Entrepreneurial orientation, knowledge management, dynamic capabilities towards e-commerce adoption of SMEs in Indonesia

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Abstract

Purpose – The purpose of this study is to examine the dimensions of entrepreneurial orientation (EO), knowledge management process (KMP) and dynamic capability (DC) toward the adoption of electronic commerce (e-commerce) of small and medium enterprises (SMEs) in North Sumatera.

Design/methodology/approach – This study used a quantitative methodology using Smart PLS of structural equation model. A survey is done by distributing the questionnaires to the respondents (owner-managers) of SMEs across sectors. Using a convenient sampling technique, 131 respondents were selected. Using a cross-sectional survey design, 11 hypotheses were tested.

Findings – It is found that both innovativeness and proactiveness of EO have a significant relationship with e-commerce adoption (EA), while the risk-taking of EO is found as insignificant. Both risk-taking and proactiveness of EO are significantly related to KMP, but innovation of EO is found to be insignificant. Moreover, KMP significantly mediates the relationship between risk-taking and proactiveness of EO and EA, while KMP insignificantly mediates the relationship between innovativeness of EO and EA. Finally, it is found that DC has a significant relationship in EA.

Originality/value – By using the resource based-theory, the study on the decision of EA by SMEs is conducted which focuses on a number of internal and external factors influencing the adoption decision. This differs from other studies using theories of the technological, organizational and environmental, theory of acceptance and use of technology, theory of planned behavior, theory of reasoned action and others which emphasized on the implementation and usage of EA.

Keywords E-commerce adoption, Entrepreneurial orientation, Knowledge management process, Dynamic capability, SMEs, Indonesia

Paper type Research paper

Abbreviation

SME = small and medium enterprise;
TPB = theory of planned behavior;
TRA = theory of reasoned action;
TAM = technology acceptance model;
UTAUT = theory of acceptance and use of technology;

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RBT = resources-based theory;
GDP = gross domestic product; and
TOE = technological, organizational and environmental.

1. Introduction

In today's business environment, many companies are seeking to be competitive through the adoption of information technology (IT) (Martínez-Caro and Gabriel Cegarra-Navarro, 2010); this includes various countries that have been transformed into IT-enabled services (Chatterjee and Kar, 2018). With the emergence of the internet, e-business/electronic commerce (e-commerce) is now a crucial tool for companies, in helping the business operations to be more efficient and in gaining competitive advantages. Almost every company has their own email and other social networks via internet connections (Pieter van Donk, 2008).

E-commerce for small and medium enterprises (SMEs) has increasingly become an important platform and plays a unique role by providing transactions without physical presence or expand its geographical reach, respond competitive pressure and lower the operational costs (Martin and Matlay, 2003; Beck *et al.*, 2005; Wymer and Regan, 2005). Customers now can purchase the products at home or office, installing major changes in business orientations. All information on the products' details is disseminated and can be traced through computer monitors. However, although the growth of adoption of e-commerce is increasing, there are some issues why some SMEs are reluctant to adopt the e-commerce (Fomin *et al.*, 2005; Pratt, 2002). An example is in the USA, only 40% of SMEs sell their products and services on the internet (Weiss, 2004). This indicates that not all firms have an established or well-presented website, while the owner-managers have other difficulties in running the business (Abebe, 2014).

Meanwhile in Indonesia, the number of users of e-commerce is tremendously increasing which is estimated to contribute to the economic growth with a market value approximately US$150bn (Das *et al.*, 2016). Countries with a rapid pace of technology advancement will reap economic benefits in the long run (Lestari, 2019), while Indonesian internet users are among the world's most active users; despite the weak ICT infrastructure and low internet penetration, somehow, these users are tech savvy (Das *et al.*, 2016). Moreover, SMEs in developing countries face challenges which are entirely different from those in developed countries and differs greatly in adopting and benefiting from e-commerce (Tan *et al.*, 2007) because the subject of e-commerce adoption (EA) for SMEs only gained attention in the academic institutions. Likewise, studies associated with EA still become a threat rather than opportunity when applied to SMEs in the developing countries.

SMEs in North Sumatera are actively involved in e-commerce. This province is among the largest provinces in Indonesia with its capital of province; Medan city is the third largest city in Indonesia with a population of 14 million people. This province has huge economical potential including its SMEs' contribution to gross domestic product (GDP) (the fifth highest in Indonesia) with a total of 2,288,303 units of SMEs. Meanwhile, with regards the data on adoption of e-commerce, based on a report of McKinsey Global Institute Report (2018), it is mentioned that one-third of the total number of SMEs in Indonesia or 36% are still adopting offline dealings and 37% have the ability to use basic online computers and accesses. Then, 18% of the SMEs have the ability of using medium online platforms such as web and social media, while 9% of them are able to do e-commerce. In fact, the income growth will be increased between 23% and 80% when they adopt the e-commerce in their businesses.

There are a number of barriers and potentials that had been explored extensively of EA by SMEs (Jahanshahi *et al.*, 2013; Savrul *et al.*, 2014; Ghobakhloo and Tang, 2013;

Johnston *et al.*, 2007; Martin and Matlay, 2003; Wymer and Regan, 2005; Grandon and Pearson, 2004a, 2004b; Bianchi and Bivona, 2002; Webb, 2002). Among others, a study by Jahanshahi *et al.* (2013) found the primary barriers faced by SMEs in three developing countries (Iran, Malaysia and India) when adopting e-commerce such as security and privacy issues; lack of knowledge and understanding about e-commerce; and high maintenance costs, while Cragg *et al.* (2011) found low organizational readiness as an antecedent to EA among SMEs in Portugal. Besides that, drawbacks must be considered including unsolicited e-mail, high user service costs and a lack of protection and privacy (Lee, 2001; Watson *et al.*, 1998; Zhang and von Dran, 2001). Other factors also had been explored (Wymer and Regan, 2005; Houghton and Winklhofer, 2004; Matlay, 2004) but did not include factors such as entrepreneurial orientation (EO), knowledge management (KM) and dynamic learning as proposed in this study.

A popular theory of EA is technological, organizational and environmental (TOE) (Zhu and Kraemer, 2005; Ghobakhloo *et al.*, 2011; Awa *et al.*, 2015; Kraemer *et al.*, 2006; Tornatzky *et al.*, 1990) beside few other theories such as the theory of planned behavior (TPB) (Ajzen, 1991), the technology acceptance model (TAM) (Davis, 1989), the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), the diffusion of technology theory (Rogers, 1995), the unified theory of acceptance and use of technology (UTAUT) (Venkatesh *et al.*, 2003; Anderson and Schwager, 2003), actor-network theory (Tatnall and Burgess, 2004) and contingency theory. Some of these focus on either individual or organizational level of adoption.

This study is not using particularly TOE theory because it does not include other steps of EA such as implementation and usage (Intan Salwani *et al.*, 2009; Zhu *et al.*, 2003; Zhu, 2004; Awa *et al.*, 2015), which are ideal examinations related to e-commerce. Moreover, some research in EA has examined a number of internal and external factors influencing the adoption decision in SMEs (Grandon and Pearson, 2004a, 2004b; Sutanonpaiboon and Pearson, 2006; Loane, 2006; Saffu *et al.*, 2008). Therefore, this study is justified to use the resource-based theory (RBT) by using internal resources to assess any decision to achieve better performance, in this case a good decision to adopt e-commerce. The resources include EO, KM and dynamic capability (DC) that are believed to be key elements to influence the decision to adopt e-commerce, which then expectedly will gain better performance.

This study aims to examine empirically the relationship between EO, KM and DCs toward EA; then the study investigates the effect of mediating variable of KM on the relationship between EO and EA using cross-sectional data collected from the SMEs across the various sectors in North Sumatera, Indonesia. The EO of this study tested the three dimensions of it, to verify KM and EA which would be different than other studies. Moreover, the results of this study can be used as a reference that could give a new insight for the practitioners, policymakers, academicians and owner-managers on the importance of EO, KM and DCs which are considered as the major factors for EA by SMEs.

2. Literature review

2.1 Electronic commerce adoption

E-commerce refers to the activities of purchasing and selling products or services through computer networks of internet connections (Turban *et al.*, 2010; Kalakota and Whinston, 1997) which nowadays are extended to a social media network via its mobility features (Shemi and Procter, 2018). For the SMEs, e-commerce is a fundamental strategy to be used to enter global markets (Marcelo *et al.*, 2014); however, its advantage is limited to the majority of companies (Alyoubi, 2015; Savrul *et al.*, 2014). Meanwhile, every SME could have more efficiency in production and logistics, as the movement of goods is delivered without any

physical transactions (Santarelli and D'Altri, 2003; Lohrke *et al.*, 2006), improved convenience for end-users, enhanced business process flow and increased flexibility in dealing with suppliers (Afshar Jahanshahi *et al.*, 2011; Fenech and O'Cass, 2001; Khatibi *et al.*, 2003; Magutu *et al.*, 2011). There are studies which considered the benefits and rewards of EA in SMEs (Stockdale and Standing, 2004; Raymond *et al.*, 2005).

Moreover, the adoption of e-commerce is to develop and achieve the organizational goals for short- and long-term benefit or in other words to achieve highly competitive advantages and growth opportunities. Since the development of SMEs is increasing, thus the scope of exploiting potentials through adoption of e-commerce is widely open, while at the same time they could expand to the unlimited connections. The role of the owner managers in any EA among SMEs has been described as the significant determinant of EA decisions (Ghobakhloo and Tang, 2013) besides other factors such as the knowledge of owners/managers and the readiness of trading partners to adopt e-commerce systems such as infrastructure, network and online transactions (Savrul *et al.*, 2014).

According to Al-Bakri and Katsioloudes (2015), the e-commerce system consists of two parts; *the first* is covering the promotion and advertisement of products/services and the electronic delivery of goods. This includes business intelligence functions which involves attracting potential clients both domestic and abroad and gathering competitor or market intelligence (Quelch and Klein, 1996; Bianchi and Bivona, 2002; Houghton and Winklhofer, 2004). *The second* is a much more advanced level of managerial role that is covering local and global payment and delivery. This includes maintaining and developing relationships with clients, channel partner, suppliers and network partners (Coltman *et al.*, 2001; Loane, 2006; Auger, 2005).

Although SMEs using e-commerce are still lagging behind the larger firms (Rahayu and Day, 2017), e-commerce is dedicated to create employment and fostering regional growth and innovation (Jones and Beynon, 2011), thereby having a positive effect on the economic status of their countries (Shemi and Procter, 2018; Ghobakhloo *et al.*, 2011). Moreover, the adoption of e-commerce by SMEs enables them to pursue a global strategy to target a broader customer base (Mehta and Shah, 2001; Moodley, 2003; Beck *et al.*, 2005), address environmental and competitive pressures in their industries (Wymer and Regan, 2005; Grandon and Pearson, 2004a, 2004b) and take advantage of significant cost savings associated with implementing such a technology (Raymond *et al.*, 2005; Riemenschneider *et al.*, 2003; Santarelli and D'Altri, 2003).

There are studies on EA in SMEs that focus on factors that influence the adoption and non-adoption decision (Riemenschneider *et al.*, 2003; Grandon and Pearson, 2004a, 2004b; Matlay, 2004; Fomin *et al.*, 2005; Wymer and Regan, 2005). For example, a study by Grandon and Pearson (2004a) found that organizational readiness, external pressure and perceived ease of use significantly affect EA. Other studies summarized EA based on the technological dimensions (Kurnia *et al.*, 2015), neglecting other relevant factors such as EO, KM and DC.

2.2 Entrepreneurial orientation

As been developed by Miller (1983) and later redefined by Covin and Slevin (1989), EO popularly consists of risk-taking, innovativeness and proactiveness components that can be used as antecedent in finding and exploiting new opportunities such as e-commerce.

EO is a strategic initiative of an organization and relates to basic policies and practices for the development of entrepreneurial actions that help attain competitive advantage (Martens *et al.*, 2018). Conceptually, EO is used by the firms toward entrepreneurship development that will help to find new opportunities and allow to take optimal level of benefits from it (Anderson *et al.*, 2015). There are three dimensions of EO; proactiveness,

risk-taking and innovativeness (Covin and Slevin, 1991; Zahra, 1991; Jiang *et al.*, 2019). Innovativeness refers to the willingness to encourage innovation and experimentation in the introduction of new products or services and novelty, technological leadership and R&D in the development of new processes (Lumpkin and Dess, 2001; Kamal *et al.*, 2016); risk-taking refers to entrepreneurs' willingness to engage in measured business-related risks (Brockhaus, 1980; Kreiser *et al.*, 2002); finally, proactiveness refers to the forward-looking and opportunity-seeking perspectives involving new products or services ahead of the market and acting in the anticipation of potential demand to generate change and shape the environment (Lumpkin and Dess, 2001).

Managers of SMEs that have high EO generally tend to explore new processes and technology for creating products/services to their customers (Lumpkin and Dess, 1996; Avlonitis and Salavou, 2007). Abebe (2014) mentioned that entrepreneurially oriented small business managers are more likely to take advantage of e-commerce technology than their counterparts because they are more inclined to take perceived "risks" in adopting new technology or processes. Gupta *et al.* (2016) asserted that SMEs' owner-managers became open-minded and already went further to be a risk-taker, innovative and proactive after taking steps to adopt e-commerce or new technologies (Gupta *et al.*, 2016). Accordingly, the following hypotheses are proposed:

H1a. Innovation of entrepreneurial orientation is related to electronic commerce adoption.

H1b. Risk-taking of entrepreneurial orientation is related to electronic commerce adoption.

H1c. Proactiveness of entrepreneurial orientation is related to electronic commerce adoption.

When understanding about the KM topic, it may relate to only KM, knowledge management process (KMP) and KM enablers. Ramadan *et al.* (2017) define KM as the management processes and activities that an organization practices to improve the effectiveness of generating, creating and sustaining organizational intellectual assets. KM enablers include factors like culture, leadership and intellectual capital that enable KM processes (Iqbal and Malik, 2019; Obeidat *et al.*, 2017). A recent study by Latif *et al.* (2020) considered two enablers of KM, namely, EO and knowledge-oriented leadership. On the other hand, KM processes include knowledge acquisition, application and sharing that foster sustainable competitive advantage (Lin and Lee, 2005; Torres *et al.*, 2018). For this study, it focuses on using the KMP that is assumed to be related to EO which is also one of the components of KM enablers.

One of the EO components is innovativeness that is useful to support new ideas and novelty, which is further able to increase the enhancement in developing new products or processes (Lumpkin and Dess, 1996; Li *et al.*, 2009; Kamal *et al.*, 2016). In other words, the development of new products and process needs extensive and intensive knowledge activities. The firms with EO tend to depend on employees' knowledge and skills as key inputs in the knowledge process (Lumpkin and Dess, 1996). This indicates that the firms with EO tend to focus attention and efforts toward KM.

EO is assessed as a predictor of a limited number of KM processes such as knowledge utilization (Wach *et al.*, 2018; Adam *et al.*, 2018a, 2018b), knowledge sharing (Hormiga *et al.*, 2017) and knowledge creation (Jiang *et al.*, 2019). There are studies that found a significant impact of EO on KM processes such as studies by Latif *et al.* (2020) and Gupta and Moesel (2007) which are in line with the findings of Stuetzer *et al.* (2018), who found that

management initiatives like experimentation and risk-taking, which are ingredients of EO, affect how knowledge is created and shared. In fact, an organization's system that encourages risk-taking and experimentation would support learning and dissemination of information (Mile, 2012). With these arguments, the proposed hypotheses are:

H2a. Innovation of entrepreneurial orientation is positively related to knowledge management process.

H2b. Risk-taking of entrepreneurial orientation is positively related to knowledge management process.

H2c. Proactiveness of entrepreneurial orientation is positively related to knowledge management process.

2.3 Knowledge management process

KM (knowledge acquisition and knowledge dissemination) in an organization significantly influences the electronic system in a business implementation (Yeh *et al.*, 2012). Theodosiou and Katsikea (2012) asserted that when the organization encourages the acquisition and distribution of knowledge, the intensity of electronic system adoption is greater, and Yee-Loong Chong *et al.* (2014) found that KM has a significant effect on the decision to adopt electronic systems by Malaysian SMEs. However, in some cases, the organizations are aware of KM and its benefits but the levels of implementation and awareness were not optimal (Siong Choy *et al.*, 2006; Pandey *et al.*, 2013), especially when no support or initiative is available from the government to emphasize on this matter.

KM is used to be a prominent concept and is an antecedent related to the innovation creation (Nonaka and Takeuchi, 1995; Darroch and McNaughton, 2002). Many organizations are initiating to launch KM to have dynamic effects among the members. Additionally, recent studies stressed that in a context of rapid technological innovation, firms consider organizational capabilities through knowledge accumulation, combination and dissemination (Grant, 1996). To have an efficient KMP, there are important components for new technology adoption such as knowledge acquisition, application and sharing (Lin and Lee, 2005). The goal of the KM processes is to make an organization aware of its knowledge at the individual and collective levels and utilize that knowledge to shape itself and make its business process efficient and effective (Azan *et al.*, 2017).

Lin and Lee (2005) defined the three components of KM process: knowledge acquisition refers to the business processes that use existing knowledge and capture new knowledge; knowledge application refers to the business processes through which effective storage and retrieval mechanisms enable a firm to access knowledge easily; and knowledge sharing refers to the business processes that distribute knowledge among all individuals participating in process activities. Many studies found the relationship between knowledge acquisition, knowledge application, knowledge sharing and e-commerce systems adoption (Drucker, 1993; Caloghirou *et al.*, 2004; Al-Emran *et al.*, 2018; Lee and Choi, 2003; Gilbert and Cordey-Hayes, 1996; Sveiby, 1997; Johannessen *et al.*, 1999; Yee-Loong Chong *et al.*, 2014). Accordingly, the following hypothesis is posited:

H3a. Knowledge management is related to electronic commerce adoption.

KMP expectedly could be a leverage point in organizations through EO toward a good decision of EA. There are studies that significantly found KMP as a mediating factor in the

relationship between EO and EA (Adam *et al.*, 2018a, 2018b; Madhoushi *et al.*, 2011); thus, the proposed hypotheses are:

H3b. The relationship of innovativeness (EO) and electronic commerce adoption is mediated by knowledge management process.

H3c. The relationship of risk-taking (EO) and electronic commerce adoption is mediated by knowledge management process.

H3d. The relationship of proactiveness (EO) and electronic commerce adoption is mediated by knowledge management process.

2.4 Dynamic capability

DCs refer to the higher-level competences that determine the firm's ability to identify new opportunities, integrate, build and reconfigure internal and external resources to address, and possibly shape, rapidly changing business environments (Teece, 2007, 2010; Teece *et al.*, 1990, 1997), used as vital for keeping competitive advantage of the firms (Wheeler, 2002) that can be used as another antecedent to the EA. In fact, DCs have grown in importance with the existence of e-commerce that leads to greater specialization and more rapid competitive responses.

DCs theory has been applied in the e-business field (Wu and Hisa, 2008). Rindova and Koha (2001) used the DCs to examine how the organizational form, function and competitive advantage of e-business dynamically coevolves, while Daniel and Wilson (2003) revealed that DCs are necessary for such e-business transformation including e-commerce.

Moreover, DCs by virtue of a firm's people or material resources (Eisenhardt and Martin, 2000; Teece *et al.*, 1997; Zollo and Winter, 2002) are essential in implementing innovations in an effective and efficient process and more in updating, integrating and reconfiguring a firm's existing operational capabilities and resources (Helfat *et al.*, 2009; Helfat and Peteraf, 2003; Helfat and Winter, 2011), including in decision of adopting e-commerce. Specifically, innovation alone is insufficient for generating success without the DCs of a firm to purposefully create, extend or modify its resource base (Lin *et al.*, 2016; Cui and Pan, 2015).

Moreover, DCs are related to the resource-based view of the firm (Wernerfelt, 1984) that emphasizes on a collection of specific physical, human and organizational assets which aim to create competitive advantage (Prahalad and Hamel, 1990; Barney, 1991; Grant, 1996). Meanwhile, RBV has proved to be a useful paradigm with which to explore the information system domain (Jarvenpaa and Leidner, 1998; Pereira, 1999; Zhang and Lado, 2001), in this case e-commerce. Specifically, Duhan *et al.* (2001) and Caldeira and Ward (2003) mentioned that RBV is useful in examining IS use in the context of SMEs. Moreover, if the DCs are combined with a good strategy (Rumelt, 2011), they enable the enterprises to have potentials in positioning their products and targeting the right markets (Lin *et al.*, 2016) and enhancing entrepreneurial competences (Pitelis and Teece, 2009).

The DCs framework provides a sensible approach to analyze the e-commerce initiatives. Daniel and Wilson (2003) asserted that DCs are critical for businesses operating through e-business models. The DCs which are explored through innovative and integrative capabilities can be used or have an influence in the context of e-business transformation (Teece, 2007; Daniel and Wilson, 2003; Wu and Hisa, 2008; Rindova and Koha, 2001). It is believed that DC will enhance EA decision; thus, the proposed hypothesis is (Figure 1):

H4. Dynamic capability is related to electronic commerce adoption.

3. Methodology

This study used a quantitative methodology using SmartPLS of the structural equation model (SEM) which is a tool that uses a component-based estimate approach (Hwang and Takane, 2014). SmartPLS has gained popularity among academics, as it can analyze various types of data, is user-friendly, has advanced features and does not require many assumptions, such as normality and a large sample size (Wong, 2013; Yi and Hwang, 2003). An outer model analysis is applied to verify that the proposed construct is valid and reliable, which can be assessed by the following indicators: convergent validity, discriminant validity and uni-dimensionality. This paper uses cross-loading to examine the discriminant validity. The convergent validity is measured by using the average variance extracted (AVE). To examine the internal consistency, this study uses Cronbach's alpha and composite reliability. The inner model assessment is performed to ensure that the structural model is robust and appropriate. The evaluation of the inner model can be performed, one of them using goodness of fit index.

Using cross-sectional survey design, 11 hypotheses are tested. The six variables were selected on the basis of the literature review. A five-point Likert-type scale 1 (strongly disagree) to 5 (strongly agree) was used to measure the constructs of the used variables. A total of 23 items were constructed on the basis of extensive literature review to grasp the perception of participants (owner-managers) about the EO, DCs and EA which is mediated by KM of SMEs in North Sumatera, Indonesia. When referred to the SMEs' characteristics, the owner plays the role of the manager. Using a convenient sampling technique, there were 131 respondents who responded to the given questionnaires. This sampling technique is convenient and common for use, as there are various studies on SMEs using it such as Hossain *et al.* (2018), Newman and Sheikh (2014), Khalique *et al.* (2011), Aisyah *et al.* (2017), Masocha and Fatoki (2018), Lamptey *et al.* (2017), Lo and Ramayah (2011), Reynolds and Lancaster (2006), Sane (2019), Adel *et al.* (2020) and Mittal (2016). This type of technique is applicable when members of the target population meet certain practical criteria such as easy accessibility and availability at a given time (Dörnyei, 2007), which also referred to the researching subjects of the population that are easily accessible to the researcher (Given, 2008). A reason of easy accessibility was considered because of the uncontrolled or uncoordinated SMEs that are scattered in the province. Thus, 131 respondents are selected as the sample from SME's population of 86,608 (involved and used e-commerce in its business transactions and had a number of employees between 5 and 99 people SMEs) in North Sumatera. This data (number of population) is obtained from the Regional Office for Ministry of Cooperatives and SMEs in North Sumatera.

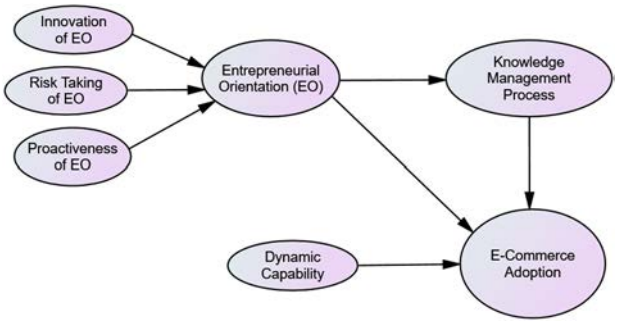

Figure 1.
Conceptual framework

Different authors have given different guidelines pertaining to the determination of sample size. Stevens (1996, p. 72) recommends that, for "a social science research, about 15 participants per predictor are needed for a reliable equation". Green (1991) and Tabachnick and Fidell (2007, p.123) suggested a formula for calculating sample size requirements, that is, $N > 50 + 8\ m$ (where m = number of independent variables). This study has five independent variables, so it needs at least 90 respondents. If one is to follow Steven's recommendation of 15 participants, then it, multiplied by 6 independent variables, equals to 90 participants. As a result, based on the three authors' recommendations, a selection of 131 Indonesian SMEs as the sample size would be acceptable for this research and attaining the rule of thumb criteria.

3.1 Instruments development and justifications

The measurement of the variables is based on the conceptual and theoretical framework operationalized in the studies. Although there are variety of range scales; five, six or seven points, Gwinner (2006) stated that five- and six-point Likert scales are prefered to do such market research. Most of the questionnaire items were extracted and adapted from selected authors as listed in Table 1.

4. Findings

4.1 Descriptive analysis

Below is the demographic profile of respondents:

As depicted in Table 2, a majority of 53.4% of respondents are male, and 46.6% are female. It is indicated that the owner-managers of SMEs in North Sumatera are still an area dominated by male. Meanwhile, a majority of 81% are owner-managers with age 31 to above 50 years old. Many of the owner-managers are aware of the effect and concern of the government and its agencies and the importance of education; that is why 51.9% of the respondents have attended undergraduate program and even some of them with 13% have attended postgraduate program. It is good to find out that the majority of 39.7% of the SMEs are from the retail sector. It is assumed that the likelihood of owner-managers to this sector are because of the low risk in selling its products comparatively, for example to the agricultural sector that represents only 13%. Finally, the majority of the 51.9% are the owner-managers with 6–10 years of experience in business which points out that they knew well the conditions of business environment.

4.2 Outer model evaluation (measurement model): validity and reliability tests

Convergent validity is a part of the measurement model which in SEM-PLS is usually called the outer model, while in covariance-based SEM, it is called confirmatory factor analysis (CFA) (Hair *et al.*, 2012). There are two criteria to assess whether the outer model meets the requirements of convergent validity for reflective constructs, namely:

(1) loading must be above 0.7; and

(2) significant p-value (< 0.05) (Hair *et al.*, 2012).

But in some cases, loading conditions that often go above 0.7 are often not met, especially for newly developed questionnaires. Therefore, loading between 0.40 and 0.70 must be considered to be maintained (Hair *et al.*, 2012).

Indicators which are loading below 0.40 must be removed from the model. But for indicators with loading between 0.40 and 0.70, we should analyze the impact of the decision to remove the indicator on average variance extracted (AVE) and composite reliability. We can delete the indicator by loading between 0.40 and 0.70 if the indicator can increase the

Table 1.
Instruments development and justifications

Variable	Statements	No. of item	Source
Innovativeness	1. The company regularly issues new products 2. There are expansions of products (tailor made) offered by the company	2	Covin and Slevin (1989), Lumpkin and Dess (1996); Vitale *et al.* (2003);
Risk-taking	1. Companies dare to face business risks 2. The product owned is a goal-oriented business 3. The existence of new products has the potential to have high risks	3	Keh *et al.* (2007); Knight (1997); Merlo and Auh (2009); Kreiser *et al.* (2002), Abebe (2014); Tuan (2017)
Proactiveness	1. The company is ready to expand into various areas and regions 2. The company is ready to develop new products and renewable technology 3. The company is ready to adopt something good to apply	3	
Knowledge management	1. We know the work that is being done 2. We have extensive knowledge on work activities in the company 3. We always know in detail about the work that must be done 4. We can be creative to find something new	4	Nam Nguyen and Mohamed (2011); Rasula *et al.* (2012), Gold *et al.* (2001); Cagarra-Navarro and Martinez-Conesa (2007); Egbu *et al.* (2005); Fahey *et al.* (2001); Lin and Lee (2005); Masa'deh *et al.* (2017)
Dynamic capability	1. We use mobile apps to adjust how we package or price our products 2. Through mobile apps usage, we identify sales opportunities 3. We network with people and advertise through mobile apps	3	Owoseni and Twinomurinzi (2018); Liao *et al.* (2009); Teece *et al.* (1997), Daniel and Wilson (2003)
E-commerce adoption	1. We have a website to sell products/ services 2. We have a website to receive and manage customers' orders 3. We have a website to receive electronic payment	3	Abdullah *et al.* (2018); Kalakota and Whinston (1997)

Respondents profile	Frequency	(%)
Industry Category		
Retail	52	39.7
Manufacturing	44	33.6
Agriculture	17	13
Services	18	13.7
Gender		
Male	70	53.4
Female	61	46.6
Age of owner-managers		
(21–30 years)	25	19.1
(31–40 years)	34	26
(41–50 years)	38	29
(Above 50 years)	34	26
Education level		
Primary level	23	17.6
Secondary diploma level	23	17.6
Undergraduate	68	51.9
Postgraduate	17	13
Age of business		
(0–5 years)	37	28.2
(6–10 years)	68	51.9
(11–15 years)	22	17.6
(16–20 year)	4	3.1
(Above 20 years)	–	–

Table 2.
Demographic data
($N = 131$)

AVE and composite reliability above the limit (threshold) (Hair *et al.*, 2012). The AVE cut-off value is 0.50 and composite reliability is 0.7. Another consideration in removing indicators is their impact on the content validity of the construct. Indicators with a small loading are sometimes retained because they have a contribution to the validity of the construct content (Hair *et al.*, 2012). Table 3 and Figure 2 present loading values for each indicator.

Based on the validity test of loading factors in Table 3, all loading values are more than 0.7, which means they met the validity requirements based on the loading value. Then the validity test of AVE all with values more than 0.5 are presented in Table 4, which means they met the validity requirements based on AVE.

Furthermore, reliability testing is based on composite reliability (CR) values which must be above 0.7 (Hair *et al.*, 2012). As depicted in Table 5, all CR values are more than 0.7, which means they met the reliability requirements based on CR.

Then the discriminant validity test is performed using the Fornell-Larcker approach as presented in Table 6. In this discriminant validity test, the AVE square root value of a latent variable is compared with the correlation value between the latent variable and other latent variables. It is known that the AVE square root value of each latent variable is greater than the correlation value between the latent variable and other latent variables. So it was concluded that it had fulfilled the discriminant validity requirements.

4.3 Significance test of direct effect

Table 7 presents the results of the path coefficient and significance test of direct effects.

Based on Table 7, the results obtained are:

	DC	E-CA	INNO (EO)	KMP	PRO (EO)	RT (EO)
DC1	0.894					
DC2	0.908					
DC3	0.919					
EC1		0.896				
EC2		0.910				
EC3		0.786				
INNO1			0.888			
INNO2			0.902			
KMP1				0.897		
KMP2				0.931		
KMP3				0.941		
KMP4				0.926		
PRO1					0.871	
PRO2					0.908	
PRO3					0.852	
RT1						0.883
RT2						0.887
RT3						0.915

Table 3.
Validity test based on loading factors

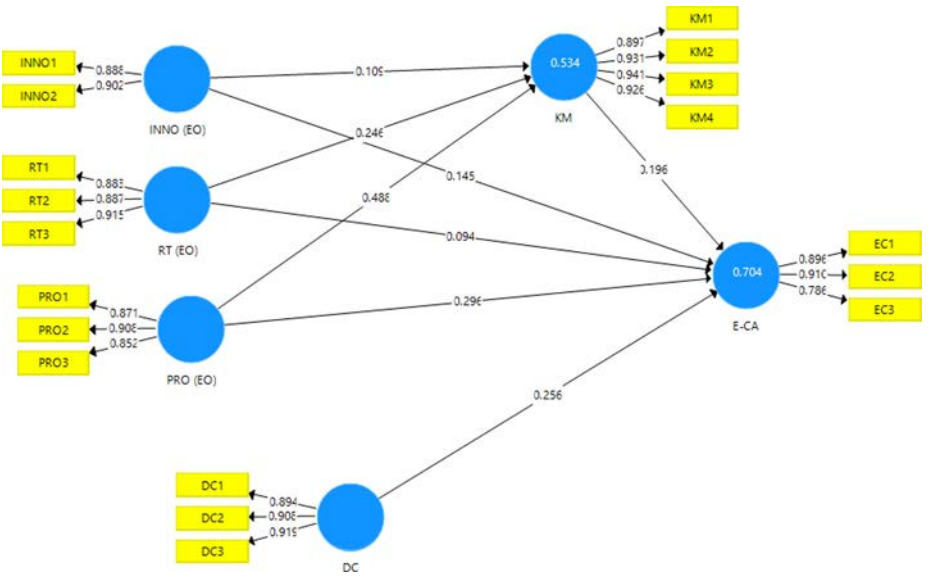

Figure 2.
Loading factor results

- DC has a positive effect on E-CA with a path coefficient value of 0.256 and significant with a *p*-value of 0.001, less than 0.05.
- INNO (EO) has a positive effect on E-CA with a path coefficient value of 0.145 and significant with a *p*-value of 0.008, less than 0.05.
- INNO (EO) has a positive effect on KMP with a path coefficient value of 0.109 but not significant with a *p*-value of 0.267, greater than 0.05.

- KMP has a positive effect on E-CA with a path coefficient value of 0.196 and significant with a *p*-value of 0.005, less than 0.05.
- PRO (EO) has a positive effect on E-CA with a path coefficient value of 0.296 and significant with a *p*-value of 0.000, less than 0.05.
- PRO (EO) has a positive effect on KMP with a path coefficient value of 0.488 and significant with a *p*-value of 0.000, less than 0.05.
- RT (EO) has a positive effect on E-CA with a path coefficient value of 0.094 but not significant with a *p*-value of 0.102, greater than 0.05.
- RT (EO) has a positive effect on KMP with a path coefficient value of 0.246 and significant with a *p*-value of 0.001, less than 0.05.

Table 8 presents the results of the coefficient of determination value (*r*-square). Below is the elaboration of the results:

- The coefficient of determination value for the latent variable of KMP is 0.534, which means that INN (EO), RT (EO) and PRO (EO) are able to influence KMP by 53.4%.

	Average variance extracted (AVE)
DC	0.822
E-CA	0.750
INNO (EO)	0.801
KMP	0.854
PRO (EO)	0.770
RT (EO)	0.801

Table 4. Validity test based on average variance extracted (AVE)

	Composite reliability
DC	0.933
E-CA	0.899
INNO (EO)	0.889
KMP	0.959
PRO (EO)	0.909
RT (EO)	0.923

Table 5. Reliability test based on composite reliability (CR)

	DC	E-CA	INNO (EO)	KMP	PRO (EO)	RT (EO)
DC	0.907					
E-CA	0.756	0.866				
INNO (EO)	0.587	0.622	0.895			
KMP	0.736	0.717	0.516	0.924		
PRO (EO)	0.734	0.766	0.649	0.696	0.877	
RT (EO)	0.574	0.570	0.371	0.560	0.561	0.895

Table 6. Discriminant validity test

Table 7.
Path coefficient and *p*-value (testing the significance of direct effects) and hypotheses

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	*t*-statistics (|O/STDEV|)	*p*-values	Decision to hypotheses
DC → E-CA	0.256	0.262	0.080	3.201	0.001	Supported
INNO (EO) → E-CA	0.145	0.146	0.054	2.677	0.008	Supported
INNO (EO) → KMP	0.109	0.106	0.098	1.110	0.267	Not supported
KMP → E-CA	0.196	0.194	0.070	2.811	0.005	Supported
PRO (EO) → E-CA	0.296	0.292	0.079	3.739	0.000	Supported
PRO (EO) → KMP	0.488	0.482	0.107	4.573	0.000	Supported
RT (EO) → E-CA	0.094	0.095	0.058	1.640	0.102	Not supported
RT (EO) → KMP	0.246	0.235	0.074	3.308	0.001	Supported

- The coefficient of determination value for the latent variable of E-CA is 0.704, which means that INN (EO), RT (EO), PRO (EO), KMP and DC are able to influence E-CA by 70.4%.

4.4 Significance test of indirect effect

Table 9 presents the results of the path coefficient and significance test of indirect effects.

Based on Table 9, the results are obtained:

- INN (EO) indirectly, insignificantly affects E-CA, through KMP with a *p*-value of 0.301, more than 0.05. In other words, KMP insignificantly mediates the relationship between INNO (EO) and E-CA
- PRO (EO) indirectly, significantly affects E-CA, through KMP with a *p*-value of 0.018, more than 0.05. In other words, KMP significantly mediates the relationship between PRO (EO) and E-CA.
- RT (EO) indirectly, significantly affects E-CA, through KMP with a *p*-value of 0.044, less than 0.05. In other words, KMP significantly mediates the relationship between RT (EO) and E-CA.

5. Discussion

The aim of this study is to examine the effect of three variables of EO (innovativeness, risk-taking and proactiveness), KMP, DCs toward EA and to investigate the effect of KMP as a mediating variable in the relationship between innovativeness of EO, risk-taking of EO, proactiveness of EO and EA of SMEs.

This study finds out substantial effect of innovativeness of EO and proactiveness of EO to the EA which is supports *H1a*; however, risk-taking of EO has an insignificant relationship with EA which does not support *H1b*. This finding is supported by the statements that managers of SMEs are more likely to take advantage of e-commerce technology (Abebe, 2014) and particularly who have high EO generally tend to explore new processes and technology for creating products/services for their customers (Lumpkin and Dess, 1996; Avlonitis and Salavou, 2007; Gupta *et al.*, 2016). Matlay and Addis (2003) asserted that the managers of SMEs that have high level of EO are more likely to exploit

Table 8. Determination of coefficient value

	R^2
E-CA	0.704
KMP	0.534

Table 9. Path coefficient and *p*-value (testing the significance of indirect effects) and hypotheses

	Original sample (O)	Sample mean (M)	SD (STDEV)	*t*-statistics (|O/STDEV|)	*p*-values	Decision to hypotheses
PRO (EO) → KMP → E-CA	0.095	0.094	0.040	2.365	0.018	Supported
INNO (EO) → KMP → E-CA	0.021	0.020	0.021	1.035	0.301	Not supported
RT (EO) → KMP → E-CA	0.048	0.046	0.024	2.016	0.044	Supported

e-commerce technology to achieve higher operational efficiency and marketing capability than those that have low level of EO. But so far no statements are aligned with the risk-taking of EO in relation to EA. This result also is related to the education and age of owner-managers. In all, 45.1% are the owner-managers with age 21–40 years that assume that they are more innovative and proactive as young men/women and aware on the latest technology. Of the respondents, 64.9% attended the undergraduate and postgraduate program whereby they learned various courses that trained themselves to be innovative and proactive. However, for the risk-taking factor, as 55% of the respondents are with age 41 years and above, they try to avoid any uncertainties in business or investment.

This study finds that EO (risk-taking and proactiveness) is significantly related to the KMP and, thus, support *H2b* and *H2c*. This finding is aligned with the studies by Latif *et al.* (2020), Gupta and Moesel (2007); and Stuetzer *et al.* (2018) that found a relationship of EO on KM processes, although one or two of EO's dimensions are not specifically mentioned. The EO also relates to knowledge utilization (Wach *et al.*, 2018; Adam *et al.*, 2018a, 2018b), knowledge sharing (Hormiga *et al.*, 2017) and knowledge creation (Jiang *et al.*, 2019), although its relationship is limited. This can be associated with why innovativeness has an insignificant relationship toward KMP, which does not support *H2d*. All these three variables are associated with the age of business of the respondents, of which 28.2% are with 0–6 years. In this range of age, the KMP could not be implemented optimally because of the lack of established system in the organization.

Moreover, this study finds that the KMP is significantly related to EA, thus support *H3a*. This study is aligned with the studies by Drucker (1993), Caloghirou *et al.* (2004); Al-Emran *et al.* (2018), Lee and Choi (2003); Gilbert and Cordey-Hayes (1996), Sveiby (1997); and Yee-Loong Chong *et al.* (2014) that KMP has a relationship with the adoption of e-commerce. This exactly relates to most of the respondents that are well educated (64.9% with bachelor and master's degree). Moreover, as the relationship of innovation of EO was insignificant on KMP, the role of KMP in mediating the relationship between innovativeness of EO and EA is also insignificant. This means that *H3b* is not supported. Meanwhile, KMP is significantly related with the other two variables of EO; risk-taking and proactiveness, and thus, it supports *H3c* and *H3d*. This result is aligned with studies by Adam *et al.* (2018a, 2018b) and Madhoushi *et al.* (2011) that found that KMP significantly mediated the relationship between EO and EA. These significant results supported the statement that KMP can be used as a leverage point that makes EO able to influence the decision on EA.

Finally, this study finds the significant relationship of DC and EA and, thus, supports *H4*. This is aligned with the statements that DCs can be used or have an influence in the context of e-business transformation (Teece, 2007; Daniel and Wilson, 2003; Wu and Hisa, 2008; Rindova and Koha, 2001; Wu and Hisa, 2008) including in decision of adopting e-commerce. Moreover, as it is mentioned that DCs relate to competitive advantage (Wheeler, 2002; Teece *et al.*, 1997; Rindova and Koha, 2001) through RBV (Prahalad and Hamel, 1990; Barney, 1991; Grant, 1996), it supports innovations in an effective and efficient process (Helfat *et al.*, 2007; Helfat and Peteraf, 2003; Helfat and Winter, 2011) and enables the enterprises to have potentials in positioning their products and targeting the right markets (Lin *et al.*, 2016) and enhancing entrepreneurial competences (Pitelis and Teece, 2009). Again, these positive results can be possibly influenced by, one of them, the high percentage of well-educated (64.9%) respondents.

6. Conclusion

The e-commerce today plays an important role in the development of SMEs in many countries, both developed and developing. An efficient transaction and deal will be the

main benefit of the e-commerce, from which then is derived the lower operational costs and the performance of the firms. Meanwhile, there are other factors that are crucially considered such as KMP, EO and DCs. This study also examines the mediating variable, which is the KMP, of the relationship between EO and adoption of e-commerce. The demographic profile of this study may expose other important characteristics as compared to other studies. It is also expected that the government agencies as policymakers could take advantage of these results that will be useful in creating strategies and long-term plans in assessing the adoption of e-commerce by SMEs particularly in Indonesia.

Moreover, this study is using the resource based-theory in examining the dimensions of EO, KMP and DC toward the adoption of e-commerce of SMEs. This differs from other studies which have used theories of TOE (Zhu and Kraemer, 2005; Ghobakhloo *et al.*, 2011; Tornatzky *et al.*, 1990), the TPB (Ajzen, 1991), the TAM (Davis, 1989), the TRA (Azjen and Fishbein, 1980), the diffusion of technology theory (Rogers, 1995), the UTAUT (Venkatesh *et al.*, 2003; Anderson and Schwager, 2003), actor-network theory (Tatnall and Burgess, 2004) and the contingency theory which focus on either individual or organizational level of adoption, whereas RBT covers internal and external factors.

In future research initiatives, this framework could be enriched by including the factor of personal value or customer capital. Other studies (Zainol and Ayadurai, 2011; Asah *et al.*, 2015; Tomczyk *et al.*, 2013) have found that personal value is significantly influencing the decision to perform better, which can relate to E. Similarly, the customer capital variable which is suggested by Jalali *et al.* (2014); Chen *et al.* (2004); Subramaniam and Youndt (2005); and Reed *et al.* (2006) may affect the adoption of e-commerce by SMEs. Finally, the research could be based on one specific sector or industry instead of dealing with heterogeneous respondents.

References

Abdullah, A., Thomas, B., Murphy, L. and Plant, E. (2018), "An investigation of the benefits and barriers of e-business adoption activities in Yemeni SMEs", *Strategic Change*, Vol. 27 No. 3, pp. 195-208.

Abebe, M. (2014), "Electronic commerce adoption, entrepreneurial orientation and small- and medium-sized enterprise (SME) performance", *Journal of Small Business and Enterprise Development*, Vol. 21 No. 1, pp. 100-116.

Adam, S., Mahadi, B. and Rahman, A.P.A. (2018), "The effect of entrepreneurial orientation towards organizational performance of E-Business in Malaysia", *International Journal of Entrepreneurship and Management Practices*, Vol. 1 No. 2, pp. 12-21.

Adam, S., Mahadi, B., Panatik, S.A. and Rahman, A. (2018), "The mediating role of knowledge management in e-Business in Malaysia", *Asia-Pacific Management Accounting Journal*, Vol. 13 No. 2, pp. 1-25.

Adel, H.M., Mahrous, A.A. and Hammad, R. (2020), "Entrepreneurial marketing strategy, institutional environment, and business performance of SMEs in Egypt", *Journal of Entrepreneurship in Emerging Economies*, Vol. 12 No. 5, pp. 727-746.

Aisyah, S., Musa, C.I. and Ramli, A. (2017), "Effect of characteristics and entrepreneurial orientation towards entrepreneurship competence and crafts and arts smes business performance in makassar", *International Review of Management and Marketing*, Vol. 7 No. 2, pp. 166-173.

Ajzen, I. (1991), "The theory of planned behaviour", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.

Ajzen, I. and Fishbein, M. (1980), *Understanding Attitudes and Predicting Social Behavior*, Englewood Cliffs, NJ: Prentice Hall.

Al-Bakri, A. and Katsioloudes, M. (2015), "The factors affecting e-commerce adoption by Jordanian SMEs", *Management Research Review*, Vol. 38 No. 7, pp. 726-749.

Al-Emran, M., Mezhuyev, V., Kamaludin, A. and Shaalan, K. (2018), "The impact of knowledge management processes on information systems: a systematic review", *International Journal of Information Management*, Vol. 43, pp. 173-187.

Alyoubi, A.A. (2015), "E-commerce in developing countries and how to develop them during the introduction of modern systems", *Procedia Computer Science*, Vol. 65, pp. 479-483.

Anderson, J. and Schwager, P. (2003), "SME adoption of wireless LAN technology: Applying the UTAUT model", *in Proceedings of the Southern Association for Information Systems*, *Savannah*, *GA*, pp. 39-43.

Anderson, B.S., Kreiser, P.M., Kuratko, D.F., Hornsby, J.S. and Eshima, Y. (2015), "Reconceptualizing entrepreneurial orientation", *Strategic Management Journal*, Vol. 36 No. 10, pp. 1579-1596.

Asah, F., Fatoki, O.O. and Rungani, E. (2015), "The impact of motivations, personal values and management skills on the performance of SMEs in South Africa", *African Journal of Economic and Management Studies*, Vol. 6 No. 3, pp. 308-322.

Auger, P. (2005), "The impact of interactivity and design sophistication on the performance of commercial websites for small businesses", *Journal of Small Business Management*, Vol. 43 No. 2, pp. 119-137.

Avlonitis, G.J. and Salavou, H.E. (2007), "Entrepreneurial orientation of SMEs, product innovativeness, and performance", *Journal of Business Research*, Vol. 60 No. 5, pp. 566-575.

Awa, H.O., Ojiabo, O.U. and Emecheta, B.C. (2015), "Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs", *Journal of Science and Technology Policy Management*, Vol. 6 No. 1, pp. 76-94.

Azan, W., Bootz, J.P. and Rolland, O. (2017), "Community of practices, knowledge transfer, and ERP project (ERPP)", *Knowledge Management Research and Practice*, Vol. 15 No. 2, pp. 238-256.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.

Beck, R., Wigand, R.T. and Konig, W. (2005), "The diffusion and efficient use of electronic commerce among small and medium-sized enterprises: an international three-industry survey", *Electronic Markets*, Vol. 15 No. 1, p. 38.

Bianchi, C. and Bivona, E. (2002), "Opportunities and pitfalls related to e-commerce strategies in small–medium firms: a system dynamics approach", *System Dynamics Review*, Vol. 18 No. 3, pp. 403-429.

Brockhaus, R.H. (1980), "Risk taking propensity of entrepreneurs", *Academy of Management Journal*, Vol. 23 No. 3, pp. 509-520.

Cagarra-Navarro, J.G. and Martinez-Conesa, E.A. (2007), "E-business through knowledge management in spanish telecommunications companies", *International Journal of Manpower*, Vol. 28 Nos 3/4, pp. 298-314.

Caldeira, M.M. and Ward, J.M. (2003), "Using resource-based theory to interpret the successful adoption and use of information systems and technology in manufacturing small and medium-sized enterprises", *European Journal of Information Systems*, Vol. 12 No. 2, pp. 127-141.

Caloghirou, Y., Kastelli, I. and Tsakanikas, A. (2004), "Internal capabilities and external knowledge sources: complements or substitutes for innovative performance?", *Technovation*, Vol. 24 No. 1, pp. 29-39.

Chatterjee, S. and Kar, A.K. (2018), "Effects of successful adoption of information technology enabled services in proposed smart cities of India", *Journal of Science and Technology Policy Management*, Vol. 9 No. 2, pp. 189-209.

Chen, J., Zhu, Z. and Xie, H.Y. (2004), "Measuring intellectual capital: a new model and empirical study", *Journal of Intellectual Capital*, Vol. 5 No. 1, pp. 195-212.

Coltman, T., Devinney, T., Latukefu, A. and Midgely, D. (2001), "E-business: revolution, evolution or hype?", *California Management Review*, Vol. 44 No. 1, pp. 57-86.

Covin, J.G. and Slevin, D.P. (1989), "Strategic management of small firms in hostile and benign environments", *Strategic Management Journal*, Vol. 10 No. 1, pp. 75-87.

Covin, J.G. and Slevin, D.P. (1991), "A conceptual model of entrepreneurship as firm behavior", *Entrepreneurship Theory and Practice*, Vol. 16 No. 1, pp. 7-25.

Cragg, P., Caldeira, M. and Ward, J. (2011), "Organizational information systems competences in small and medium-sized enterprises", *Information and Management*, Vol. 48 No. 8, pp. 353-363.

Cui, M. and Pan, S.L. (2015), "Developing focal capabilities for e-commerce adoption: a resource orchestration perspective", *Information and Management*, Vol. 52 No. 2, pp. 200-209.

Daniel, E.M. and Wilson, H.M. (2003), "The role of dynamic capabilities in e-business transformation", *European Journal of Information Systems*, Vol. 12 No. 4, pp. 282-296.

Darroch, J. and McNaughton, R. (2002), "Examining the link between knowledge management practices and types of innovation", *Journal of Intellectual Capital*, Vol. 3 No. 3, pp. 210-222.

Das, K., Gryseels, M., Sudhir, P. and Tan, K.T. (2016), *Unlocking Indonesia's Digital Opportunity*, McKinsey and Company. October, 28 2016.

Davis, F.D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, Vol. 13 No. 3, pp. 319-340.

Dörnyei, Z. (2007), *Research Methods in Applied Linguistics*, New York, NY: Oxford University Press.

Drucker, P.F. (1993), "The rise of the knowledge society", *The Wilson Quarterly*, Vol. 17 No. 2, pp. 52-72.

Duhan, S., Levy, M. and Powell, P. (2001), "Information systems strategies in knowledge-based SMEs: the role of core competencies", *European Journal of Information Systems*, Vol. 10 No. 1, pp. 25-40.

Egbu, C.O., Hari, S. and Renukappa, S.H. (2005), "Knowledge management for sustainable competitiveness in small and medium surveying practices", *Structural Survey*, Vol. 23 No. 1, pp. 7-21.

Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: what are they?", *Strategic Management Journal*, Vol. 21 Nos 10/11, pp. 1105-1121.

Fahey, L., Srivastava, R., Sharon, J.S. and Smith, D.E. (2001), "Linking e-business and operation processes: the role of knowledge management", *IBM Systems Journal*, Vol. 40 No. 4, pp. 889-907.

Fenech, T. and O'Cass, A. (2001), "Internet users' adoption of web retailing: user and product dimensions", *Journal of Product and Brand Management*, Vol. 10 No. 6, pp. 361-381.

Fomin, V.V., King, J.L., Lyytinen, K.J. and McGann, S.T. (2005), "Diffusion and impacts of e-commerce in the United States of America: Results from an industry survey", *Communications of the Association for Information Systems*, Vol. 16 No. 1, p. 28.

Ghobakhloo, M. and Tang, S.H. (2013), "The role of owner/manager in adoption of electronic commerce in small businesses: the case of developing countries", *Journal of Small Business and Enterprise Development*, Vol. 20 No. 4, pp. 754-787.

Ghobakhloo, M., Arias-Aranda, D. and Benitez-Amado, J. (2011), "Adoption of e-commerce applications in SMEs", *Industrial Management and Data Systems*, Vol. 111 No. 8, pp. 1238-1269.

Gilbert, M. and Cordey-Hayes, M. (1996), "Understanding the process of knowledge transfer to achieve successful technological innovation", *Technovation*, Vol. 16 No. 6, pp. 301-312.

Given, L.M. (2008), (Ed.). *The Sage Encyclopedia of Qualitative Research Methods*, Thousand Oaks, CA: Sage.

Gold, A.H., Malhotra, A. and Segars, A.H. (2001), "Knowledge management: an organizational capabilities perspective", *Journal of Management Information Systems*, Vol. 18 No. 1, pp. 185-214.

Grandon, E.E. and Pearson, J.M. (2004a), "Electronic commerce adoption: an empirical study of small and medium US businesses", *Information and Management*, Vol. 42 No. 1, pp. 197-216.

Grandon, E. and Pearson, J.M. (2004b), "E-commerce adoption: perceptions of managers/owners of small and medium sized firms in Chile", *Communications of the Association for Information Systems*, Vol. 13 No. 1, p. 8.

Grant, R.M. (1996), "Toward a knowledge-based theory of the firm", *Strategic Management Journal*, Vol. 17 No. S2, pp. 109-122.

Green, S.B. (1991), "How many subjects does it take to do a regression analysis", *Multivariate Behavioral Research*, Vol. 26 No. 3, pp. 499-510.

Gupta, V.K. and Moesel, D.M. (2007), "The impact of entrepreneurial orientation on knowledge management in strategic alliances: Evidence from high-technology SMEs", *In Annual USASBE Conference*, *FL*.

Gupta, V.K., Niranjan, S., Goktan, B.A. and Eriskon, J. (2016), "Individual entrepreneurial orientation role in shaping reactions to new technologies", *International Entrepreneurship and Management Journal*, Vol. 12 No. 4, pp. 935-961.

Gwinner, C. (2006), "5-point vs. 6-point likert scales", Infosurv White Paper.

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2012), "Partial least squares: the better approach to structural equation modeling?", *Long Range Planning*, Vol. 45 Nos 5/6, pp. 312-319.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (1998), "Multivariate data analysis", Upper Saddle River, NJ: Prentice hall, Vol. 5 No. 3, pp. 207-219.

Helfat, C.E. and Peteraf, M.A. (2003), "The dynamic resource-based view: capability lifecycles", *Strategic Management Journal*, Vol. 24 No. 10, pp. 997-1010.

Helfat, C.E. and Winter, S.G. (2011), "Untangling dynamic and operational capabilities: strategy for the (N) ever-changing world", *Strategic Management Journal*, Vol. 32 No. 11, pp. 1243-1250.

Helfat, C.E., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D. and Winter, S.G. (2009), *Dynamic Capabilities: Understanding Strategic Change in Organizations*, John Wiley and Sons.

Hormiga, E., de Saá-Pérez, P., Díaz-Díaz, N.L., Ballesteros-Rodríguez, J.L. and Aguiar-Diaz, I. (2017), "The influence of entrepreneurial orientation on the performance of academic research groups: the mediating role of knowledge sharing", *The Journal of Technology Transfer*, Vol. 42 No. 1, pp. 10-32.

Hossain, A., Siddique, M.Z.R., A. and Jamil, M.A. (2018), "Factors affecting women involvement as entrepreneur in SMEs sector, economic development and its impact on poverty reduction in Bangladesh", *Business, Management and Economics Research*, Vol. 4 No. 5, pp. 51-65.

Houghton, K.A. and Winklhofer, H. (2004), "The effect of website and e-commerce adoption on the relationship between SMEs and their export intermediaries", *International Small Business Journal: Researching Entrepreneurship*, Vol. 22 No. 4, pp. 369-388.

Hwang, H. and Takane, Y. (2014), *Generalized Structured Component Analysis: A Component-Based Approach to Structural Equation Modeling*, CRC Press.

Intan Salwani, M., Marthandan, G., Daud Norzaidi, M. and Choy Chong, S. (2009), "E-commerce usage and business performance in the Malaysian tourism sector: empirical analysis", *Information Management and Computer Security*, Vol. 17 No. 2, pp. 166-185.

Iqbal, Z. and Malik, M. (2019), "Entrepreneurial orientation and engagement of Pakistani small and medium enterprises in sustainable development practices: mediating role of knowledge management", *Business Strategy and Development*, Vol. 2 No. 3, pp. 192-203.

Jahanshahi, A.A., Mirzaie, A. and Asadollahi, A. (2011), "Mobile commerce beyond electronic commerce: issue and challenges", *Asian Journal of Business and Management Sciences*, Vol. 1 No. 2, pp. 119-129.

Jahanshahi, A., Zhang, S. and Brem, A. (2013), "E-commerce for SMEs: empirical insights from three countries", *Journal of Small Business and Enterprise Development*, Vol. 20 No. 4, pp. 849-865.

Jalali, A., Jaafar, M. and Ramayah, T. (2014), "Entrepreneurial orientation and performance: the interaction effect of customer Capital", *World Journal of Entrepreneurship, Management and Sustainable Development*, Vol. 10 No. 1, pp. 48-68.

Jarvenpaa, S.L. and Leidner, D.E. (1998), "An information company in Mexico: extending the resource-based view of the firm to a developing country context", *Information Systems Research*, Vol. 9 No. 4, pp. 342-361.

Jiang, F., Wang, G. and Jiang, X. (2019), "Entrepreneurial orientation and organizational knowledge creation: a configurational approach", *Asia Pacific Journal of Management*, Vol. 36 No. 4, pp. 1193-1219.

Johannessen, J.A., Olsen, B. and Olaisen, J. (1999), "Aspects of innovation theory based on knowledge-management", *International Journal of Information Management*, Vol. 19 No. 2, pp. 121-139.

Johnston, R.B., Mak, H.C. and Kurnia, S. (2007), "Achieving advanced supply chain management through internet-based electronic commerce", *E-Commerce and V-Business*, pp. 291-341.

Jones, P. and Beynon, D. (2011), *Journal of Systems and Information Technology*, Vol. 13 No. 2.

Kalakota, R. and Whinston, A. (1997), *Electronic Commerce: A Manager's Guide*, Addison-Wesley, Reading, MA.

Kamal, E.M., Yusof, N.A. and Iranmanesh, M. (2016), "Innovation creation, innovation adoption, and firm characteristics in the construction industry", *Journal of Science and Technology Policy Management*, Vol. 7 No. 1, pp. 43 -57.

Keh, H.T., Nguyen, T.T.M. and Ng, H.P. (2007), "The effects of entrepreneurial orientation and marketing information on the performance of SMEs", *Journal of Business Venturing*, Vol. 22 No. 4, pp. 592-611.

Khalique, M., Isa, A.H.B.M., Nassir Shaari, J.A. and Ageel, A. (2011), "Challenges faced by the small and medium enterprises (SMEs) in Malaysia: an intellectual capital perspective", *International Journal of Current Research*, Vol. 3 No. 6, p. 398.

Khatibi, A., Thyagarajan, V. and Seetharaman, A. (2003), "E-commerce in Malaysia: perceived benefits and barriers", *VIKALPA*, Vol. 28 No. 3, pp. 77-82.

Kraemer, K., Dedrick, J. and Melville, N. (2006), *Globalization and National Diversity: E-Commerce Diffusion and Impacts across Nations*, Cambridge University Press, New York, NY.

Kreiser, P.M., Marino, L.D. and Weaver, K.M. (2002), "Assessing the psychometric properties of the entrepreneurial orientation scale: a multi-country analysis", *Entrepreneurship Theory and Practice*, Vol. 26 No. 4, pp. 71-94.

Kurnia, S., Choudrie, J., Mahbubur, R.M. and Alzougool, B. (2015), "E-commerce technology adoption: a Malaysian grocery SME retail sector study", *Journal of Business Research*, Vol. 68 No. 9, pp. 1906-1918.

Lamptey, L.L., Frimpong, K. and Morrison, A.B. (2017), "Empirical study on the influence of working capital management on performance of SMEs in a developing economy", *Journal of Economics, Management and Trade*, pp. 1-10.

Latif, K., Afzal, O., Saqib, A., Sahibzada, U. and Alam, W. (2020), "Direct and configurational paths of knowledge-oriented leadership, entrepreneurial orientation, and knowledge management processes to project success", *Journal of Intellectual Capital*.

Lee, C.-S. (2001), "An analytical framework for evaluating e-commerce business models and strategies", *Internet Research*, Vol. 11 No. 4, pp. 349-359.

Lee, H. and Choi, B. (2003), "Knowledge management enablers, processes, and organizational performance: an integrative view and empirical examination", *Journal of Management Information Systems*, Vol. 20 No. 1, pp. 179-228.

Lestari, D. (2019), "Measuring e-commerce adoption behaviour among gen-Z in Jakarta, Indonesia", *Economic Analysis and Policy*, Vol. 64, pp. 103-115.

Li, Y., Liu, X., Wang, L., Li, M. and Guo, H. (2009), "How entrepreneurial orientation moderates the effects of knowledge management on innovation", *Systems Research and Behavioral Science*, Vol. 26 No. 6, pp. 645-660.

Liao, J., Kickul, J. and Ma, H. (2009), "Organizational dynamic capability and innovation: an empirical examination of internet firms", *Journal of Small Business Management*, Vol. 47 No. 3, pp. 263-286.

Lin, H. and Lee, G. (2005), "Impact of organizational learning and knowledge management factors on e-business adoption", *Management Decision*, Vol. 43 No. 2, pp. 171-188.

Lin, H.F., Su, J.Q. and Higgins, A. (2016), "How dynamic capabilities affect adoption of management innovations", *Journal of Business Research*, Vol. 69 No. 2, pp. 862-876.

Lo, M. and Ramayah, T. (2011), "Mentoring and job satisfaction in malaysian SMEs", *Journal of Management Development*, Vol. 30 No. 4, pp. 427-440.

Loane, S. (2006), "The role of the internet in the internationalisation of small and medium sized companies", *Journal of International Entrepreneurship*, Vol. 3 No. 4, pp. 263-277.

Lohrke, F.T., Franklin, G.M. and Frownfelter-Lohrke, C. (2006), "The internet as an information conduit: a transaction cost analysis model of US SME internet use", *International Small Business Journal: Researching Entrepreneurship*, Vol. 24 No. 2, pp. 159-178.

Lumpkin, G.T. and Dess, G.G. (1996), "Clarifying the entrepreneurial construct and linking it to performance", *Academy of Management Review*, Vol. 21 No. 1, pp. 135-172.

Lumpkin, G.T. and Dess, G.G. (2001), "Linking two dimensions of entrepreneurial orientation to firm performance: the moderating role of environment and industry life cycle", *Journal of Business Venturing*, Vol. 16 No. 5, pp. 429-451.

McKinsey Global Institute Report (2018), "The digital archipelago: how online commerce is driving Indonesia's economic development", available at: www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Asia%20Pacific/The%20digital%20archipelago%20How%20online%20commerce%20is%20driving%20Indonesias%20economic%20development/The-digital-archipelago-Executive-summary.ashx

Madhoushi, M., Sadati, A., Delavari, H., Mehdivand, M. and Mihandost, R. (2011), "Entrepreneurial orientation and innovation performance: the mediating role of knowledge management", *Asian Journal of Business Management*, Vol. 3 No. 4, pp. 310-316.

Magutu, P.O., Mwangi, M., Nyaoga, R.B., Ondimu, G.M., Kagu, M., Mutai, K., Kilonzo, H. and Nthenya, P. (2011), "E-commerce products and services in the banking industry: the adoption and usage in commercial banks in Kenya", *Journal of Electronic Banking Systems*, Vol. 2011, pp. 1-19.

Marcelo, P., João, T., Lisboa, V. and Yasin, M.M. (2014), "E-commerce strategies and corporate performance: an empirical investigation", *Competitiveness Review*, Vol. 24 No. 5, pp. 463-481.

Martens, C.D.P., Machado, F.J., Martens, M.L. and de Freitas, H.M.R. (2018), "Linking entrepreneurial orientation to project success", *International Journal of Project Management*, Vol. 36 No. 2, pp. 255-266.

Martin, L. and Matlay, H. (2003), "Innovative use of the internet in established small firms: the impact of knowledge management and organisational learning in accessing new opportunities", *Qualitative Market Research: An International Journal*, Vol. 6 No. 1, pp. 18-26.

Martínez-Caro, E. and Gabriel Cegarra-Navarro, J. (2010), "The impact of e-business on capital productivity: an analysis of the UK telecommunications sector", *International Journal of Operations and Production Management*, Vol. 30 No. 5, pp. 488-507.

Masocha, R. and Fatoki, O. (2018), "The role of mimicry isomorphism in sustainable development operationalisation by SMEs in South Africa", *Sustainability*, Vol. 10 No. 4, p. 1264

Matlay, H. (2004), "E-entrepreneurship and small e-business development: towards a comparative research agenda", *Journal of Small Business and Enterprise Development*, Vol. 11 No. 3, pp. 408-414.

Matlay, H. and Addis, M. (2003), "Adoption of ICT and e-commerce in small businesses: an HEI-based consultancy perspective", *Journal of Small Business and Enterprise Development*, Vol. 10 No. 3, pp. 321-335.

Mehta, K.T. and Shah, V. (2001), "E-commerce: the next global frontier for small businesses", *Journal of Applied Business Research (JABR)*, Vol. 17 No. 1.

Merlo, O. and Auh, S. (2009), "The effects of entrepreneurial orientation, market orientation, and marketing subunit influence on firm performance", *Marketing Letters*, Vol. 20 No. 3, pp. 295-311.

Miller, D. (1983), "The correlates of entrepreneurship in three types of firms", *Management Science*, Vol. 29 No. 7, pp. 770-791.

Mittal, S. (2016), "Effects of transformational leadership on turnover intentions in IT SMEs", *International Journal of Manpower*, Vol. 37 No. 8, pp. 1322-1346.

Moodley, S. (2003), "E-commerce and export markets: small furniture producers in South Africa", *Journal of Small Business Management*, Vol. 41 No. 3, pp. 317-324.

Nam Nguyen, H. and Mohamed, S. (2011), "Leadership behaviors, organizational culture and knowledge management practices: an empirical investigation", *Journal of Management Development*, Vol. 30 No. 2, pp. 206-221.

Newman, A. and Z. Sheikh, A. (2014), "Determinants of best HR practices in Chinese SMEs", *Journal of Small Business and Enterprise Development*, Vol. 21 No. 3, pp. 414-430.

Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York, NY.

Obeidat, B.Y., Tarhini, A., Masa'deh, R.E. and Aqqad, N.O. (2017), "The impact of intellectual Capital on innovation via the mediating role of knowledge management: a structural equation modelling approach", *International Journal of Knowledge Management Studies*, Vol. 8 Nos 3/4, pp. 273-298.

Owoseni, A. and Twinomurinzi, H. (2018), "Mobile apps usage and dynamic capabilities: a structural equation model of SMEs in Lagos, Nigeria", *Telematics and Informatics*, Vol. 35 No. 7, pp. 2067-2081.

Pandey, A., Vandana, M., Mishra, S. and Rai, S. (2013), "Relationship between e-Commerce and knowledge economy and their role in risk assessment process", *Journal of Global Research in Computer Science*, Vol. 4 No. 4, pp. 50-57.

Pereira, R.E. (1999), "Resource view theory analysis of SAP as a source of competitive advantage for firms", *ACM SIGMIS Database: The DATABASE for Advances in Information Systems*, Vol. 30 No. 1, pp. 38-46.

Pieter van Donk, D. (2008), "Challenges in relating supply chain management and information and communication technology: an introduction", *International Journal of Operations and Production Management*, Vol. 28 No. 4, pp. 308-312.

Pitelis, C.N. and Teece, D.J. (2009), "The (new) nature and essence of the firm", *European Management Review*, Vol. 6 No. 1, pp. 5-15.

Prahalad, C.K. and Hamel, G. (1990), "Core competency concept", *Harvard Business Review*, Vol. 64 No. 3, pp. 70-92.

Pratt, J.H. (2002), *E-Biz. com: Strategies for Small Business Success*, SBA Office of Advocacy, pp. 5-6.

Quelch, J.A. and Klein, L.R. (1996), "The internet and international marketing", *MIT Sloan Management Review*, Vol. 37 No. 3, p. 60.

Rahayu, R. and Day, J. (2017), "E-commerce adoption by SMEs in developing countries: evidence from Indonesia", *Eurasian Business Review*, Vol. 7 No. 1, pp. 25-41.

Ramadan, B., Dahiyat, S., Bontis, N. and Al-Dalahmeh, M. (2017), "Intellectual Capital, knowledge management and social capital within the ICT sector in Jordan", *Journal of Intellectual Capital*, Vol. 18 No. 2, pp. 437-462.

Rasula, J., Vuksic, V.B. and Stemberger, M.I. (2012), "The impact of knowledge management on organisational performance", *Economic and Business Review for Central and South-Eastern Europe*, Vol. 14 No. 2, p. 147.

Raymond, L., Bergeron, F. and Blili, S. (2005), "The assimilation of e-business in manufacturing SMEs: determinants and effects on growth and internationalization", *Electronic Markets*, Vol. 15 No. 2, pp. 106-118.

Reed, K.K., Lubatkin, M. and Srinivasan, N. (2006), "Proposing and testing an intellectual capital-based view of the firm", *Journal of Management Studies*, Vol. 43 No. 4, pp. 867-893.

Reynolds, P.L. and Lancaster, G. (2006), "A scheme to increase profitability in entrepreneurial SMEs", *Journal of Small Business and Enterprise Development*, Vol. 13 No. 3, pp. 395-410.

Riemenschneider, C.K., Harrison, D.A. and Mykytyn, P.P. Jr (2003), "Understanding IT adoption decisions in small business: integrating current theories", *Information and Management*, Vol. 40 No. 4, pp. 269-285.

Rindova, V.P. and Koha, S. (2001), "Continuous morphing: Competing through dynamic capabilities, form, and function", *Academy of Management Journal*, Vol. 44 No. 6, pp. 1263-1280.

Rogers, E. (1995), *Diffusion of Innovations*, 4th ed., The Free Press, New York, NY.

Rumelt, R.P. (2011), *Good Strategy Bad Strategy: The Difference and Why It Matters*, Crown Business.

Saffu, K., Walker, J.H. and Hinson, R. (2008), "Strategic value and electronic commerce adoption among small and medium-sized enterprises in a transitional economy", *Journal of Business and Industrial Marketing*, Vol. 23 No. 6, pp. 395-404.

Santarelli, E. and D'Altri, S. (2003), "The diffusion of e-commerce among SMEs: theoretical implications and empirical evidence", *Small Business Economics*, Vol. 21 No. 3, pp. 273-283.

Savrul, M., Incekara, A. and Sener, S. (2014), "The potential of e-commerce for SMEs in a globalizing business environment", *Procedia-Social and Behavioral Sciences*, Vol. 150, pp. 35-45.

Shemi, A. and Procter, C. (2018), "E-commerce and entrepreneurship in SMEs: case of myBot", *Journal of Small Business and Enterprise Development*, Vol. 25 No. 3, pp. 501-520.

Siong Choy, C., Kuan Yew, W. and Lin, B. (2006), "Criteria for measuring KM performance outcomes in organisations", *Industrial Management and Data Systems*, Vol. 106 No. 7, p. 917.

Stevens, J. (1996), *Applied Multivariate Statistics for the Social Sciences*, (3rd ed.), Mahwah, NJ: Lawrence Erlbaum Associates.

Stockdale, R. and Standing, C. (2004), "Benefits and barriers of electronic marketplace participation: an SME perspective", *Journal of Enterprise Information Management*, Vol. 17 No. 4, pp. 301-311.

Stuetzer, M., Audretsch, D.B., Obschonka, M., Gosling, S.D., Rentfrow, P.J. and Potter, J. (2018), "Entrepreneurship culture, knowledge spillovers and the growth of regions", *Regional Studies*, Vol. 52 No. 5, pp. 608-618.

Subramaniam, M. and Youndt, M.A. (2005), "The influence of intellectual capital on the types of innovative capabilities", *Academy of Management Journal*, Vol. 48 No. 3, pp. 450-463.

Sutanonpaiboon, J. and Pearson, A.M. (2006), "E-commerce adoption: perceptions of managers/owners of small-and medium-sized enterprises (SMEs) in Thailand", *Journal of Internet Commerce*, Vol. 5 No. 3, pp. 53-82.

Sveiby, K.E. (1997), *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets*, Berrett-Koehler Publishers.

Tabachnick, B.G. and Fidell, L.S. (2007), *Using Multivariate Statistics*, (5th ed.), Boston: Pearson Education.

Tan, J., Tyler, K. and Manica, A. (2007), "Business-to-business adoption of eCommerce in China", *Information and Management*, Vol. 44 No. 3, pp. 332-351.

Tatnall, A. and Burgess, S. (2004), "Using Actor-Network theory to identify factors affecting the adoption of ECommerce in SMEs", in Singh, M. and Waddell, D. (Eds), *EBusiness Innovation and Change Management*, IRM Press, Hershey, PA, pp. 152-169.

Teece, D.J. (2007), "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance", *Strategic Management Journal*, Vol. 28 No. 13, pp. 1319-1350.

Teece, D.J. (2010), "Business models, business strategy and innovation", *Long Range Planning*, Vol. 43 No 2-3, pp. 172-194.

Teece, D.J., Pisano, G. and Shuen, L.E. (1990), "Firm capabilities, resources, and the concept of strategy: four paradigms of strategic management (no. 90-8)", CCC working paper.

Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533.

Theodosiou, M. and Katsikea, E. (2012), "Antecedents and performance of electronic business adoption in the hotel industry", *European Journal of Marketing*, Vol. 46 Nos 1/2, pp. 258-283.

Tomczyk, D., Lee, J. and Winslow, E. (2013), "Entrepreneurs' personal values, compensation, and high growth firm performance", *Journal of Small Business Management*, Vol. 51 No. 1, pp. 66-82.

Tornatzky, L.G., Fleischer, M. and Chakrabarti, A.K. (1990), *The Processes of Technological Innovation*, Lexington: Lexington Books.

Torres, A., Ferraz, S. and Santos-Rodrigues, H. (2018), "The impact of knowledge management factors in organizational sustainable competitive advantage", *Journal of Intellectual Capital*, Vol. 19 No. 2, pp. 453-472.

Turban, E., Bolloju, N. and Liang, T.P. (2010), "August. Social commerce: an e-commerce perspective", In Proceedings of the 12th International Conference on Electronic Commerce: Roadmap for the Future of Electronic Business, pp. 33-42.

Venkatesh, V., Morris, M.G., Davis, G.B., *et al.* (2003), "User acceptance of information technology: toward a unified view", *MIS Quarterly*, Vol. 27 No. 3, pp. 425-478.

Vitale, R., Giglierano, J. and Miles, M.P. (2003), "An exploratory study of self administrated quick-audits as a management diagnostic to assess marketing and entrepreneurial orientations in established and startup firms", *Journal of Research in Marketing and Entrepreneurship*, Vol. 6 No. 1, pp. 64-77.

Wach, K., Głodowska, A. and Maciejewski, M. (2018), "Entrepreneurial orientation, knowledge utilization and internationalization of firms", *Sustainability*, Vol. 10 No. 12, p. 4711.

Watson, R., Berthon, P., Pitt, L. and Zinkhan, G. (1998), *Electronic Commerce: The Strategic Perspective*, Harcourt Brace College Publishers, Orlando, FL.

Webb, K.L. (2002), "Managing channels of distribution in the age of electronic commerce", *Industrial Marketing Management*, Vol. 31 No. 2, pp. 95-102.

Weiss, P. (2004), "Small companies play catch-up on the internet", *Information Week*, July 26, p. 70.

Wernerfelt, B. (1984), "A resource-based view of the firm", *Strategic Management Journal*, Vol. 5 No. 2, pp. 171-180.

Wheeler, B.C. (2002), "NEBIC: a dynamic capabilities theory for assessing net-enablement", *Information Systems Research*, Vol. 13 No. 2, pp. 125-146.

Wong, K.K. (2013), "Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS", *Marketing Bulletin*, Vol. 24 No. 1, pp. 1-32.

Wu, J.H. and Hisa, T.L. (2008), "Developing e-business dynamic capabilities: an analysis of e-commerce innovation from I-, M-, to U-commerce", *Journal of Organizational Computing and Electronic Commerce*, Vol. 18 No. 2, pp. 95-111.

Wymer, S.A. and Regan, E.A. (2005), "Factors influencing e-commerce adoption and use by small and medium businesses", *Electronic Markets*, Vol. 15 No. 4, pp. 438-453.

Yee-Loong Chong, A., Ooi, K., Bao, H. and Lin, B. (2014), "Can e-business adoption be influenced by knowledge management? An empirical analysis of Malaysian SMEs", *Journal of Knowledge Management*, Vol. 18 No. 1, pp. 121-136.

Yeh, C., Lee, G. and Pai, J. (2012), "How information system capability affects e-business information technology strategy implementation: an empirical study in Taiwan", *Business Process Management Journal*, Vol. 18 No. 2, pp. 197-218.

Yi, M.Y. and Hwang, Y. (2003), "Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model", *International Journal of Human-Computer Studies*, Vol. 59 No. 4, pp. 431-449.

Zahra, S.A. (1991), "Predictors and financial outcomes of corporate entrepreneurship: an exploratory study", *Journal of Business Venturing*, Vol. 6 No. 4, pp. 259-285.

Zhang, M.J. and Lado, A.A. (2001), "Information systems and competitive advantage: a competency-based view", *Technovation*, Vol. 21 No. 3, pp. 147-156.

Zhang, P. and von Dran, G.M.V. (2001), "User expectations and rankings of quality factors in different web site domains", *International Journal of Electronic Commerce*, Vol. 6 No. 2, p. 9.

Zainol, F.N. and Ayadurai, S. (2011), "Entrepreneurial orientation and firm performance: the role of personality traits in family firms in Malaysia", *International Journal of Business and Social Science*, Vol. 2 No. 1, pp. 59-71.

Zhu, K. and Kraemer, K.L. (2005), "Post-adoption variations in usage and value of e-business by organizations: cross-country evidence from the retail industry", *Information Systems Research*, Vol. 16 No. 1, pp. 61-84.

Zhu, K., Kraemer, K.L. and Dedrick, J. (2004), "Information technology payoff in e-business environments: an international perspective on value creation of e-business in the financial services industry", *Journal of Management Information Systems*, Vol. 21 No. 1, pp. 17-54.

Zhu, K., Xu, S. and Dedrick, J. (2003), "Assessing drivers of e-business value: results of a cross-country study", *ICIS 2003 Proceedings*, p. 16.

Zollo, M. and Winter, S.G. (2002), "Deliberate learning and the evolution of dynamic capabilities", *Organization Science*, Vol. 13 No. 3, pp. 339-351.

Further reading

Davis, F. (1993), "User acceptance of information technology: system characteristics, user perceptions and behaviour impacts", *International Journal of Man-Machine Studies*, Vol. 38 No. 3, pp. 475-487.

Grandon, E. and Pearson, J.M. (2003), "Strategic value and adoption of electronic commerce: an empirical study of Chilean small and medium businesses", *Journal of Global Information Technology Management*, Vol. 6 No. 3, pp. 22-43.

Hair, J.F., Sarstedt, M., Pieper, T.M. and Ringle, C.M. (2012), "The use of partial least squares structural equation modeling in strategic management research: a review of past practices and recommendations for future applications", *Long Range Planning*, Vol. 45 Nos. 5/6, pp. 320-340.

Hwang, H., Malhotra, N.K., Kim, Y., Tomiuk, M.A. and Hong, S. (2010), "A comparative study on parameter recovery of three approaches to structural equation modeling", *Journal of Marketing Research*, Vol. 47 No. 4, pp. 699-712.

Jones, N., Borgman, R. and Ulusoy, E. (2015), "Impact of social media on small businesses", *Journal of Small Business and Enterprise Development*, Vol. 22 No. 4, pp. 611-632.

Miles, J.A. (2012), *Management and Organization Theory: A Jossey-Bass Reader*, John Wiley and Sons, San Francisco, CA, Vol. 9.

Pandey, S. and Dutta, A. (2013), "Role of knowledge infrastructure capabilities in knowledge management", *Journal of Knowledge Management*, Vol. 17 No. 3, pp. 435-453.

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