knowledge transfer from universities to MSMEs, and proposed conceptual frameworks on knowledge transfer from universities to MSMEs. to support the creation of MSMEs 4.0.

2. THE CONCEPT OF MSMEs 4.0

Matt and Rauch (2020) stated that in general, studies on the Industrial Revolution 4.0 (IR 4.0) state that the majority of MSMEs are still not ready for IR 4.0, MSMEs tend to lag behind the future trends, the IR 4.0 has not been able to touch MSMEs, and the majority of MSMEs do not. ready to implement the concept of the industrial revolution 4.0. However, it is undeniable that MSMEs have characteristics that are adaptive, flexible, and innovative both in products and in operational activities. This provides an advantage for MSMEs that in conditions of unfavorable economic pressure, MSMEs' ability to survive is greater than large-scale businesses to even multinational companies (Matt et al., 2016). It makes MSMEs become the pillars and backbone of the economy

in many countries, in Asia, Europe, the United States of America (USA), and even throughout the world (Matt & Rauch, 2020).

In Asia, especially the ten members of ASEAN (Association of Southeast Asian Nations), MSMEs have an important role and dominate the population of companies operating in these countries, reaching 97-98%. Micro-enterprises dominate up to 85-99% of the total MSME population with business characteristics that tend to be labor intensive and provide low added value to the economic sector. The MSME business sector is dominated by retail, trade and agriculture which absorbs domestic workers quite high, reaching an average of 66.3% (Matt & Rauch, 2020).

In Europe, MSMEs are also recognized as key factor to support their economic growth, especially in Cyprus, Greece, and Italy. Statistics show that, in European countries, the contribution of micro enterprises reaches 20.3%, small enterprises reaches 17.1%, and medium-scale enterprises reaches 18.5% (Eurostat, 2018 cited in Matt & Rauch, 2020). In the United States, non-agricultural private MSMEs contribute up to 46% of the country's GDP (Gross Domestic Product). This contribution of course provides an important role in economic growth and other innovative activities.

MSMEs are the main players in the economies of countries in the world which reach 99% (Matt & Rauch, 2020). As the main players, MSMEs are important contributor to the creation of this reaches an average of 50-60% of the average added value. MSMEs are also considered to make a significant contribution to economic diversification because of the flexible and adaptive characteristics inherent in MSMEs.

Given the importance of MSMEs role in supporting the economies of countries in the world, the survival of MSMEs requires high attention so that the proper strategy is needed to overcome every challenge and threat and take the advantage or opportunities in responding to changes that occur, especially the IR 4.0. Hamidah et al. (2019) stated some of the impacts caused by changes due to the Industrial Revolution 4.0 include:

- a. The use of technology in the form of machines and other supporting equipment in production process is expected to overcome the company's production problems, especially those related to product quality problems.
- b. The adoption of technology, especially digital technology in the company's marketing field, is expected to provide benefits to increase sales and market share of MSMEs and increasing the potential for exporting the products produced.
- c. With regard to human resource issues, the use of technology in the company's operational activities will certainly be able to improve human resources competence, particularly with regard to technical and managerial skills. This increase in competence will certainly improve the quality of the products produced by the company, especially in terms of product design, product quality, and increasing the company's production capacity.

Several strategies must be prepared to develop digital technology-based MSMEs so that MSMEs are able to compete and survive in the changes including the implementation of science and technology in (Hamidah et al., 2020):

1. Every company's production activity such as in terms of product engineering to product finishing.
2. Product development process, both oriented to local and international markets
3. The proper layout strategy so as to facilitate the flow of the production process to the final product.
4. Company management, for example through investment in the use of accounting and administration software.

5. Expansion of market share by utilizing digital technology such as websites, etc.

Matt and Rauch (2020) argue that in the IR 4.0, several new and innovative technologies are introduced which include information and communication technology (ICT), cyber-physical systems, network communications, simulations, big data analysis, and digital assistance. For example, ICT is used to integrate systems at all stages of product development include those related to logistics and supply chains. Cyber physical systems use to monitor and control physical processes and systems that include sensors and intelligent robots to configure the system according to the product made. Network communication includes wireless and internet technology that connects machines, products, systems, and workers both with internal companies as well as with suppliers and distributors.

Safar et al. (2018) stated that the business model in the era of the IR 4.0 must include and support three main elements, namely value proposition, value creation, and value capturing, each of which is explained in the implementation column for IR 4.0. According to them, the realization of these elements at the MSMEs scale is indeed not easy so they simplify the attributes in their business model by emphasizing on communication within and outside the organization with the aim of maximizing the contribution of MSMEs. Technologies in the IR 4.0 offer opportunities to increase their competitiveness by focusing on digitizing products so that they can compete in the market (Deloitte, 2015; Gualtieri et al., 2018).

A real example of digitizing MSMEs products is the use of digital technology in the marketing process of MSMEs products. A study conducted by Utari (2021) which aims to find out how MSMEs marketing strategies are implemented through Instagram in Marketing in the IR 4.0 era. Through in-depth interviews involving 70 persons selected based on purposive sampling method, the results of the study show that in addition to marketing through photo updates on Instagram, providing promos on certain days, and customer testimonials, word of mouth marketing is also considered to have a significant and important role for MSMEs. The study findings also show a change in new consumer patterns from 4A (Aware, Attitude, Ask, Act Again) to 5A (Aware, Appeal, Ask, Act, Advocate). This is due to the massive use of technology and allows people to be connected to one another.

3. PREVIOUS STUDIES ON KNOWLEDGE TRANSFER FROM UNIVERSITIES TO MSMEs

Transfer of knowledge from universities to MSMEs is an alternative collaboration strategy in terms of inter-organizational knowledge transfer that might provide benefits for MSMEs to increase competitiveness, especially in respond to various changes that arise due to the IR 4.0. Interorganizational knowledge transfer define as knowledge transfer process from sender to recipient which includes activities such as the process to move, assimilate and applicate knowledge that involve at least two organizations (Al-Jabri & Al-Busaidi, 2018).

Companies that willing to study the characteristics of consumers, competitors, and understand related regulations will have sensitivity and adaptability to changes. This adaptation is carried out not only in terms of products but also services provided to consumers. This is one of the reasons why topics on interorganizational knowledge transfer in MSMEs get important attention.

Study conducted by Chen et al. (2006) aims to determine the needs and implementation of interorganizational knowledge transfer practices in the MSMEs service sector in the UK. The results of the study conclude that knowledge about competitors, suppliers, and consumers is very important and needed by MSMEs compared to internal knowledge. This is due to the fact that the external environment provides much greater uncertainty for MSMEs than the internal environment.

The study conducted by Ibidunni et al. (2020) examines the relationship between knowledge transfer and organizational performance in the informal sector MSMEs that involved in international business relations. The study involved 370 owners and managers of MSMEs in Nigeria. The results of the study show that the dimensions of knowledge transfer such as R&D and social networking have varied impacts on innovation performance. Knowledge transfer in the form of training as a strategic tool for MSMEs involved in international cooperation may not significantly improve MSMEs innovation performance.

Several previous conceptual and empirical studies related to interorganizational knowledge transfer involving higher education and MSMEs are focused more on the factors that influence knowledge transfer (Anatan, 2013; Yuling, 2016; Fang et al, 2013; Yih-Tong Sun & Scott, 2005; Al-Jabri & Al-Busaidi, 2018). Table 2 summarizes several studies that discuss interorganizational knowledge transfer in MSMEs.

Table 2. Factors Influencing Interorganizational Knowledge Transfer in MSMEs

Reference	Factors Influencing	Type of Study
Anatan (2013)	Knowledge attributes, organizational attributes and networks attributes	Conceptual
Yuling (2016)	Learning capability, cognitive distance, expected value, and R&D Cost.	Conceptual
Fung et al. (2013)	knowledge content, environmental context, and knowledge characteristics	Conceptual
Yih-Tong Sun & Scott (2005)	Organizational culture, sender, receivers, organizational support, general objectives, personality, understanding and trust, conflict of interest	Empirical
Al-Jabri & Al-Busaidi (2018)	Sender, recipient, nature of knowledge, inter-organizational dynamics, risk and trust	Empirical

Source: Author's Elaboration

Study conducted by Anatan (2013) classified the antecedent of knowledge transfer into three attributed include knowledge, organizational, and network, while the consequence was the alliance performance. Uncertainties considered as a moderating carriable that might effect the relationship between knowledge transfer and alliance performance. A conceptual study conducted by Yuling (2016) identified the factors that influence interorganizational knowledge transfer including learning ability, cognitive distance, expected value, and R&D Cost. While the conceptual study conducted by Fung et al. (2013) identified knowledge content, environmental context, and knowledge characteristics as factors that have an important role in the practice of interorganizational knowledge transfer.

An empirical study conducted by Yih-Tong Sun & Scott (2005) identified factors that influence interorganizational knowledge transfer including organizational culture,

sender factors (interpersonal skills, communication skills, values and openness), receivers factors (individual trust, openness to ideas, learning capabilities, communication methods, external strengths, and group views), organizational support, common goals, personality, understanding and beliefs, and conflicts of interest. The empirical study conducted by Al-Jabri & Al-Busaidi (2018) aims to examine the factors that influence the interorganizational process of knowledge transfer of MSMEs in Oman. By using a qualitative method and involving ten MSMEs from the information and communication technology sector as well as the intensive knowledge-based industry sector, the results of the study show that inter-organizational knowledge transfer is an important factor for MSMEs. The results of the study also show that the donor organization, recipient organization, nature of knowledge, interorganizational dynamics, and risk and trust are important factors in the implementation of interorganizational knowledge transfer activities.

4. A CONCEPTUAL FRAMEWORK OF KNOWLEDGE TRANSFER FROM UNIVERSITIES TO MSMEs

Knowledge is an important resource and must be managed strategically by the company since it has a very important role in achieving the company's competitive advantage (Falkenberg et al., 2003). Chen et al. (2006) suggests that the issue of knowledge transfer practices in MSMEs is not the same as what happens in large-scale companies. This is influenced by the flexibility and volatility of MSMEs, their skills and expertise, and limited market forces. Since external knowledge is considered to have a very important role in the competitiveness of MSMEs compared to internal knowledge which is an important concern for large-scale companies. External knowledge is obtained through various patterns of sources that might be accessed through interaction with external parties, such as consumers, universities or research institutes, experts in the field of intellectual property rights (IPR), and network partners (Brunswicker & Vanhaverbeke, 2014). In this paper, external sources of knowledge are focused on knowledge from the university.

Although universities and MSMEs are two kind of organizations that have different organizational cultures and can be a barrier to collaboration, universities are considered as external sources of knowledge in supporting innovation activities in MSMEs (Tsai, 2009; Brunswicker & Vanhaverbeke, 2014). Another obstacle is the difference in the goals of the two organizations, for example, universities tend to have a long-term scientific research mission, while industry has an exploitation-oriented research goal. Likewise, in terms of determining rewards, universities are publication-oriented, while companies are oriented towards protecting research findings (Harryson et al., 2008 cited in Brunswicker & Vanhaverbeke, 2014). Although there are many differences between the two parties, external knowledge, especially from universities, is still considered an important source in improving the competence and capability of MSMEs, especially in developing competencies to prepare MSMEs to compete in the IR 4.0 era so that and achieve competitive advantage.

Chen et al. (2006) suggested several reasons why external knowledge is important for MSMEs including:

1. To obtain external knowledge, MSMEs require cooperation in several activities with internal organizations, for example through interorganizational knowledge transfer activities.

2. External knowledge such as knowledge related to consumers, suppliers, competitors, social, economic conditions, legal aspects, demographic issues, to other regulations is needed as a consideration in the decision-making process of an organization, as is the case with MSMEs.
3. MSMEs need networks and channels to facilitate their knowledge exchange through interorganizational knowledge transfer activities, for example by developing social networks that make it easy to communicate, developing strong ties between network members, so that the existing network might function as a channel of knowledge transfer activities.
4. Interorganizational knowledge transfer is basically a learning process between organizations. In other words, the knowledge gained by individuals from external organizations might be effectively utilized for business development.

External knowledge obtained by MSMEs from universities will determine the level of readiness of MSMEs in adopting technology or in other words determine the success or failure of MSMEs to become MSMEs 4.0. Several things might be used as indicators to determine the level of readiness of MSMEs, for example related to the level of resilience of MSMEs, infrastructure systems, manufacturing systems, data transformation, and mastery of digital technology (Chonsawat & Sopadang, 2020).

The level of organizational resilience could be measured for example through aspects of the business model, business strategy, digital transformation, human resources, organizational structure leadership, and supply chain management. The infrastructure system can be measured through several aspects such as infrastructure, standardization, financial resources and investment. Manufacturing systems might be measured based on logistics systems, artificial intelligence technology, industrial automation, and customized products. Data transformation might be measured through several aspects such as data management, data acquisition, real time data, or cloud manufacturing. Meanwhile, mastery of digital technology might be measured through, for example, tracking systems, information systems, cybersecurity, data analysis and the circular economy.

The level of readiness of MSMEs 4.0 will ultimately affect the competitiveness of MSMEs. The competitiveness of MSMEs can be defined as how competitive a company is in a certain period. MSMEs competitiveness relates to the ability to act or react in a competitive environment. It requires investment in human resources and technology as their financial strength (Zonoos et al., 2011). To measure the competitiveness of SMEs, several indicators can be used such as sales per person, net outputs per person, and net profit on turnover (O'Farrel & Hitchens, 1993). Other measures that can be used include return on equity, earnings per share, payout ratio, and dividend yield based on the measurement of financial performance (Feurer & Chaharbaghi cited in Zonoos et al., 2011). Based on this description, the following propositions can be developed:

Proposition:

An increase in the level of interorganizational knowledge transfer practices will lead to an increase in the level of readiness to become MSME 4.0 which will ultimately have an impact on increasing the competitiveness of MSMEs.

5. CONCLUSION

The rapid development of the use of digital technology in responding to the IR 4.0 era requires MSMEs to be able to adapt to the changes that occur. The obstacles and limitations of MSMEs can be overcome by collaborating with external parties through an interorganizational knowledge transfer mechanism, namely focusing on external knowledge, one of which comes from universities as a source of knowledge. By carrying out interorganizational knowledge transfer practices, it is hoped that MSMEs can increase their readiness to become MSMEs 4.0 that are responsive to technological developments so that MSME competitiveness can be improved.

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