

## Towards SMEs' digital transformation: The role of agile leadership and strategic flexibility

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### ABSTRACT

Digital transformation in SMEs has become a necessity in the Industrial Revolution 4.0 era. The ASEAN Economic Community will be more established if SMEs are able to take the benefit of information technology advancement in its business process. This research aims to test the role of agile leadership and strategic flexibility to improve digital transformation in SMEs among ASEAN countries. The data from this research were from 539 SMEs in Indonesia and Malaysia as representatives of ASEAN community and tested using Smart PLS 3. A total of 519 usable surveys were collected. Data testing results showed that agile leadership becomes the key to success in implementing digital transformation. Moreover the strategic flexibility, which comes from workforce transformation and dynamic capability, is also the determining factor in the creation of digital transformation in SMEs. The fast response of the leader followed by strategy flexibility, play a significant role to the success of digital transformation implementation.

### Introduction

The digital era is such a pleasant era to run a business with the support of technological sophistication. Exciting new technologies, such as cloud service, big data, machine learning, and cognitive computing provide the opportunity to completely change the business way (Prasad et al., 2018). The company must establish a connection to develop through a network of interconnected relationships in order to get the access of resources and capabilities (Mu, 2013). These externally accessible resources are able to influence the company's performance. It is because the interconnected relationship provide positive relationship and competitive advantage (Havila & Medlin, 2012; Mirtega et al., 2012; Mu, 2013). In this digital era, all business sectors experience a change that requires digitization in its oper-

ations, including Small and Medium Enterprises (SMEs). SMEs are also required to adapt toward the changes in order to survive and have a sustainable competitive advantage.

The biggest challenge faced by SMEs is how to increase the accessibility of SMEs to go-digital, increase the capabilities of SMEs to produce high quality products and have a strong competitiveness to improve community welfare. In developing countries such as Indonesia and Malaysia, it is important to remember that most SMEs operates with very limited internet access and low digital-literate levels. Lack of connectivity and affordable digital access result in low attention about the importance of using digital technology, so that it affects the level of SMEs with weak readiness and digital capacity (Warner & Wäger, 2019). Therefore, this is the moment for the stakeholders of SMEs to solve this problem. Utilization of digital technology, the internet and social media can encourage the innovation capabilities of SMEs, and play a role in market expansion both regionally and globally through network capability (Cenamor et al.,

2019). The proven durability and adaptation capability become the main capital for SMEs to be the leading actors in digital economy. If during this time SMEs have difficulty in selling their products in the market, in digital economy era SMEs can easily market their products. Through transformation efforts towards business digitization in SMEs, it is expected that SMEs will have a sustainable competitive advantage.

Digital transformation has opened up various possibilities for companies to interact with customers, which has led to new and unexpected business model innovations (Amit & Zott, 2001). In order to facilitate the wider marketing process of the SMEs' product, it also needs to pay attention on the human resources readiness in the SMEs. The human resources in SMEs are expected to be able to adapt with any changes, including digitization, so that the process will run effectively, efficiently and optimally. Thus, the digitization can really facilitate the interaction experience between the company and the customer, and cover a wider market. The next problem is how does the SMEs balance the current capabilities and build new digital capabilities that are compatible with SMEs' dependency on a wide range of instruments in the past (Svan et al., 2017). Digitization is the fastest, most conductive and fundamental labour market intruder. According to Accenture Technology Vision (2019), it is predicted that in the year 2020, about a quarter of the world economy will be digital. The development of technology, which triggers the presence of workforce transformation, at the same time is the cause and effect of digital era. People are always trying to develop creative innovations and new discoveries. As stated by Morgan (2016), we face the next industrial revolution in form of a cyber-physical system. The revolution is not about one invention but some ongoing advances that incorporate the digital, physical and biological worlds. This leap technological becomes the main reason why there are so many new social measures taken and new businesses.

The great expectation of SMEs development in digital era will certainly bring major changes from various facets of the company. The company will face new problems that require the important role of a leader in making decisions. Strategic decisions often arise suddenly and only have a small amount of time to immediately make the most effective and efficient decision for the company's strategy. In today's digitization era, digital transformation becomes a strategic necessity on the leadership agenda (Singh & Hess, 2017). A leader has an important role in an organization. Facing this era, it needs an agile and sensitive leader in all aspects. The agility of a leader will produce a strategy, which will make the company, especially SMEs, follow the development of the era. In addition, it needs a leader who

is able to give influence to his members in order to do the work based on the needs of the company in this dynamic era.

Moreover, digital technology makes the consumer behaviour unpredictable, and the competition experiences a rapid change (Warner & Wäger, 2019). It makes dynamic capabilities become an interesting factor to be analysed. Dynamic capabilities represent a suitable approach to learn the effects of information systems or their specific capabilities in organizations ( Contractor et al., 2017; Rialti et al., 2018). The system utilization which is able to analyse big data is often associated with general processes and routines that can be used to fix various problems related with data (Wamba et al., 2017). A big adaptable data analytics system can be used in different situations and can provide a competitive advantage during environmental turbulence. Similarly, the big data analysis capability is a set of capabilities that can help organizations to adapt with the underlying resources (in this case is data) to overcome the various needs of information in different situations (Rialti et al., 2018). Since these considerations are coherent with dynamic capability theory which most widely used approach in research of big data and performance (Wamba et al., 2017). Through dynamic capability, it is expected that SMEs will be able to maintain the implementation of business digitization in the current era especially by knowing the readiness to change of all SMEs stakeholders, especially owners. This is because, in the current digital era, other than ability, it also needs a readiness in addressing business transformation.

In order to develop SMEs in the digital era, it needs a mature strategy. The successful renewal and business model transformation are the major part of strategic flexibility (Doz & Kosonen, 2010). The agility of this strategy cannot be separated from the company resources especially the workers. Towards the agility, the workers must transform to follow the development through workers who are literate in technology, information, and innovation. Not only from human resources, but it also needs to pay attention on how the company responds to the technological changes and fast markets that's called dynamic capability (Teece, 2007). If SMEs do not follow the development, there will be no progress, even the performance of SMEs itself will decreased.

Existing research has been discussed about how to prepare SMEs to go on digital transformation; however, there is still a limited number of research that offers a complex model ranging from workforce involvement, strategy implementation and leadership capability. Hence, this research aims to examine the role of agile leadership and strategic flexibility in improving SMEs digital transformation. The rest of the paper is organized as follows: Section 2 is Literature Review, Section 3 is Research Method, and Section

4 is Result and Discussion. Conclusion and suggestions for future research are provided in Section 5.

## **Literature Review**

### **Digital Transformation for SMEs**

Transformation gives the meaning of a comprehensive change in form of appearance, character and so on in a reciprocal relationship for either individual or group (Sunarti et al., 2013). The transformation includes creation and it is a change from one form to completely new form in functionally and structurally (Kinosian et al., 2016; Margolis et al., 2017).

Digital transformation related with digital technology changes can bring changes in the company's business model. The result is there is a change in the product, in the organizational structure, or in the process automation. Fitzgerald et al. (2014) defined digital transformation as the use of new digital technologies (social media, mobile, analytics, or embedded devices) to enable the key business improvements such as enhancing the customer experience, streamlining the operations, or creating new business models. Meanwhile, Liu et al. (2011) defined digital transformation as an organization transformation that integrates digital technology and business processes in the digital economy. Digital transformation is not only about technology, but also about strategy. In addition, the senior leaders' team have to find ways to leverage new and unexpected business model innovation that optimise the customers' needs and experience. Hence, it can be concluded that digital transformation is a process or business for the company in facilitating the relationship between customers with the company itself, simplify the various processes by changing the business model through the recent technology. This change is not only limited to the use of technology but also has an impact on the structural and strategy of the company to fit the business model due to the new technology. Warner & Wäger (2019) measured digital transformation on three things: navigating the innovation ecosystem, redesigning internal structures and enhancing digital maturity.

The research by Li et al. (2018) about digital transformation on SMEs, explained that SME actors do digital transformation by utilizing the availability of digital platform, digital investment (ICT), social capital (Torres et al., 2018) development, building business team, and improving the ability of all members in the organization. Not only using technical ability, in order to perform digital transformation (Information System) Besson and Rowe (2012) argued that it also requires managerial capabilities, such as work process design, business strategy training, human resources

investment in digital literacy capability. Digital transformation for SME actors should not be limited to investment information technology and information system, but also more focused on the business dimension or basic business process (automation, simulation and analysis integrated data, supply chain, work design, product design, and product cycle management), products (utilization of internet, digitization with technological use for market expansion) and business model (customer oriented, adaptation ability with consumer behavior changes, increased innovation and creativity to produce products and services with a high level of personalized services). Hence, it can be concluded that SMEs who perform the digital transformation have a goal to improve the product quality and the services.

### **Workforce Transformation and Strategic Flexibility**

The transformation of the workforce is a fundamental change in circumstances and it requires a change in culture, behaviour and mind-set (Shaughnessy, 2018). In other words, workforce transformation requires a change in human consciousness that truly transforms the life and livelihoods (Pan et al., 2019). Transformation is not just a change; but it has a more rational, cognitive and holistic perspective and can even be spiritually oriented (Bertola & Teunissen, 2018). Workforce transformation is the creation and alteration of one form to another entirely new form functionally or structurally.

Gibson et al. (2015) identified the dimensions for measuring workforce transformation consist of; data capture, information integrity, identity management, access and disclosure, information management governance, content compliance, information/knowledge asset management, customer support, and information analysis and business intelligence. According to Shaughnessy (2018), the dimensions for measuring workforce transformation are, the large-scale visualization of all work; a work concept, flexible and fluid, faster and more adaptive on a daily basis; adoption of new social values; and the prioritization of value-seeking activity in all work. Meanwhile, according to Stevens (2018), the dimension of workforce transformation are skills required, qualities required from workforce, communication, reliability, and humour. Therefore, this research will use the dimensions of skill and qualities required from workforce, adoption of new social values, flexible and fluid, and faster and more adaptive on a daily basis to measure workforce transformation.

Based on previous research, in the digitization era, workforce transformation can be called a component that cannot be abandoned. Since workforce is a very important resource of a company, it needs to be developed in order to

produce the performance of companies that can compete according to the era development. In this digital era, the workforce must be literate in technology. As stated by (Uimonen, 2016), technological development is the mother of transformation of the workforce. If the workforce can transform in the digital era, the company will design the strategy easily.

Strategic flexibility is a company's ability to respond to changes in the dynamic business environment in order to achieve the objectives, with the support of knowledge and superior capabilities. The strategic capabilities are comprised of an integrated workforce, process, product, and system (Warner & Wäger, 2019). Strategic flexibility supports the future strategy development, and it requires rapid reaction towards the internal and external changes. The concept of strategic flexibility in product competitions is a fundamental approach to the management of uncertainty (Celuch & Murphy, 2010; Ghorban-bakhsh & Gholipour-kanani, 2018). The flexibility of strategy can offer the company a distinctive competitive advantage, due to the ability to make decision options, and various forms of strategic flexibility. It aims to deal with dynamic and changing environments that may be difficult for competitors to emulate (Sanchez, 1995).

Factors that become the cause of SMEs must have strategic flexibility are; first, the development and improvement of digital technology utilization (digital network, use of access to the intensity, the use of smart phones, tablets, personal computers, and laptops in small business activities). Internet usage is applied to SMEs such as in communication with customers, payment transactions and products promotion or services, also known as market-sensing activity (Celuch & Murphy, 2010). Second, SMEs must be able to deal with global competition that requires comprehensive problem solving skills, innovation and creativity (Schneider & Spieth, 2014). In addition, strategic flexibility also helps SMEs to manage risk management through both increased rapid response capability towards the current business problems and to proactively design the future strategies (Grewal & Tansuhaj, 2001). Strategic flexibility is also a key for SMEs to balance the internal and the external needs of the company to achieve competitive advantage, so that it can improve the performance.

Workforce transformation is related with the creation of changes from a workforce to other forms that include the fundamental changes of a state, culture, behaviour and mind-set. In digital transformation, culture in the workforce context is needed, which emphasizes on achieving efficiency, forming awareness and engagement of workers to be able to adapt to the use of digital technology in accordance with the needs of the organization to develop its business (Ndayizigamiye & Khoase, 2018). Workforce transforma-

tion in form of skills required, quality required, communication, adoption of new social values, flexible and fluid, faster and more adaptive on daily basis, will support the growth of strategic flexibility. The study in agrifood nanotechnology by (Yawson & Greiman, 2017), found that workforce transformation conducted by human resource development is able to map future skill needs through skills training and development (identify best practice, learning and sharing knowledge, identification of opportunities and challenges ahead, and increased coordination and consultation for all stakeholders), so that it creates strategic flexibility for the company. Based on the results of the previous study, the hypothesis can concluded as follows:

**H1.** There is a positive relationship between workforce transformation and strategic flexibility.

### Dynamic Capability and Strategic Flexibility

Dynamic capability is related with the organization's ability to adequately and timely adapt towards the changing environments by reconfiguring the internal or external processes and resources, through the existing competencies (Eisenhardt & Martin, 2000; Gaur et al., 2014). The use of dynamic capability theory will allow a researcher to dismantle the big data results by simultaneously considering the routines. This aims for analysing the data and spreading knowledge to everyone in the organization (Rialti et al., 2019). Dynamic capability is the agent of evaluation and change that allows the company to assess what changes are needed for the resource base and their ability to remain competitive, especially to face the changing market environment (Wilden et al., 2013). The absence of dynamic capabilities is seen as a threat that can hamper the company's ability to maintain the performance level in new and constantly changing environments (Gnizy et al., 2014). Dynamic capabilities are characterized by persistent long-term patterns of company behaviour that facilitate adaptation, but they do not directly affect the company's performance. So it can be concluded that dynamic capability is an organization's ability to adapt with the changing environment for the resource base and their ability to remain competitive by spreading knowledge to everyone in the organization in a persistent long-term pattern.

Gnizy et al. (2014) stated that dynamic capabilities could be measured from marketing program adaption, and local integration. Meanwhile Oliva et al. (2018) measured dynamic capabilities with integration of individuals' expertise in the organization; culture, orientation and leadership; and company strategies. The other dimensions are the development of an entrepreneurial management (Teece et al.,

2016), markets, technologies and regulations (Park et al., 2018) sensing (ability to identify new opportunities), seizing (ability to absorb external knowledge and assimilate with prior knowledge), transforming (ability to transform knowledge into new products/services/systems/processes) (Tallott & Hilliard, 2016) the ability to identify and explore emerging opportunities and new sources of competitive advantages (Bamel & Bamel, 2018; Schilke et al., 2018). So it can be concluded that, to measure or find out the dynamic capabilities, the dimensions are sensing capability, adaptive capability, innovation capability, networking capability, learning capabilities, integrating capabilities and coordinating capabilities.

Based on previous research, companies need to build strong dynamic capabilities to quickly create, deploy, and transform business models to remain relevant in the current digital economies (Teece, 2018; Teece & Linden, 2017; Velu, 2017). SMEs should be flexible, to always develop knowledge about changes in external environments by growing dynamic capabilities in organizational culture. An organizational culture that focuses on empowering dynamic abilities of workers is needed to create, deliver and capture value in the context of innovation in the digital age (Schallmo et al., 2017). The example of high dynamic capability is the utilization of information technology conducted by SMEs. It helps to achieve the objectives more specifically, and can avoid coordination and sales transactions. Dynamic capability through the use of IT (Information Technology), also helps SMEs to develop strategic flexibility and to adapt towards their position in competition, to adjust and establish the connectivity between customer and competitor (Schneider & Spieth, 2014). As such, we hypothesize the following:

**H2.** There is a positive relationship between dynamic capability and strategic flexibility.

### Strategic Flexibility and Digital Transformation

Strategic Flexibility refers to the company's ability to respond to uncertainty by adjusting its objectives with the support of knowledge and superior capabilities. Strategic flexibility allows the company to support future strategy development, to react rapidly towards changes in internal and external. The concept of strategic flexibility in product competitions is a fundamental approach to the uncertainty management, including digital transformation (Sanchez, 1995). The flexibility of strategy offer the company a distinctive competitive advantage, due to the ability to make decision options, and various forms of strategic flexibility in order to deal with dynamic and changing environments, which may be difficult for competitors to emulate (Sanchez,

1995). Therefore, strategic flexibility is a company's ability to adapt towards a constantly changing environment in order to survive and continue to evolve in a new and higher level.

Warner (2013) measured strategic flexibility with strategic sensitivity, leadership unity and resource fluidity. The existing research proved that strategic flexibility has the potential to give positive impacts of technological capabilities. The impacts are in term of the exploration and shifting boundaries of the company's exploration into a higher level (Zhou & Wu, 2010). In this digitization era, the company is encouraged to make a good change from traditional to digital. In order to realize these changes, it needs strategic flexibility, so that the company can respond to any form of uncertainty in order to realize the objectives of the company. Thus, the Hypothesis 3 is as follows:

**H3.** There is a positive relationship between strategic flexibility and digital transformation.

### The Moderating Role of Agile Leadership

In addition, we argue that successful strategic flexibility and digital transformation is determined with the existence of agile leadership. Agile leadership is an agile leader who can guide his team and continually influence the team behaviour by defining, spreading, and maintaining organizational vision (Perker et al., 2015). Agile entrepreneurs are obsessed with providing more value to customers. In an agile organization, "customer focus" means that everyone in the organization has a clear view to the main customers and can see whether their work adds value to the customer or not (Denning, 2018). Marquest (2018) stated that the entire performance environment is the current fast- and agility is the key to stay in a business game. Leadership agility means agility in affecting people and make a change. Agility is considered one of the main skills for current managers. An agile manager who has a lot of skills with flexibility and speed can facilitate the achievement of the success of larger organisations and prepare to face the challenges of the world today (Buhler, 2010). So it can be concluded that agile leadership is an agile leader who can guide the team and continuously influence the team behaviour. So that the team always provide value to customers by having many skills with flexibility and speed in order to achieve the larger organization's success, and always ready to face the current world's challenges.

Perker et al. (2015) measured agile leadership as a form of leader capability to feel the sense of urgency and direction, hard work upfront – sets expectations and norms, shares responsibility and mutual accountability, effective in

recognising problems and making decisions, commitment and trust among members, balances individual and group needs, cohesive without stifling individuality, confronts differences and deals with conflicts, deals with minority opinions effectively, and effective communication methods. The agile leadership guidance consists of: intrinsic ability to face change; organizational views, adaptive systems; recognition of external control constraints; a humanistic, problem-solving approach; collective capability of autonomous team as basic problem-solving mechanisms; limiting planning in advance to the minimum based on the assumption of uncertainty; adaptability; react based on the results from a self-managed team; and manage results (Gardner et al., 2005). The other dimensions of agile leadership include customer-first mind-set, focus on the road map for the future, continuous creation of new businesses, multiple paths to yes, willingness to take risks and acquire new institutional skills, and turning institutional skills into new businesses (Denning, 2018). Meanwhile, according to Sanatigar et al. (2017) the dimensions to measure agile leadership are collaboration and nurturance, accepting diversity, competency, innovation and creativity, transparency and trust, flexible structure, appropriate and smooth, regulations and directives, new methods and processes for performing work, robust – high speed and updated hardware and infrastructures,

appropriate and timely software and programs. So it can be concluded that the dimensions to measure agile leadership are: shares responsibility, effective in recognizing problems and making decisions, adaptive systems, and flexible structure.

According to previous research results, an organization will have greater agility capability, if a leader use a far ahead and strategic perspective to make the best decision in the best time, and exert the best goal and plan by using their own initiative also the awareness and application of modern scientific methods related with work, in an environment which is filled with obscurity and uncertainty. Agile leadership allows a congruence in the implementation of strategies, quickly articulates and creates a strategy into the choice of business logic, as well as infrastructure. The skills, system infrastructure, functions and processes are required in articulating and prototyping essential strategies in preparing SMEs to quickly respond to the changing environments (Li et al., 2018). Thus, Hypothesis 4 is as follows:

**H4.** Agile leadership strengthen the relationship between strategic flexibility and digital transformation

Hence, the research empirical model (Figure 1) can be visualized as follows:

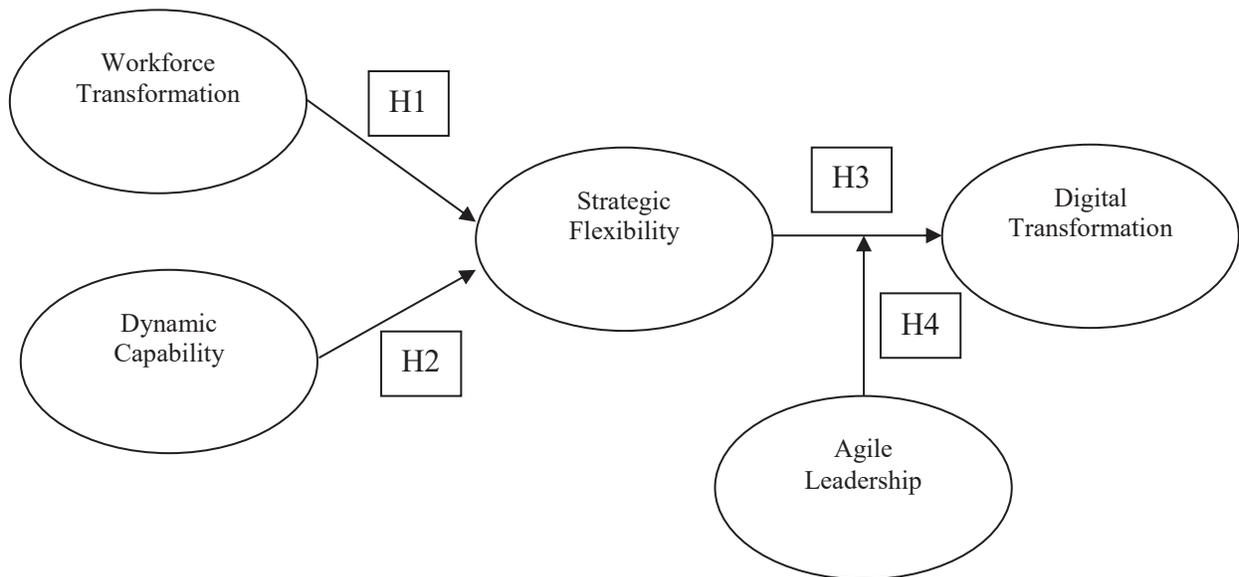


Figure 1. Empirical Model

## Method

### Population, Sample and Data Collection

A survey methodology is used in this research to collect primary data for empirical analysis. The samples used in this research were SMEs with high usage of simple digital technology such as using social media for marketing and partnership purposes with clients and customer. The high usage of simple digital technology in this study is the SMEs who use at least mobile phones with internet connection in running their business. This is because the mobile phone is a simple digital technology that supports the use of the internet and social media (i.e., Facebook, Whatsapp, Instagram, etc) that facilitates access to information about various digital technology features.

The population of this study were SMEs in Indonesia and Malaysia with industrial classification, which are included in a homogeneous-specific section that falls under the classification of small and home industries. The samples in this study were SMEs with less than 300 employees, and sampling technique used in this study was non-random sampling with a purposive sampling method. They were composing company data and also collecting interest information (e.g., type of industry, number of employees and annual sales) into an ad hoc database specifically for this research project (Table 1).

In order to compile the primary data, the research assistants gave questionnaires to owner/leader/manager of 350 creative industries SMEs companies in Semarang – Central Java Indonesia and 350 companies in Terengganu Malaysia, as they have a strategic position in decision making related to information technology adoption. The criteria of SMEs selected as samples in this study are based on the development and adoption of (Badan Pusat Statistik (BPS), 2017; SME Corporation Malaysia, 2018; UU No. 20 Tahun 2008, 2008), referring to SMEs according to the world bank standard (World Bank Group, 2018) is business types with annual sales turnover of USD 100.000 - < USD 15.000.000, and full-time employees of 10 -  $\geq$  300 people. Additionally, Semarang as one capital city in Indonesia, and Terengganu as one capital city in Malaysia were selected as population targets since these areas have potential for the development of creative industry-based small businesses (bin Abdul Halim & Mat, 2010; Hapsari & Setiawan, 2019). Other selection criteria used in this research are SMEs who have used the internet in their part of business, with organization tenure more than one year (SMEs have been operating for at least one year). The SMEs creative industry sector was chosen as a sample because it requires the use of digital technology (business development, production and distribution

processes, and customer relationship) to develop innovation in their business (Li, 2018). SMEs creative industry sectors in this research, including fashion, retailer, service, food and beverages, handcraft as their part of creative industry. According to (National Creative Industry Policy (DIKN), 2018) Malaysia and (Badan Ekonomi Kreatif Indonesia, 2017) Indonesia, the creative industries definition refers to the United Kingdom's (Departement of Culture Media and Sport (DCMS), 1998) "*those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property*".

The questionnaire contains some detail literature review on measurement scales and some questions that address workforce transformation, dynamic capability, strategic flexibility, agile leadership and digital transformation. The questionnaire also included a letter that requests the owners or senior managers or executives who acquire the topic of this study to complete the questionnaire.

Before doing the survey, five owners of SMEs had personal interviews and the questionnaire validated first by a number of academics. The interview aims to improve the quality of items and correct the wording issues. Finally, after three months, a total of 519 usable surveys were collected. The majority of the respondents are owners and middle-level managers. The SMEs employed 5 – 300 staff and have between \$100,000 (USD) and \$15,000,000 (USD) in annual sales.

Systematic measurement error and bias in the estimation of the true relationship among theoretical constructs can be caused by the self-report questionnaire data with a cross-sectional research design, common method variance from the measurement method rather than the constructs of interest (Podsakoff & Organ, 1986). Harman (1960) tests the existence of this problem in one-factor test (through exploratory factor analysis). This test provides substantial amount of common method variance, such as (a) a single factor from the factor analysis or (b) the majority of the covariance among the variables of one general factor (Podsakoff & Organ, 1986). The existence of six distinctive factors with Eigen values greater than 1.0 is shown by the factor analysis (principal component analysis with varimax rotation) on the questionnaire items. These factors are 77.2% of the total variance. Moreover, the largest factor is 29.8% of the total variance. Common method variance concern is unlikely to merge the interpretations of the results in this study. It is because there is more than one factor and specific factor for the total majority variance.

In this study, the collection of data through the distribution of questionnaires arranged in stages based on a five-point Likert scale ranging from strongly disagree to strong-

ly agree.

**Measures**

**Workforce Transformation**

We defined workforce transformation as a phenomenon among workers because of some external environment changing. We measure this variable with four items such as skill and qualities required from workforce, adoption of new social values, flexible and fluid, faster and more adaptive on a daily basis. These items are developed by combination from (Kucukusta et al., 2015; Liu, 2014; Shaugnessy, 2018; Stevens, 2018).

**Dynamic Capability**

Dynamic capability is defined as SMEs capability in responding to the rapid change of technology and market. The five-point Likert scale with four items from (Bamel & Bamel, 2018; Gnizy et al., 2014; Schilke et al., 2018) measured dynamic capability. The items include sensing capability, adaptive capability, innovative capability, networking capability, learning capabilities, integrating capabilities and coordinating capabilities.

**Strategic Flexibility**

We defined strategic flexibility as the company’s ability to respond to uncertainty by adjusting its objectives with the support of knowledge and excellent ability. Multi-items adopted from (Warner & Wäger, 2019) to measure strategic flexibility. It includes four items, which are sensitivity, strategy, leadership unity, and resource fluidity. These items mainly relate to SMEs activities that permit the company to generate or adjust their business strategy flexibly.

**Agile Leadership**

We defined agile leadership as a leadership style that can give a fast response on business opportunities and threats which derive from changes and advances in information technology. The five-point Likert scale with four items from Perker et al. (2015) defined agile leadership are about share responsibility, effective in recognizing problems and making decisions, adaptive system and flexible structure.

**Digital Transformation**

Digital transformation is defined as organization transformation which integrates digital technology and business

processes in a digital economy. The three items of (Warner & Wäger, 2019) are used to measure. Those three items are navigating the innovation ecosystem, redesigning internal structures and enhancing digital maturity.

**Results**

**Demographic Respondents**

This study used 519 Indonesia and Malaysia SMEs as a sample. Demographics respondents in this study include; country, business fields, number of employees, and annual sales, as seen in Table 1.

Table 1  
*Demographic respondents*

Detail	Semarang, Indonesia		Terengganu, Malaysia	
	Total	Percentage	Total	Percentage
<b>Total Sample (519)</b>	<b>280</b>		<b>239</b>	
<b>Semarang</b>	280	53.95		
<b>Terengganu</b>			239	46.05
<b>Business Field</b>	<b>Semarang</b>		<b>Terengganu</b>	
Foods/Drinks	89	31.79	76	31.80
Craft	48	17.14	35	14.64
Fashion	76	27.14	68	28.45
Retailer	38	13.57	45	18.80
Service	29	10.36	15	6.28
<b>Number of Employees</b>	<b>Semarang</b>		<b>Terengganu</b>	
5 – 10	150	53.57	136	56.90
≥ 10 – 49	85	30.36	65	27.20
50 - 300	45	16.07	38	15.90
<b>Annual Sales</b>	<b>Semarang</b>		<b>Terengganu</b>	
≤ USD 100.000	128	45.71	118	49.37
USD 100.000 - USD 3.000.000	83	29.64	67	28.03
USD 3.000.000 - < USD 15.000.000	69	24.64	54	22.59

In terms of country, 53.95% SMEs were from Indonesia and 46.05% were from Malaysia. The majority of respondents in this study were SMEs actors engaged in the food and drinks business (Terengganu 31.80% and Semarang 31.79%), then the fashion business sector (Semarang 27.14% and Terengganu 28.45%). The business sectors of Craft Semarang and Terengganu SMEs are (17.14% and 14.64%). While the Terengganu SMEs retailer business sector was 18.83% and Semarang was 13.57%. The re-

maintaining 10.36% and 6.28% are Semarang and Terengganu SMEs with service business. Most respondents (SMEs) Semarang (53.5%) and Terengganu (56.90%) have five – employees. Semarang SMEs with employees between 11 - 20 are 30.36% and 27.2% Terengganu SMEs. Then SMEs with more than 20 workers are only 15.90% Terengganu SMEs and 16.90% Semarang SMEs. Judging from the ability of annual sales, the majority of Indonesian and Malaysian SMEs have a production capability of < 100 (45.71% and 49.37%). Annual sales capability between 100 – 300 is 29.64% Semarang and 28.03% Terengganu SMEs. Whereas SMEs that have more than 300 annual sales capabilities are only (24.64% and 22.59%) Semarang and Terengganu SMEs.

**Descriptive Analysis**

All variables in this study were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree (Items of measures in Appendix). The mean score lower than two is rated as low, two to four rated as moderate, and higher than four is rated as high perception of understanding each variable (Radzi et al., 2018). The descriptive statistical values of this research are shown in (Table 2):

**Statistical Analysis and Hypothesis Testing**

The study used partial least squares (PLS) to analyse the research model. The software to conduct the analysis was provided by SmartPLS (Hair et al 2017). A variance-based on PLS approach is preferable to covariance-based methods, since PLS imposes less restrictions on sample size

Table 2  
Descriptive statistics

Variables	Terengganu		Semarang	
	Mean	SD	Mean	SD
Work transformation	4.27	0.83	4.20	0.83
Dynamic Capability	4.26	0.78	4.24	0.74
Strategic Flexibility	4.15	0.96	4.07	0.93
Agile Leadership	4.3	0,85	4,34	0,85
Digital Transformation	3.88	1.01	3,97	0.98

and distribution (Chin et al., 2003). PLS is defined as a SEM technique in which a measurement model and the theoretical structural model are simultaneously assessed (Chin et al., 2003). In addition, it is an equal method to resolve multicollinearity problems that frequently arise in multivariate regression analysis, since PLS transforms predictor variables to an orthogonal component called as PLS (Chin et al., 2003). Although the measurement prediction and structural parameters happen simultaneously, the PLS model application typically occurs in two stages. The first stage is to assess the measurement model using confirmatory factor analysis also to estimate the reliability and validity of the theoretical constructs. Then, the second stage is to estimate the structural model tests of the (path) associations among the hypotheses in this research model.

**Measurement Model**

The initial stage before test measurement models test is to estimate the model (Figure 2). Evaluation of measurement models is used to test internal consistency (Cronbach

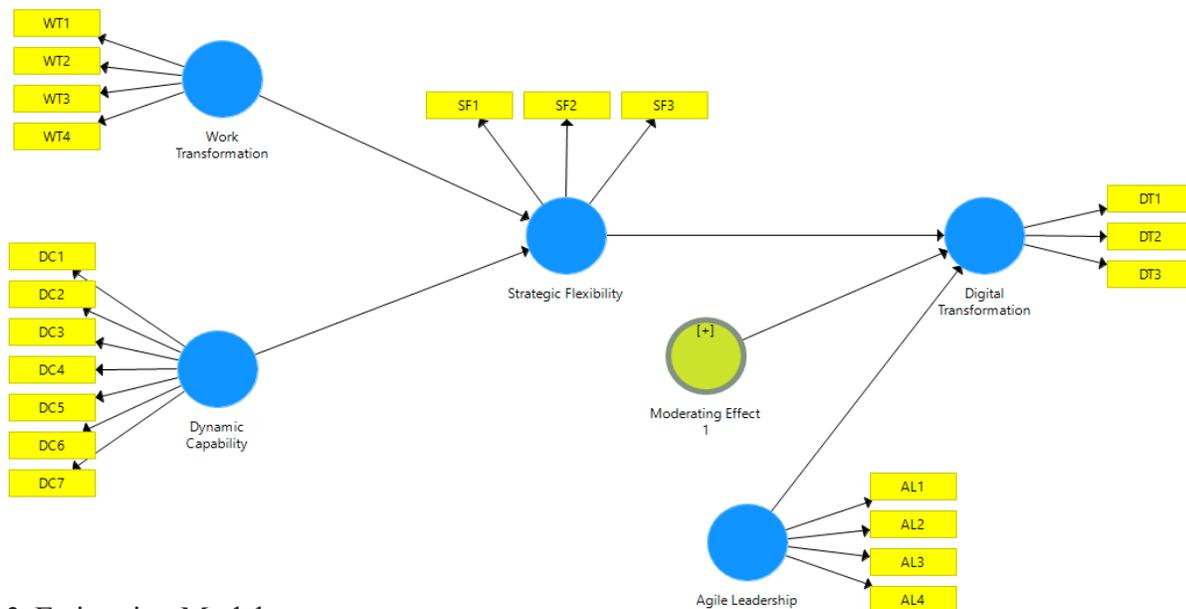


Figure 2. Estimation Model

alpha and composite reliability); convergent validity (indicator reliability and AVE); and discriminant validity (Fornell-Larcker, 1981, Cross Loading, and HTMT). The test results of the measurement model of Figure 3 and Table 3

shows that the model is valid and reliable.

The evaluation result of PLS models Algorithm run 1, the outer loading are more than 0.70, showing that all indicators of all variable are valid, then there is no indicators

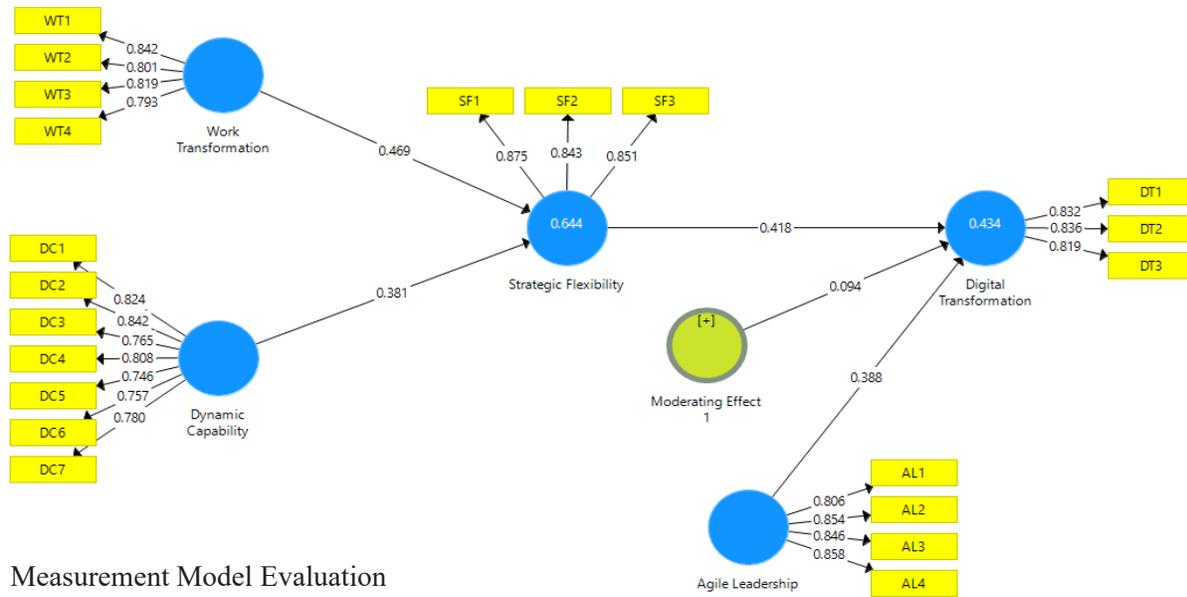


Figure 3. Measurement Model Evaluation

Table 3  
Measurement model evaluation

Latent Variable	Indicators (Appendix 1)	Convergent Validity		Internal Consistency Reliability		Discriminant Validity
		Loadings > 0.70	AVE > 0.50	Composite Reliability > 0.70	Cronbach Alpha > 0.70	
Workforce Transformation	WT1	0.842	0.663	0.887	0.831	Yes
	WT2	0.801				
	WT3	0.819				
	WT4	0.793				
Dynamic Capability	DC1	0.824	0.624	0.921	0.899	Yes
	DC2	0.843				
	DC3	0.765				
	DC4	0.808				
	DC5	0.746				
	DC6	0.757				
	DC7	0.780				
Strategic Flexibility	SF1	0.875	0.734	0.892	0.818	Yes
	SF2	0.843				
	SF3	0.851				
Agile Leadership	AL1	0.806	0.708	0.906	0.863	Yes
	AL2	0.854				
	AL3	0.846				
	AL4	0.858				
Digital Transformation	DT1	0.832	0.687	0.868	0.774	Yes
	DT2	0.836				
	DT3	0.819				
Moderating Effect	AL*SF→DT	1.706	0.734	1.000	1.000	Yes

Source: SmartPLS Output

that needs to be eliminated.

Reliability indicator shows the value of all indicator-loading factor of more than 0.70 and AVE values above 0.50. Internal consistency reliability demonstrates the value of Cronbach alpha and composite reliability of more than 0.70. To test the discriminant validity, Fornell-Larcker 1981 researchers used a matrix and HTMT (heterotrait-monotrait ratio of correlations) as suggested by (Henseler et al., 2016). In Fornell-Larcker 1981 matrix (Table 4), the value of the square root of AVE (diagonal) greater than all the values,

and the value of HTMT (Table 3) is less than one. Hence, it can be concluded that the discriminant validity of the measurement models was confirmed.

In order to assess discriminated validity, Fornell & Larcer (1981) stated that the square root of the AVE of a latent variable should be higher than the correlations among the rest of the latent variables. Table 4 shows, discriminat-ed validity holds for the model, as the square root of the AVE for each construct shows higher than the correlations among the variable construct.

Table 4  
Fornell-Larcker criterion

	Agile Leadership	Digital Transformation	Dynamic Capability	Moderating Effect (Agile Leadership Moderates Strategic Flexibility on Digital Transformation)	Strategic Flexibility	Work Transformation
Agile Leadership	<b>0.841</b>					
Digital Transformation	0.567	<b>0.829</b>				
Dynamic Capability	0.580	0.549	<b>0.790</b>			
Moderating Effect (Agile Leadership Moderates Strategic Flexibility on Digital Transformation)	-0.433	-0.184	-0.342	<b>1.000</b>		
Strategic Flexibility	0.595	0.582	0.747	-0.420	<b>0.856</b>	
Workforce Transformation	0.673	0.550	0.781	-0.356	0.766	<b>0.814</b>

Source: SmartPLS Output

**Structural Model**

**Coefficient of Determination**

The coefficient of determination (Table 5) is used to measure the ability of exogenous constructs in explaining endogenous variable. The expected R<sup>2</sup> value criteria are between zero and one. The result of R<sup>2</sup> value of all endoge-

nous variables shows ability in predicting the model. The value of R<sup>2</sup> 0.75, 0.50 and 0.25 (Hair et al., 2017) show that the ability of endogenous variables in predicting models is (strong, moderate, and weak).

It can be concluded that endogenous variables of strategic flexibility and digital transformation have moderate abilities (0.434 and 0.644) in predicting models. It can be

Table 5  
Coefficient of determination

Endogenous Variable	R <sup>2</sup>	R <sup>2</sup> Adjusted
Strategic Flexibility	0.434	0.431
Digital Transformation	0.644	0.643

Source: SmartPLS output

said that exogenous variables (workforce transformation, dynamic capability) are able to predict (43.4%) endogenous variables of strategic flexibility, while the rest is influenced by other variables outside of this research. Exogenous variables of agile leadership and strategic flexibility are also able to predict (64.4%) endogenous variables of digital transformation, while the remainder is influenced by other variables outside this research.

Figure 4 shows the results of the structural model analysis, showing the path coefficients along their significance

levels. Path coefficient, *t*-value, and *p*-value for each hypothesis are shown in Table 6. Path coefficients describe the strength of relationship between constructs (latent variables). This evaluation is similar to that of the regression coefficients. Analogous to the indicator weight analysis, the use of bootstrapping techniques allows for accessing each coefficient’s significance (Tenenhaus et al., 2005).

H1 assesses a positive impact of workforce transformation on strategic flexibility. Diamantopoulos et al. (2005) categorized path coefficients that are under 0.30 as the causing moderate (effects), from 0.30 to 0.60 as strong, and up to 0.60 as very strong. Consequently, workforce transformation establishes a strong, positive, significant effect on strategic flexibility (path coefficient = 0.469; *t*-value > 1.96; *p*-value < 0.001. If the company often transform their workforce, it will give the better chance to have strategic flexibility. The other result also arises dynamic capability, which has a strong, positive and significant effect on strategic flex-

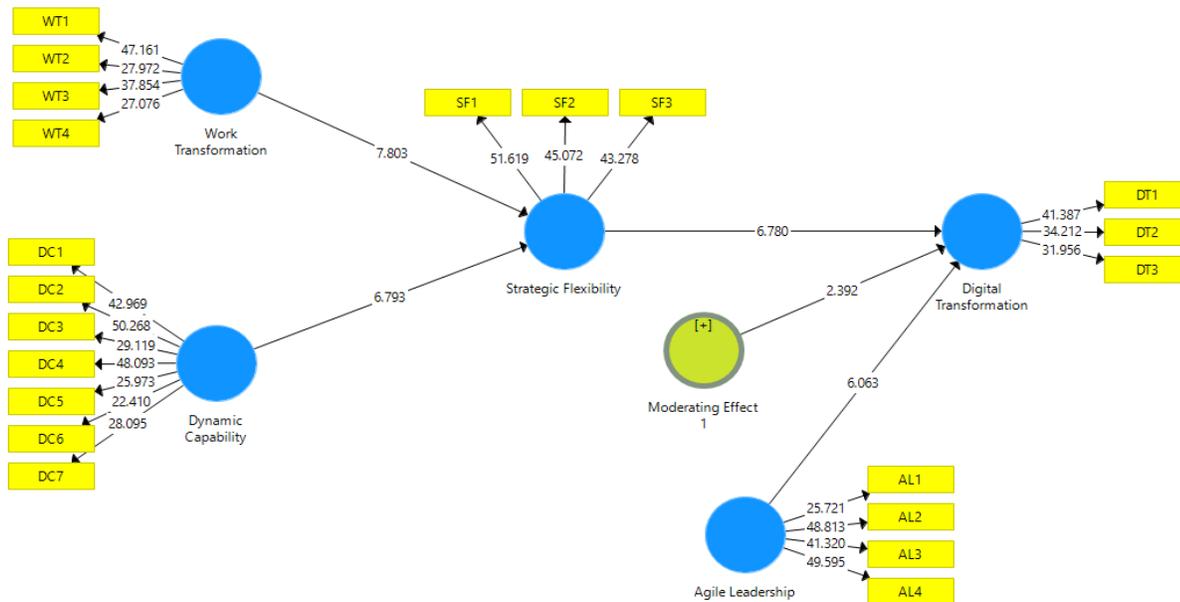


Figure 4. Structural Model Evaluation

Table 6  
Path coefficient and effect size

	Path Coef	<i>t</i> -value	<i>p</i> -value	f <sup>2</sup>	Hypotheses
Work Transformation → Strategic Flexibility	0.469	7.803	0.000	0.241	Supported
Dynamic Capability → Strategic Flexibility	0.381	6.793	0.000	0.195	Supported
Strategic Flexibility → Digital Transformation	0.418	6.780	0.000	0.189	Supported
Agile Leadership Moderates Strategic Flexibility → Digital Transformation	0.094	2.392	0.017	0.035	Supported

Source: SmartPLS Output

ibility (path coefficient = 0.381;  $t$ -value > 1.96;  $\rho$ -value < 0.001). Therefore, H2 also confirm empirical support from the data. The result of H3 also confirm empirical support from the data. Strategic flexibility has a positive and significant relationship on digital transformation (path coefficient = 0.418;  $t$ -value > 1.96;  $\rho$ -value < 0.001). In conclusion, strategic flexibility demonstrates a strong, positive, and significant impact on digital transformation. Finally, the results of H4 also confirm the moderated effect of agile leadership between strategic flexibility and digital transformation. The moderating effect shows the interaction between exogenous variables (predictor) and moderator variables in influencing endogenous variables (Baron & Kenny, 1986; Henseler & Fassott, 2010). Agile leadership as moderator variable of interaction between strategic flexibility on digital transformation shows (path coefficient = 0.094;  $t$ -value > 1.96;  $\rho$ -value < 0.001). This result show that agile leadership has a mod-

erate, positive and significant moderation effect on the interaction between strategic flexibility to increase digital transformation. Effect size of  $f$ -square indicates that exogenous latent variables have a large influence (effect degree/ effect size) on endogenous variables, with criteria (0.02 = weak/ low, 0.15 = moderate, and 0.35 = strong/high) ((Baron & Kenny, 1986). The  $f^2$  value in Table 6 illustrates the effect of workforce transformation, dynamic capability and strategic flexibility have moderate effect on digital transformation (0.241, 0.195, and 0.189). Figure 5 illustrated the graph of the moderating effect. These results represents effect of strategic flexibility on digital transformation under high and low levels of agile leadership, respectively.

In the context of moderation effect,  $f^2$  indicates what degree the moderation variable contribute to the explanation of the endogenous variable. The  $f^2$  value suggested by Hair et al. (2017) from the  $f^2$  classification is 0.005, 0.010,

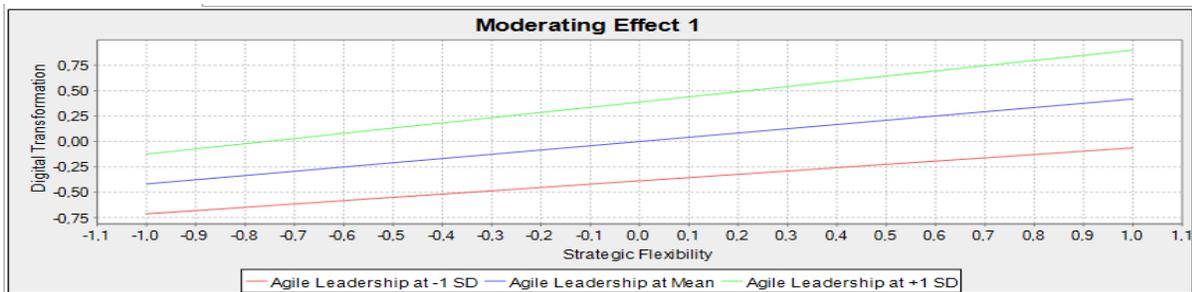


Figure 5. Graph of the Moderating Effect

and 0.025 constitute more realistic standards for low, moderate, and high effect sizes, respectively. Table 6 explains that agile leadership as a moderating variable in the interaction between strategic flexibility and digital transformation, provides a high degree of moderation effect with a value of  $f^2$  0.035.

**Predictive Relevance ( $Q^2$ )**

Cross-validated redundancy ( $Q^2$ ) is a method used to test predictive relevance. If the  $Q^2$  value is higher than zero then the model has an accurate predictive relevance to a construct (Figure 6).

The previous cross-validation test hypotheses commu-

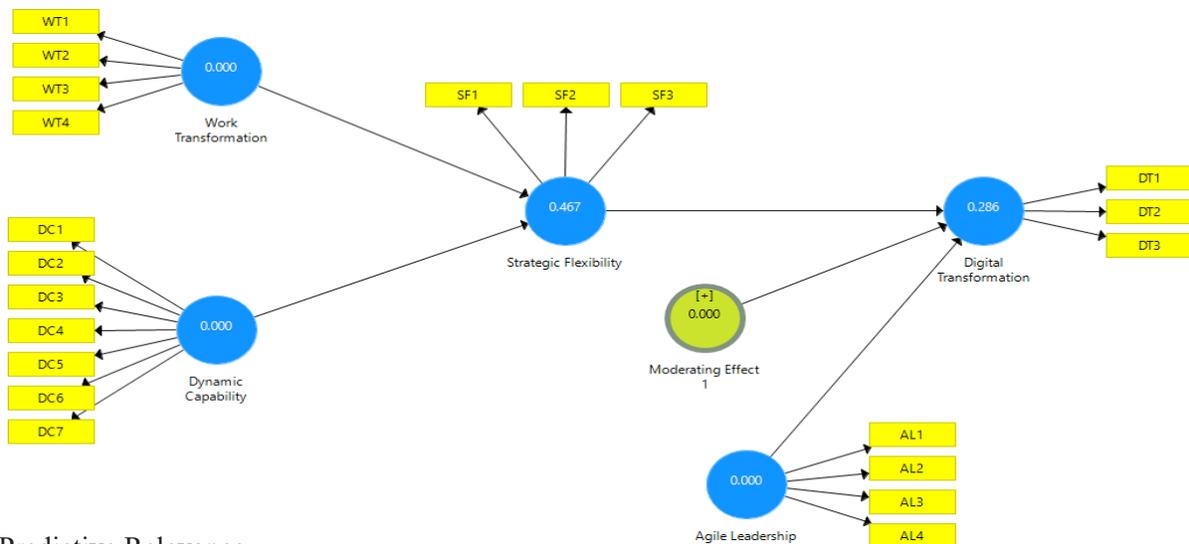


Figure 6. Predictive Relevance

nality and redundancy indices estimate the quality of the structural model. It means that the cross-validation (CV) communality global ensures that the quality of the structural model fit the indices are positive for all the blocks, considering the measurement models as a whole. In addition, a metric to evaluate the quality of each structural equation is offered by CV redundancy index. This index should be positive for all endogenous constructs (Tenenhaus et al., 2005). This study provides the models of equal and suitable predictive validity since all the latent variables have values for cross-validation (CV) redundancy and commonality. Table 7 and Figure 6 shows the value of the Q-square all dependent variables more than 0.

After analysing the quality of the structural equation, the next step is to examine the relationship among all constructs. According to Chin (1998), bootstrapping (500 subsamples) generates standard errors and t values. Figure 7 shows the results of structural model analysis and the path coefficients along with their significance levels. Path coeffi-

cient and t value (sign) for each hypothesis shown in Table 6.

Table 7  
Predictive relevance

Variable	CV Commu- nality	CV Redun- dancy
Agile Leadership	0.503	
Digital Transformation	0.365	0.286
Dynamic Capability	0.496	
Moderating Effect 1 Agile Leadership*S- strategic Flexibility→ Digital Transformation	1.000	
Strategic Flexibility	0.448	0.467
Work Transformation	0.433	

Source: Output of SmartPLS

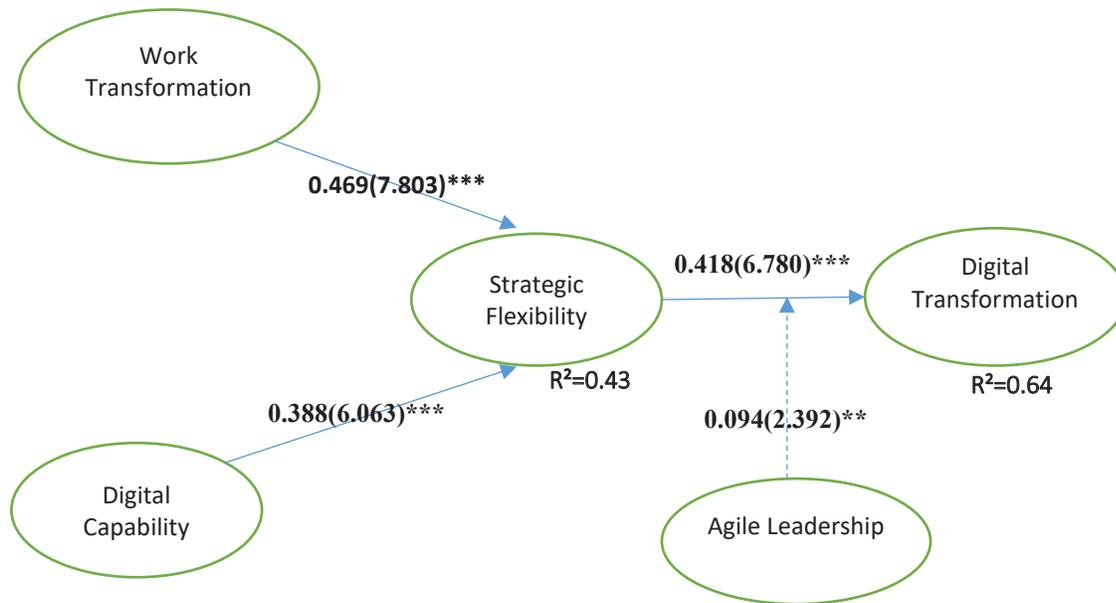


Figure 7. results of the structural model  
\*\* $\rho < 0.05$ ; \*\*\*  $\rho < 0.001$

### Discussion

#### Workforce Transformation and Strategic Flexibility

Workforce transformation establishes a strong, positive, significant effect on strategic flexibility (path coefficient = 0.469;  $t$ -value > 1.96;  $\rho$ -value < 0.001). If the company often transform their workforce, it will give the better chance to have strategic flexibility. The result ensure that the existence of this kind of transformation – combining features of knowledge, skill and attitude of workforce – is

antecedent to the strategic flexibility. This shows that the higher the level of ability to work transformation of SMEs (workers), has an effect on increasing the ability of SMEs to design strategic flexibility. The results of this study are in line with (Uimonen, 2016) which shows the ability of workforce transformation in the digital era influence strategy design. The results of the research showed that workforce transformation improves strategic flexibility. These initiatives mainly regard workforce as the main component in technology change (Ghobakhloo et al., 2012).

In this case, a strong workforce transformation lim-

its the company to start the digital transformation through substantial investment and development initiatives in order to change the workforce mindset and behavior. This type of transformation leads the employees to believe that technology disruption along with support from organization are basic for organizational transformation (Cha et al., 2015).

### Dynamic Capability and Strategic Flexibility

H2 also admits empirical support from the data. Dynamic capability, has a strong, positive and significant effect on strategic flexibility (path coefficient = 0.381;  $t$ -value > 1.96;  $\rho$ -value < 0.001). Dynamic capability features such as sensing capability, adaptive capability, innovative, networking, learning and integration between those capabilities also contribute to the development of strategic flexibility. Therefore, a greater tendency of firms focused on workforce transformation and dynamic capability for organizational functioning and performance are likely to consider efforts devoted to development and support of the strategic capability by strategic sensitivity, leadership unity, and resources fluidity. SMEs owner and their leader need to build strong, dynamic capabilities to quickly create, implement and change business models to stay relevant in the emerging digital economy (Teece, 2018; Teece & Linden, 2017; Velu, 2017).

### Strategic Flexibility and Digital Transformation

Strategic flexibility has a positive and significant relationship on digital transformation (path coefficient = 0.418;  $t$ -value > 1.96;  $\rho$ -value < 0.001). The result of H3 also admits empirical support from the data. Strategic flexibility demonstrates a strong, positive, and significant impact on digital transformation. A combination between strategic plan, leadership on strategy and resources of business revolution practices give positive relationships with digital transformation. Traditionally, this research demonstrates that strategic flexibility has a relation with digital transformation (Celuch & Murphy, 2010) as new or existing combined leadership of strategy plan and implementation can contribute to either innovation or transformation (Schneider & Spieth, 2014).

### The Moderating Role of Agile Leadership

Agile leadership as moderator variable of interaction between strategic flexibility on digital transformation shows (path coefficient = 0.094;  $t$ -value > 1.96;  $\rho$ -value < 0.001). This result show that agile leadership has a moderate, positive and significant moderation effect on the inter-

action between strategic flexibility to increase digital transformation. Finally, H4 also confirms the moderated effect of agile leadership between strategic flexibility and digital transformation. The result of  $f^2$  0.035 represents that agile leadership is able to provide a high degree moderating effect of the interaction between strategic flexibility and digital transformation. Agile leadership moderates the relationship between strategic flexibility and digital transformation. As the hypotheses proposed, when a company has a greater tendency toward digital transformation, this company develops and supports a larger volume of flexibility to plan and implement a strategy, which then gives a positive impact to its digital transformation.

The results show that agile leadership acts as a moderator in aligning the implementation of strategic flexibility and quickly articulating and designing a strategy in the logic of the business world, (Sanatigar et al., 2017). This supports the study by Li 2018 and Steude 2017 that leadership helps improve the ability to adapt infrastructure and process of digital information systems, to deal with uncertainty and radical change in the business world.

### Conclusion and Implications

Research on the best way to plan and implement organizational factors to produce digital transformation is growing, owing to this question's theoretical importance and practical relevance for firms. Among these factors, strategic flexibility and agile leadership define a way to establish a clear direction for firms to resolve organizational tasks due to digital transformation (Callaway et al., 2009; Doz & Kosonen, 2010). This study shows that in digital era, work transformation and dynamic capability should also be established in order to create the conditions for adequate management of digital transformation (Li et al., 2018).

Furthermore, this research demonstrates the role of agile leadership as a moderating variable towards the enhancement of digital transformation in their business environment. This can be achieved through a leader who is a visionary and thinks strategically in making decisions. In addition, a leader also needs to have initiative and awareness in implementing modern scientific methods because of the rapid and uncertain environmental changes. In the end, the company will be able to achieve higher agility. Work transformation has a positive and significant impact on strategic flexibility. Dynamic capability has a positive and significant impact on strategic flexibility. Furthermore, strategic flexibility positively and significantly affect the ability of digital transformation. The findings illustrate that most SME actors already have agile leadership, strategy flexibility, workforce transformation and dynamic capability in

running their business. So that, it is expected that digital transformation will be faster.

This flexibility combines the different elements of strategic sensitivity, leadership capabilities and resource fluidity that encourage digital transformation. This is because the environmental change will bring a sensitivity on strategic evaluation. The main point of this finding is that SMEs should have capability to combine the practices of strategic flexibility and agile leadership in order to implement digital transformation. SMEs should have the capability to flexibly change the stress on these elements in accordance with the situation demands (Klein et al., 2017). Therefore, developing an environment that encourages the use of strategic flexibility and agile leadership is an essential condition for managers to strengthen digital transformation.

An additional contribution of this paper is to investigate the relationship theories among workforce transformation, dynamic capability, strategic flexibility, agile leadership and digital transformation through an extensive literature review, and to anticipate some effects among these constructs. Indeed, it calls for additional research on how strategic flexibility and agile leadership can influence digital transformation processes.

In conclusion, this paper shows the effect of agile leadership and strategic flexibility in digital transformation practices. The empirical evidence has important implications for managers and marks the effects of moderating progress related with leadership factors in the relationship between strategic flexibility and digital transformation. However, this research has the following aspects of limitations. First, research design of this study is cross-sectional, and the research design is incapable of ensuring that the causal relationships set out in the hypotheses; even the results are consistent with theoretical reasoning. Further, researchers could solve this issue by applying a longitudinal design. Second, this study analyses strategic flexibility in the sense of strategy changes, leadership unity and resources fluidity. In addition, agile leadership is analysed through leader capabilities in sharing responsibility, recognizing problem and decisions making, adaptive system and flexible structure. Nevertheless, approaches that are more specific may be needed to take full advantage of those two processes in order to obtain distinct results when companies find themselves in different contexts (e.g., environment and time stage) (Rosing et al., 2011). Hence, when SMEs require creativity and experiment to face the rapid change scenario, a strategic flexibility and agile leadership may need other measurements. In this regard, future studies could try to analyse another type of strategic flexibility and agile leadership with different environmental or temporal settings. Third, self-report data is used by this study. It may

suffer from the effects of general method variance. Future research could be useful from independently achieving and using objective measures of digital transformation. Fourth, the t test is to verify that non-response bias is applied in this study. Even though the higher response rate is 96.28 - only in Semarang - Central Java Indonesia and Terengganu, Malaysia, it is not enough to describe the overall condition of Indonesian and Malaysian SMEs. Sampling is needed for SMEs in several regions of Indonesia and Malaysia more broadly. Future research could focus on a wider range of SMEs in order to validate the results and increase the sample size of the study. Fifth, respondents in the study were limited to SMEs in the Southeast Asian region, potentially limiting understating of workforce culture and leadership. Therefore, different work and cultural dynamics in the context of workforce and leadership of several SMEs outside the Asia region can be targeted by future research in order to validate the results for a wider impact to increase SMEs digital transformation.

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## Appendix

### Items of Measures

- 1. Workforce Transformation** (adapted and developed from Stevens, 2018 and Shaugnessy, 2018)
  - 1) My company always improves the skills of the workforce needed in accordance with the changing environment.
  - 2) My company adopts new social values of the community to the workplace.
  - 3) My company has regulations that are flexible and easily adapt to the conditions of the business environment.
  - 4) My company's human resources are always faster and more adaptive in responding to changes in digital technology.
- 2. Dynamic Capability** (adapted and developed from Bamel & Bamel, 2018; Schilke et al., 2018; Gnizy et al., 2014)
  - 1) My company is able to feel the changes in the business environment periodically so that the products or services we provide are as expected by customers.
  - 2) My company is able to adjust to changes in the business environment.
  - 3) My company able to create innovation with changes in the business environment.
  - 4) My company is able to form a network with changes in the business environment.
- 3. Strategic Flexibility** (adapted and developed from Warner & Wäger, 2019)
  - 1) My company has a strategic sensitivity facing the dynamics of the business environment.
  - 2) My company has a core team that is reliable at making bold and fast decisions, without getting caught up in the top-level "win-lose" politics.
  - 3) My company has an internal ability to modify resources quickly.
- 4. Agile Leadership** ( adapted and developed from Perker et al., 2015)
  - 1) I always share responsibilities with members of my company.
  - 2) I have the ability to recognize problems to make decisions.
  - 3) I always ready to face all challenges in the changing business environment.
- 5. Digital Transformation** ( adapted and developed from Warner & Wäger, 2018)
  - 1) My company emphasizes the use of digital technology in its business activities.
  - 2) My company summarizes some of its business processes because it switches to the use of digital technology.
  - 3) The company increases the mastery of digital technology in its business processes.