

## ASSESSING DIMENSIONS OF ENTREPRENEURIAL COMPETENCIES: A TYPE II (REFLECTIVE-FORMATIVE) MEASUREMENT APPROACH USING PLS-SEM

SHEHNAZ TEHSEEN<sup>1\*</sup>, ZUHAIB HASSAN QURESHI<sup>2</sup>, FATEMA JOHARA<sup>3</sup> AND THURASAMY RAMAYAH<sup>4</sup>

<sup>1</sup>Department of Management, Sunway University Business School, Sunway University, No. 5, Jalan Universiti, Bandar Sunway, 47500 Selangor Darul Ehsan, Malaysia. <sup>2</sup>Universiti Kuala Lumpur Business School, Universiti Kuala Lumpur, Jalan Gurney, Kampung Datuk Keramat, 54000 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia. <sup>3</sup>Graduate School of Business, Universiti Sains Malaysia, Penang, Malaysia & Department of Business Administration, BAIUST, Bangladesh. <sup>4</sup>School of Management, Universiti Sains Malaysia, Penang, Malaysia and Visiting Professor, Internet Innovation Center, Minjiang University, Fuzhou, China.

\*Corresponding author: shehnaz@sunway.edu.my

**Abstract:** This paper describes the assessment of the construct “Entrepreneurial Competencies” as a second-order reflective formative construct by utilising PLS-SEM technique recommended by Hair *et al.* (2017). This second-order construct has been operationalized with seven context-specific dimensions including opportunity competency, conceptual competency, strategic competency, personal competency, learning competency, ethical competency, and familism. Since these dimensions do not share a common theme of their second-order, the reflective formative relationship has been established in this study. This paper suggests considering and measuring entrepreneurial competencies as a reflective-formative second-order latent variable. This is because misspecification at the level of second-order could result in drastic changes in the values of R square as well as in path coefficients’ values.

**Keywords:** Entrepreneurial competencies, PLS-SEM, reflective-formative second-order construct, common method bias.

### Introduction

Recently, researchers are focusing more on studying different multidimensional constructs in the area of entrepreneurship (e.g. Lee *et al.*, 2016; McGee & Peterson, 2017; Umar *et al.*, 2018; Lawal *et al.*, 2018). Previous studies have recommended researchers to carefully consider the constructs as first-order or second-order based on theory (Gefen, *et al.* 2011). Other researchers have provided in-depth guidance to conceptualize the implications of multidimensional constructs in empirical studies (Shin & Kim, 2011; Polites, *et al.*, 2012). The software of structural equation modelling such as EQS, AMOS, and SmartPLS have made possible for researchers to do the modelling of multidimensional constructs. Since these tools have permitted the inclusion of multidimensional constructs in models, different multidimensional constructs have appeared in different ways in the field of entrepreneurship. Also, despite that

the use of multidimensional constructs has been considered important, scant directions have been given in the testing of models that consist of multidimensional constructs (Wright *et al.*, 2012). The scope of this research is limited to the evaluation of the construct of entrepreneurial competencies. Researchers have defined entrepreneurial competencies as a multidimensional construct based on theories under different contexts (Ahmad, 2007). However, to the authors’ best knowledge, very little is known about PLS-SEM technique in evaluating the the multidimensional construct of entrepreneurial competencies. In this paper, we argue that proper guidance is essential for researchers in improving their understanding of the theoretical concepts linked to the modelling of entrepreneurial competencies as a multidimensional construct and to evaluate it in the right way. The latest version of PLS-SEM software supports the evaluation of

multidimensional constructs in the right way based on strong theory. However, we have observed that there is a lack of evaluation on the psychometric properties of multidimensional construct of entrepreneurial competencies. The misspecification exists in the measurement model is a result of the wrong direction in the relationships between latent variables and their measures. The implications of misspecification of the measurement model impact the current as well as future research. Similar to Jarvis *et al.* (2003), this study argues that the misspecification issues of the construct (i.e. entrepreneurial competencies) in PLS-SEM models causes misleading and false conclusions drawn from the PLS model. Both Type I and Type II errors may occur due to the effects of misspecification of the entrepreneurial competencies' construct; which consequently impacts the findings of structural model analysis. According to MacKenzie *et al.* (2005), Type I error occurs due to paths of a misspecified latent variable and Type II error takes place when paths lead to a misspecified latent variable. Therefore, studies may face rejections during the review process due to the lack of understanding regarding the relationship's direction between measures and latent variables. Studies commonly depend on the validation of measurement models in the existing literature to test their structural models. Due to the misspecification of constructs in the literature, future studies will also provide wrong conclusions. Therefore, researchers are responsible for the understanding of constructs' formulation to draw a reliable conclusion for future studies. To overcome this issue, the purpose of the current study is to deliver in-depth guidance for a measurement model's evaluation of multidimensional constructs of entrepreneurial competencies within a specific context.

The "entrepreneurial competencies" is one of the current areas of research in the context of entrepreneurship. The entrepreneurial competencies have an important role in improving business performance and have been widely acknowledged as the significant factors that lead towards the growth and

success of businesses (Chandler & Hanks, 1994; Ahmad, 2007; Rahman *et al.*, 2016). Entrepreneurial competencies could be related to sustainable entrepreneurship; which is the reflection of firms' economic, social, as well as environmental objectives (Wagner & Schaltegger, 2010). The combination of these three objectives is known as a triple bottom line, which is essential for the firm's sustainability (Hall *et al.*, 2010). Competent entrepreneurs play a key role in achieving sustainable entrepreneurship's objectives. This is because sustainable entrepreneurship emphasizes on high order skills and entrepreneurial competencies of entrepreneurs (Wals & Jickling, 2002). The unique characteristics of small and medium-size enterprises (SMEs) require their sustainability models to be revised; where this is to adapt according to the specific context (Darcy *et al.*, 2014). Therefore, entrepreneurial competencies are essential to the improvement and modification of the sustainability models of SMEs. The entrepreneurial competencies are critical internal resources for SMEs. They will lead to competitive advantage and are considered as a pathway to the firm's sustainability (Darcy *et al.*, 2014). A firm can achieve its competitive advantage when it is capable of carrying out its activities in such ways that its rival firms are not able to imitate (Nghah *et al.*, 2016). This is possible only when the entrepreneurs of the firms are competent enough to carry out such unique activities that become the basis of their differentiation in the market. Thus, this paper argues that entrepreneurial competencies are crucial intangible firms' resources that assist them in attaining sustainable competitive advantage and sustainable entrepreneurship.

Lans *et al.* (2011) have defined 'competencies' as the tendency to apply collections of skills, mind-sets and knowledge in a specific professional setting. Anyhow, in scholarly research, there is an ambiguity regarding the level of presence of these abilities among the unique context of entrepreneurs (Rahman *et al.*, 2016). Ahmad (2007) has found the seven competency areas such as; strategic, learning, opportunity, conceptual, ethical,

personal, and familism as the most relevant and context-specific entrepreneurial competencies of Malaysian entrepreneurs. Many studies such as Mitchelmore and Rowley (2010), and Ahmad (2007) have attempted to understand the phenomenon of business success by considering the perceived essential entrepreneurial competencies. The entrepreneurial competencies can be considered as unique abilities of entrepreneurs, which are perceived as essential based on resource-based view theory (Ahmad, 2007). Based on Resource-Based View (RBV), entrepreneurial competencies can be regarded as valuable resources that lead towards business success. Thus, the context-specific dimensions of entrepreneurial competencies that include conceptual, strategic, learning, personal, familism, opportunity, and ethical competencies can be considered as valuable resources of a firm; in which they could assist in the attainment of business success and growth. In this regard, these certain competencies could be viewed under the lens of resource-based view theory. Different dimensions of entrepreneurial competencies have been used by various studies to measure entrepreneurial competencies. For instance, a study has illustrated five types of entrepreneurial competencies in its study on female entrepreneurs (Mitchelmore & Rowley, 2013). Moreover, Man and Lau (2000) have categorized entrepreneurial competencies into six stages of entrepreneurial behaviours. Thus, it is essential to assess the entrepreneurs' critical competencies from the perspective of a specific context. Thus, in the context of this paper, strategic competency, personal competency, conceptual competency, learning competency, opportunity competency, ethical competency, and familism, which have been earlier identified as specific entrepreneurial competencies of entrepreneurs in Malaysian context have been taken as the most relevant competencies. These entrepreneurial competencies have been linked with specific roles of entrepreneurs. By considering the huge importance of these competencies in achieving the success of businesses, this study has investigated them as context-specific entrepreneurial competencies' dimensions.

The entrepreneurial competencies' construct is a complex latent variable operationalized at the abstraction's higher level. For this study, the construct of entrepreneurial competencies has been operationalized by using seven context-specific dimensions as mentioned above. This complex latent variable is referred to as Hierarchical Component Model (HCM) where it constitutes the testing of higher-order structures with two layers of latent variables. HCMs are suggested to be used in PLS path models because of three key reasons. Firstly, HCMs lower the number of relationships in the PLS structural model and lead towards the parsimonious model. Secondly, HCMs minimize the issues of collinearity and also solve discriminant validity problems. Thirdly, HCMs are useful when high collinearity occurs among formative items, then the set of items can be split up to generate separate first-order latent variables to form a higher-order structure (Hair *et al.*, 2017). Thus, this study's main objective is to validate the reflective formative measures of the second-order latent variable of entrepreneurial competencies to provide more reliable results. This is because according to Roy *et al.* (2012), misspecification in a model takes place due to the wrong modelling of a formative model as a reflective model, and vice versa. Furthermore, it has been observed that reflective models have been largely analysed instead of formative models. This is due to the absence of proper software for the testing of formative models along with accurate testing guidelines (Roy *et al.*, 2012). Several measurement models in the literature of entrepreneurship are a formative type of models. This due to the nature of their underlying domains. Thus, the misspecification error would take place when researchers consider formative models as reflective models (Roy *et al.*, 2012). The constructs' measurement model's misspecification results in fallacious path coefficients due to their effects on structural paths (Jarvis *et al.*, 2003). This indicates that to avoid misspecification error, there is an essential need to understand as well as measure formative models accurately. This study, therefore, argues that entrepreneurial competencies

operationalized with different dimensions reflect the respondents' perceptions regarding their unique behaviours. Hence, they should be treated as a reflective-formative second-order construct to achieve more accurate results by avoiding the misspecification's errors.

Additionally, according to Cheah *et al.* (2018), the evaluation of convergent validity is one of the key requirements for analysing the formative measurement models in the context of PLS-SEM. The convergent validity shows the relationship between the latent variable and its diverse measures (Cheah *et al.*, 2018). There are two ways to measure the convergent validity of the formative type of constructs. The first way is by using the reflective measures of the formative construct, and the second is by using a single global item that represents the essence of the formative construct (Hair *et al.*, 2017). Researchers have stated that the usage of a single global item to capture the essence of the second-order latent variable is more beneficial than other reflective measures in analysing the convergent validity of the formative type of second-order constructs. This is because the set of other reflective measures would increase the length of the questionnaire and will cause low responses from respondents (Hair *et al.*, 2017; Cheah *et al.*, 2018). Furthermore, studies have highlighted the several benefits of using single items. For instance, researchers have noted that the development of single item needs less effort than constructing the scales of multi-items. Additionally, single item enhances the response rates of respondents, minimizes the suspicious responses' pattern, and provides flexible adjustment for new contexts (Gardner *et al.*, 1998; Drolet & Morrison, 2001; Nagy, 2002; Fuchs & Diamantopoulos, 2009; Cheah *et al.*, 2018). Despite these several practical benefits, the usage of construct's single item is still limited in the assessment of the validity of formative constructs (Diamantopoulos *et al.*, 2012; Sarstedt *et al.*, 2016; Ali *et al.*, 2018; Cheah *et al.*, 2018). Therefore, this paper would introduce and use the single-item measure to determine the convergent validity of reflective-formative second-order construct

of entrepreneurial competencies. The usage of a single global item of entrepreneurial competencies will assist researchers in reducing the length of their questionnaire; and thus will not become a source of respondents' low responses. Moreover, in line with the studies such as Nagy (2002) and Fuchs & Diamantopoulos (2009), we do expect entrepreneurial competencies' single-item measure to also assist in minimizing the suspicious responses' pattern with flexible adjustment in new contexts.

Before describing the methodology section, it is essential to explain the conceptual meanings based on the relevant studies of the seven types of entrepreneurial competencies' dimensions. Therefore, the next segment presents the literature review regarding these dimensions to stress the unique meanings of the underlying concepts of these dimensions. The last part of existing literature review also highlights on some of the studies that have used the construct of entrepreneurial competencies either as the first order, second order, reflective-reflective, or reflective-formative type of second-order construct. Then, it describes research methodology, study's implications, future recommendations, and finally presents a conclusion.

### ***Entrepreneurial Competencies***

Business development requires various resources that vary from financial to behavioural resources (Barazandeh *et al.*, 2015). Since entrepreneurs have to acquire the essential resources to successfully run their businesses, both tangible and intangible resources are vital for all businesses. Intangible resources that are internal are perceived as the most important for the success of an entrepreneurial firm. Thus, the concept of "Competency" has been used to explain these internal factors (Barazandeh *et al.*, 2015). In general, competency has been categorized into skills, knowledge, and characteristics (Mojab *et al.*, 2011). Due to globalization, SMEs face intensive business environment and difficulties in enhancing their performance (Kraus *et al.*, 2012). The

human capital is a key factor for survivability and profitability of any firms (Bosma *et al.* 2004). In addition, human capital is generated by competencies which indicate the skills, education, experience, and attitudes of employees and business owners (Bontis *et al.*, 2000; Johara *et al.*, 2017). Therefore, entrepreneurial competencies do impact the business success (Faggian & McCann, 2009; Mitchelmore & Rowley, 2010). Additionally, competency is associated with the outstanding performance under turbulent environment (Hayton & Kelley, 2006); and only competent business owners lead successful businesses (Chandler & Jansen, 1992). The abilities needed to establish a new business can be conceptualized in several ways. The concept of entrepreneurial competencies has been considered as a productive way of capturing the knowledge, skills and abilities needed to introduce a new venture (Man *et al.*, 2002; Mitchelmore & Rowley, 2010; Rasmussen *et al.*, 2011).

### **Strategic Competency**

Strategic competencies refer to the entrepreneurs' capability to set, assess and implement their firms' strategies (Rahman *et al.*, 2014). Strategic competency constitutes strategic thinking (Stonehouse & Pemberton, 2002; Rahman, 2015) that assists entrepreneurs in making strategic decisions to attain significant benefits and superior performance (Ahmad *et al.*, 2010). This type of competency requires the entrepreneurs to have a clear strategic vision for their firm's businesses. Here they need strong objectives and goals as well as develop and execute strategies to attain these visions and objectives (Li, 2009). This competency is essential for entrepreneurs in using the competitive scope as well as organizational competencies to attain outstanding long-run performance (Man *et al.*, 2008). Strategic competency also assists in coping with business ambiguities through the long term vision (Parnell *et al.*, 2000). The clear set of goals and guidelines to compete will enable the entrepreneurs to attain the desired goals. These strategies indeed serve as a bridge in joining the capability of the firm and its

resources (Parnell *et al.*, 2000; Ahmad *et al.*, 2010; Rahman, 2015).

This competency enables entrepreneurs to face uncertain situations. Therefore, Ahmad (2007) has associated this competency with the entrepreneurs' behaviours to predict trends and industry's changes; to generate a competitive advantage as well as to design strategy to face a bad scenario. In addition, Ahmad *et al.* (2010) have related strategic competency to the entrepreneurial role. Jackson (2015) argues that strategic management techniques are equally important for SMEs as for large firms. Additionally, he finds through case studies that SMEs benefited from strategic management tools and techniques and experienced superior performance (Jackson, 2015). To face the intense competition, enhance the competitiveness of businesses and adaptability to an uncertain business environment, entrepreneurs need to build strategic competencies that will assist them in achieving business success through the formulation and implementation of effective strategies (Man *et al.*, 2002; Sugiyarti, 2015). In a more uncertain or turbulent business environment, strategic competencies are very crucial for knowledge acquisition, its distribution and interpretation to achieve business success (Hu *et al.*, 2015).

### **Conceptual Competency**

Conceptual ability improves entrepreneurs' thinking, enables them to cope with ambiguities and assists them in running more successful and effective businesses (Ahmad *et al.*, 2010). This competency area constitutes diverse conceptual capabilities that are imitated in the entrepreneurs' behaviours (Man *et al.*, 2002; Rahman *et al.*, 2016). These conceptual abilities involve risk-taking, decision skills, innovativeness, as well as understanding and observing complicated information (Man *et al.*, 2002; Yusoff *et al.*, 2015). Moreover, Chandler and Jansen (1992) mention that conceptual competency indicates the mental capability to manage all business practices. Ahmad (2007) has operationalized this competency domain by measuring several behaviours such as taking appropriate risk

associated with job, translating the observations and ideas into business context, understanding of the various issues and observations, looking at issues and problems in new ways, seeking new ideas, observing progress in achieving objectives in risky actions and taking problems as opportunities. Therefore, a high level of conceptual competencies enables individuals to take risks and create new firms (Yusoff *et al.*, 2015).

For instance, in a previous study, the entrepreneurs have realized on the utmost importance of developing ideas and taking decisions to establish their businesses and develop skills needed to become innovative, manipulate risk and make adequate decisions (Solesvik, 2012). Thus, conceptual competencies may assist future entrepreneurs to make timely and effective decisions to create a business (Yusoff *et al.*, 2015). Once the entrepreneurs have decided to establish a business, they will need to combine their critical resources and utilise them effectively in an appropriate manner (Yusoff *et al.*, 2015). Moreover, Ahmad *et al.* (2010) have related conceptual competency to the entrepreneurial role.

The empirical evidence related with this area of competency involves the capability to determine or identify problems, relate and then reorganize concepts (analysis) and thoroughly compare new concepts with available capabilities and knowledge (judgment) (Mitchell *et al.*, 2000; Lans *et al.*, 2011). Conceptual competencies refer to such categories of competencies; which are difficult to identify as individuals' behaviours but are important for the success of entrepreneurs (Li, 2009). Moreover, this category constitutes the ability of learning, analytical and cognitive thinking, innovating, decision making, problem-solving, coping with uncertainty and risk-taking (McClell, 1987; Bird, 1995). They are strongly associated with the traits of entrepreneurs that are less directly noticeable. Furthermore, they include a high level of conceptual abilities and activities that are reflected by the entrepreneur's behaviours in their analyses, learning, decision-making, and

problem-solving. Here, they may improve their effectiveness in undertaking present or future tasks (Li, 2009). The conceptual competencies need a more abstract stage of capabilities and may be concerned with the perspectives of shorter-term, with determining prompt events or involving intuitive responses (Man *et al.*, 2002).

### **Opportunity Competency**

Opportunity competency indicates the entrepreneurs' capability to recognise market opportunities through several means (Man & Lau, 2000; Rahman *et al.*, 2014). This competency is one of the most important as well as distinguishing competency for successful entrepreneurs (Li, 2009). This competency indicates the entrepreneurs' ability to search, recognise, develop and evaluate all possible opportunities available in a certain market (Man, 2001). By identifying effective opportunities, entrepreneurs can avoid potential risks and convert those opportunities into positive and superior outcomes (Ahmad *et al.*, 2010). The most critical ability of entrepreneurs is the recognition and exploitation of the opportunity to achieve success in business (Choi & Shepherd, 2004; Bergevoet & Woerkum, 2006; Rahman *et al.*, 2015). The entrepreneurs' opportunity competency assists them in the awareness of customers' demands and the availability of possible opportunities to meet customers' unexpected demands (Rahman *et al.*, 2015). Entrepreneurs need to make the right decisions to exploit opportunities for the success of their businesses (Choi & Shepherd, 2004). Man (2001) has stated that identification, assessment and seeking opportunities as the main clusters of opportunity competency. However, entrepreneurs who develop specific knowledge can explore more effective opportunities (Bergevoet & Woerkum, 2006). This competency enables entrepreneurs to recognise effective opportunities during the initial stages of businesses (Yusoff *et al.*, 2015). For instance, Solesvik (2012) finds in his qualitative study that Ukrainian women entrepreneurs who started new ventures had subsequently developed successful businesses.

This is because of their opportunity competency to recognise the effective opportunities in their business environments which were not being recognised by other non-entrepreneurs. Thus, this competency distinguishes the entrepreneurs from non-entrepreneurs (Yusoff *et al.*, 2015). Moreover, opportunity competency enables the entrepreneurs to take risks and face uncertain business conditions by recognising and exploiting effective opportunities (Yusoff *et al.*, 2015). Additionally, Ahmad *et al.* (2010) have related opportunity competency to the entrepreneurial role.

### **Learning Competency**

Entrepreneurial learning has appeared as a key concept at the interface of organisational learning and entrepreneurship. According to Man (2001), this domain of entrepreneurial competency demonstrates the entrepreneurs' capability to learn proactively from several means and ways, to get updates about the relevant field, and to apply learned skills and knowledge into the activities. The new knowledge is developed and disseminated promptly in today's modern social era. Thus, entrepreneurs are required to meet the demands of adaptive environments which is possible through the development of learning competency (Deakins & Freel, 1998). Learning competency is essential for entrepreneurs (Lu *et al.*, 2016). This can be enhanced by getting experiences and through engagement in various business activities (Stokes & Blackburn, 2002). According to Ahmad *et al.* (2010), this competency area is reflected by various entrepreneurs' abilities and behaviours such as learning as much as they can learn about their fields, learning from various means, reactivity in learning, keeping updates in the associated field and applying all the learned knowledge and skills to real practices.

Moreover, Man (2006) has found six patterns of entrepreneurial behaviours which involve actively seeking opportunities of learning; learning purposefully and selectively; in-depth learning; learning continuously; reflecting and improving upon experience; and also transferring experience to recent business

practices. Moreover, scholars have identified that entrepreneurs learn from other people (Harrison & Leitch, 2005), from their mistakes and environments to take risks and face uncertainties (Cope & Watts, 2000; Stokes & Blackburn, 2002). In addition, Ahmad *et al.* (2010) have highlighted that learning competency is one of among most critical domains that are essential for the entrepreneurial role. High level of entrepreneurs' learning competency and knowledge will result in survival as well as the growth of new ventures. Therefore, entrepreneurs need to develop knowledge regarding "know what", "know-how," and "know who" in their business contexts (Argote & Miron-Spektor, 2011).

Moreover, Aldrich and Yang (2014) argue that knowledge acquisition is a long-term and life-long process of learning to organise business activities. Entrepreneurial learning competency reflects the development of entrepreneurs' knowledge. Thus, learning competency generates new entrepreneurial knowledge through various sources (Xiuling & Li, 2013). The high level of learning competencies will enable the entrepreneurs to create knowledge and develop skills (through experience and context), retain and then transfer or apply them into actual practices (Argote & Miron-Spektor, 2011). Furthermore, Hamilton (2011) has argued that the process of learning is influenced by social interactions. This indicates that entrepreneurs develop their learning competency through interactions with suppliers, customers, competitors and other relevant organisations that provide essential knowledge and abilities required to run a business. Gutaskaite and Ramoniene (2015) have pointed out that entrepreneurial learning inputs adapt to entrepreneurial intentions. Thus, entrepreneurs can behave more appropriately according to adaptive situations. Krishnan (2013) has positively linked entrepreneurial learning competency with the entrepreneurs' risk-taking behaviours. Tseng (2013) finds that entrepreneurs can enhance their entrepreneurial experience and knowledge in the process of entrepreneurial development through learning

and developing skills relevant to self-monitoring and self-management.

### ***Personal Competency***

Personal competency is related to personal rapport and personal qualities; and has been recognised as an important competency as it improves entrepreneurs' effectiveness (Man & Lau, 2000; Krishnan, 2013). The personal competency of entrepreneurs continuously evolves according to the dynamic business environment (Garzón, 2010). Ahmad *et al.* (2010) have illustrated several behaviours that represent this competency domain, such as "thinking quickly and intuitively while making the decisions from different angles; assessing risks; and innovating". Additionally, Ahmad *et al.* (2010) have also defined this competency domain through several behaviours including recognising and working on one's shortcomings; constructively responding towards the criticism; maintaining a high-level energy; prioritising tasks to manage time; motivating to perform at an optimum level; managing own career development; and identifying the weaknesses and strengths and match them with threats and opportunities. Moreover, Ahmad *et al.* (2011) have also linked other behaviours with personal competency including the manager's personal qualities. The examples include approachability, an outgoing personality, honesty, appropriate behaviour when around others, creativity, risk-taking behaviour, highly ambitious, leads by example, emphasises on performance standards and has self-confidence. Researchers have recognised several entrepreneurial personal competencies that differentiate successful entrepreneurs from unsuccessful entrepreneurs (Santandreu-Mascarell *et al.*, 2013). Personal competency is viewed as the key zone of competency that is important for entrepreneurs' roles (Ahmad *et al.*, 2010). This competency domain has been associated with entrepreneurs' success (Man & Lau, 2000; Man, 2001; Man & Lau, 2005). Additionally, the literature has pointed out several characteristics of attitude and personality involved in this competency. For example, entrepreneurs who depict a high level

of stress tolerance and self-control (Markman & Baron, 1998). Successful entrepreneurs often possess great confidence in their abilities to attain the objectives they set (Ahmad *et al.*, 2010). They also possess self-belief and strong determination (Thompson *et al.*, 1996), and the strong drive to achieve their objectives despite problems (Chandler & Jansen, 1992). They do possess a great desire for achievement and are more goal and action-oriented (Lee & Tsang, 2001). This competency may increase the entrepreneurs' efficiency, and its positive impact on business success is predicted. Therefore, the personal strength of entrepreneurs has been considered as one of the important business resources and is critical for achieving business success (Ahmad, 2007).

### ***Ethical Competency***

Kaur and Bains (2013) view ethical competency in business as a high ethical awareness, and ability to deal and understand ethical problems and the power to argue and communicate at the organisational level; and having a great level of confidence to operate the business more effectively. The ethical competency depicted in business ethics is also called management ethics, which is the application of all ethical principles on business practices (Inyang & Enuoh, 2009). Ethics appear in individuals' attributes, who are trustworthy, honest and responsible for their every decision. Orme and Ashton (2003) state that ethics are a key segment of a competency framework providing a strong foundation for business success. Ethical competency signifies the individuals' ability to reveal the truth in their all business transactions by confessing mistakes and being honest (Ahmad, 2007; Ahmad *et al.*, 2010). Additionally, the entrepreneurs who hold this competency are more likely to offer services and products at reasonable prices and take responsibility for their activities (Ahmad *et al.*, 2010). The ethical behaviour of entrepreneurs is observable through their actions where they apply the ethical rules and practices across all business activities consistently (Orme & Ashton, 2003).



The ethical practices and competencies may assist the entrepreneurs to differentiate their businesses from their rivals and achieve competitive advantage in the market (Lahdesmaki, 2005). Particularly, Makhbul and Hasun (2011) have found that honesty (ethical competency) has been perceived as the most influential factor for the success of a business in the setting of Malaysian SMEs. Additionally, Spence and Rutherford (2001) have concluded that ethical practices may have a positive impact on customers' loyalty and may improve the effectiveness of supply chain relationships. Moreover, individuals are increasingly aware that ethical practices in business activities lead to good return (Zairi & Peters, 2002). Furthermore, the company's good ethical behaviour may impact its reputation (Cambra-Fierro *et al.*, 2008; Korsakiene & Diskiene, 2015). Thus, as it is strongly believed that decent ethics in business are beneficial for businesses, it is for the best interest of small business managers and owners to strengthen their ethical behaviours across all businesses activities (Spence & Rutherford, 2001; Lahdesmaki, 2005).

### ***Familism Competency***

A recent stream of entrepreneurship research has introduced the construct "familism" as a vital variable for the management of entrepreneurial ventures (Kuada, 2015). Familism indicates the individuals' identification and their attachment with their families and is characterised through loyalty, duty and solidarity among members of the family (Zeiders *et al.*, 2016). Furthermore, familism involves family closeness, contribution towards family well-being, and support to family members; indeed, it indicates a more collectivist orientation than an individual orientation towards success (Taylor *et al.*, 2012). Kaur and Bains (2013) have defined familism as the concern and affection for family, whereby it dominates and drives daily life and all actions. Familism is also defined as the form of a social organisation that concerns more about obligations towards immediate family and links kin members with one another (Hee Park, 2004). Thus, familism is associated with

loyalty to own group, facilitates the sharing of knowledge, and enhances work relationships (Bertrand & Schoar, 2006; Wijaya, 2008; Ho & Barnes, 2013). According to Ahmad (2007), Malaysian entrepreneurs replicate familism through their behaviours. Additionally, she finds that the Malaysian entrepreneurs identify their family members or close connections (in-group members) as being significant for the success of their ventures. Her study shows that entrepreneurs of Malaysia seek more advice and support from their family members, share resources and knowledge with their close associates to overcome hurdles in the business management, and pursue help from their loyal and trusted employees. In addition, Ahmad *et al.* (2011) have also depicted some common behaviours that demonstrate familism such as cooperation with others; particularly close related (in-group) in business, recognize and pursue help from trusted workers, get assistance and advice from close associates and members of family, and share critical information as well as resources with close associates (Ahmad *et al.*, 2010; Ahmad *et al.*, 2011). Moreover, Ahmad *et al.* (2011) have found that familism is specific to the Malaysian context. Familism assists the organisations to establish a community of trust within their businesses' network and internal structure (Wijaya, 2008). Thus, entrepreneurs who reflect familism in their behaviours can be characterised as espousing a strong family orientation; comprising the adherence to the values of familism that focus on support, obligations and interdependence (Taylor *et al.*, 2012). Additionally, the literature has also highlighted the importance of family members and close friends in businesses. For instance, families financially assist entrepreneurs for business start-up, which is critical for business ventures' success. This is because new small firms often have difficulty in assessing external financing. Secondly, most managers of small businesses are usually family members or close relatives who have interaction based on mutual trust that effectively minimises internal transaction costs (Wang & Fang, 2012). In addition, Ghezzi (2016) argues that "familistic

relations” create favourable conditions for the development of the small-scale industry.

### Entrepreneurial Competencies as a First Order or Second Order Construct in Existing Studies

Several studies on entrepreneurial competencies have been conducted under various contexts, but some researchers just used this construct in their conceptual studies without specifying it as a first or second-order type of construct (Ng & Kee, 2013; Yusoff *et al.*, 2015; Anis *et al.*, 2016; Gwadabe & Amirah, 2017; Hashim *et al.*, 2018; Quagraine, 2018; Minai *et al.*, 2018). A few researchers have conceptualized entrepreneurial competencies as a first-order construct in their quantitative studies (Ali & Yunoh, 2016). Meanwhile, others have operationalized the construct of entrepreneurial competencies as a second-order reflective-reflective type of construct (Ahmad, 2007; Umar *et al.*, 2018). Likewise, some researchers only tested different types of entrepreneurial

competencies’ dimensions as first-order constructs (Sánchez, 2012; Mamun *et al.*, 2016; Mohsin *et al.*, 2017; Nassiuma, 2017; Ahmad *et al.*, 2018; Sundah *et al.*, 2018; Ng & Kee, 2018; Tehseen *et al.*, 2019). On the other hand, Ahmed *et al.* (2018) have tested entrepreneurial competencies as the formative-formative second-order type of construct in their study. Wickramaratne *et al.* (2014) and Soejono *et al.* (2015), as well as Lauwere *et al.* (2018), have tested entrepreneurial competencies without specifying this construct either as reflective or formative type. Table 1 shows the summary of the above studies in which entrepreneurial competencies have either taken as first-order or second-order type of construct under various contexts.

Table 1 reveals that many recent researchers have acknowledged entrepreneurial competencies as a multidimensional construct. However, it has not been empirically examined most consistently. It seems that researchers are still not very much certain about the utilization

Table 1: Summary of Studies on Entrepreneurial Competencies

Author/s and Year	Construct/Constructs	Type of Construct (First Order, Reflective-Reflective Second Order, Reflective-Formative Second Order)	Study’s Context	Type of Study
Ahmad (2007)	Entrepreneurial competencies including strategic, opportunity, personal, technical, strategic, organizing and leading, commitment, relationship, and conceptual competencies	Reflective-reflective second order construct	Entrepreneurial success in Malaysian and Australian SMEs	Quantitative
Sánchez (2012)	Entrepreneurial competence including relationship, analytical, operational, strategic, and personal.	Reflective first order constructs	Small firm performance	Quantitative
Ng & Kee (2013)	Entrepreneurial competencies	Not mentioned	SMEs’ businesses	Conceptual

Wickramaratne et al. (2014)	Entrepreneurial competencies including opportunity, strategic, organizing, Commitment, relationship, and conceptual competencies.	Second order construct but not mentioned reflective or formative	Tea manufacturing firms' entrepreneurial orientation	Quantitative
Soejono et al. (2015)	Entrepreneurial competencies	Not mentioned	South Sumatra's business owners	Quantitative
Yusoff et al. (2015)	Entrepreneurial competencies including strategic, opportunity, and conceptual.	Not mentioned	Entrepreneurship Behaviours	Conceptual
Ali & Yunoh (2016)	Entrepreneurial competencies	First order construct	Malaysian SMEs	Quantitative
Anis et al. (2016)	Entrepreneurial competencies	Not mentioned	Public universities' librarians	Conceptual
Mamun et al. (2016)	Entrepreneurial competencies including risk-taking propensity, need for achievement, experience, and self-efficacy	Reflective first order constructs only	Informal micro-enterprises	Quantitative
Gwadabe & Amirah (2017)	Entrepreneurial competency	Not mentioned	Nigerian SMEs	Conceptual
Mohsin et al. (2017)	Entrepreneurial competencies including relationship competency, strategic competencies, opportunity competency, technical competency, conceptual competency	First order constructs	Malaysian SMEs	Quantitative
Nassiuma (2017)	Entrepreneurial competencies including attitudinal competences, behavioural competences, and managerial competences	First order constructs	Uasin Gishu and Bungoma	Quantitative
Ahmad et al. (2018)	Entrepreneurial competencies including teamwork competency, analytical planning competency, leadership competency, enforcement/implementation competency, innovative competency, networking competency	First order constructs	Malaysian women entrepreneurs	Quantitative

Ahmed <i>et al.</i> (2018)	Entrepreneurial competencies including strategic competencies, opportunity recognition competence, conceptual competence, personal competence, network competence, organizing competence, relationship competencies, and commitment competence	Formative second order construct but not clearly mentioned	micro and small manufacturing enterprises of Ethiopia	Quantitative
Hashim <i>et al.</i> (2018)	Entrepreneurial competencies	Not mentioned	SMEs' businesses	Conceptual
Lauwere <i>et al.</i> (2018)	Entrepreneurial competencies	Not mentioned	Dairy farmers	Quantitative
Minai <i>et al.</i> (2018)	Entrepreneurial competencies	Not mentioned	SMEs' businesses	Conceptual
Ng & Kee (2018)	Entrepreneurial Competence	Reflective first order construct only	Enterprise success	Quantitative
Quagraine (2018)	Entrepreneurial competencies including opportunity, technical competency, leadership, human relations, managerial, personal, and conceptual	Not mentioned	Women entrepreneurs	Conceptual
Sundah <i>et al.</i> (2018, January)	Entrepreneurial competencies including human relations competencies, technical competencies, managerial competencies, financial competencies, and marketing competencies	Reflective first order constructs only	business model canvas	Quantitative
Umar <i>et al.</i> (2018)	Entrepreneurial competencies including personal, conceptual, strategic, opportunity, commitment, organising & leading, ethical, learning, relationship, social responsibility, technical, familism	Reflective-reflective second order construct	Malaysian SMEs	Quantitative
Lawal <i>et al.</i> (2018)	Entrepreneurial competencies including relationship, strategic, conceptual, and opportunity competencies	Reflective-reflective second order construct	Nigerian SMEs	Quantitative
Tehseen <i>et al.</i> (2019)	Entrepreneurial competencies including strategic and ethical competencies	Reflective first order constructs only	Malaysian SMEs	Quantitative

of entrepreneurial competencies as either first-order construct or second-order construct in their studies. Despite the availability of SmartPLS, researchers still prefer the testing of only a few dimensions of entrepreneurial competencies as first-order constructs. Thus, the above review of the existing studies reveals that many researchers have specified the construct of entrepreneurial competencies as reflective-reflective second-order construct (e.g., Ahmad, 2007; Mamun *et al.*, 2016; Umar *et al.*, 2018; Lawal *et al.*, 2018) or have tested its different dimensions as reflective type of first-order constructs only (e.g., Sánchez, 2012; Mamun *et al.*, 2016; Ng & Kee, 2018; Tehseen *et al.*, 2019). In this paper, we do suggest researchers employing PLS-SEM techniques to evaluate it as a higher-order model along with its context-specific dimensions. Also, this study proposes that the construct of entrepreneurial competencies operationalized with its seven

context-specific dimensions namely strategic, conceptual, opportunity, learning, personal, ethical and familism competencies should be treated as the reflective-formative second type of construct. This is as shown in Figure 1.

The second-order hierarchical component model is presented in Figure 1.

**Materials and Methods**

**Measures**

There were 30 items in the questionnaire to signify the seven dimensions of entrepreneurial competencies. Responses to the competency statements of the questionnaire were measured using the 5 point Likert Scale ranging from 1 = strongly disagree 5 = strongly agree. The first dimension of entrepreneurial competencies is “Strategic Competency”, which was measured by 5 items. The second dimension is

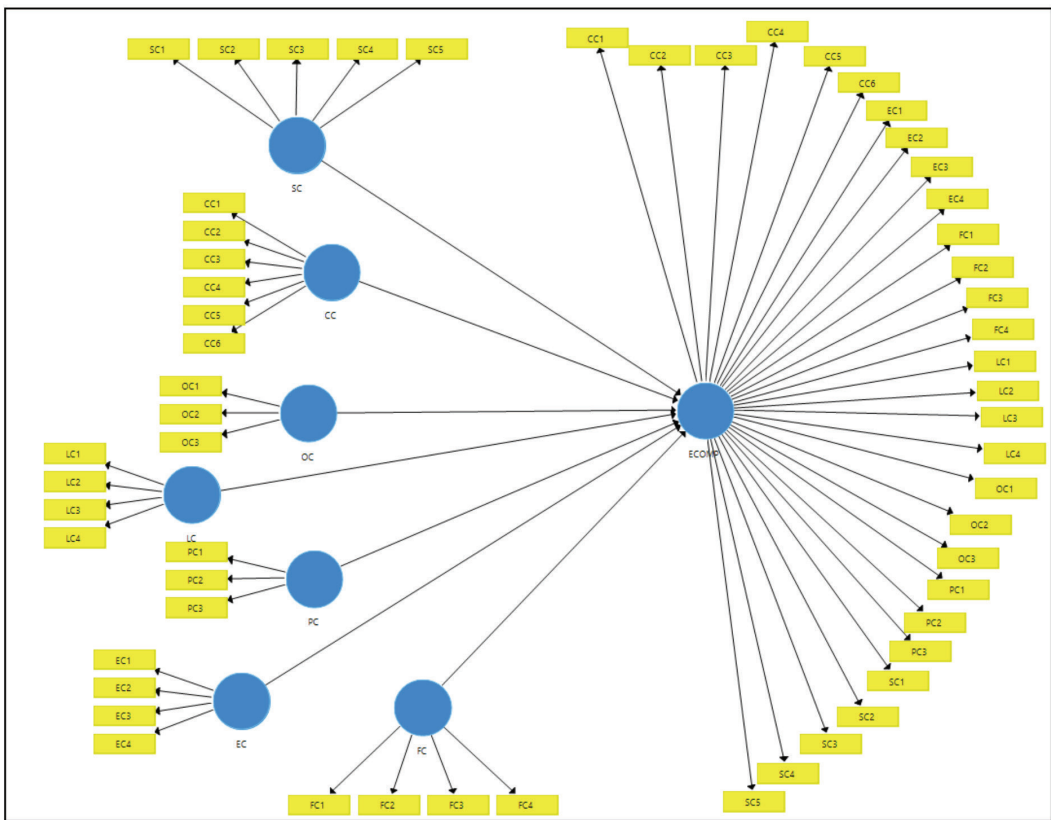


Figure 1: Second order hierarchical component model

“Conceptual Competency” and was measured by 6 items. “Opportunity Competency” is the third dimension and was measured by 3 items. The fourth dimension is “Learning Competency” and was measured by 4 items. Finally, the “Personal Competency” is the fifth dimension and was measured by 3 items. All the items of these five dimensions were adopted from Man (2001) and Ahmad (2007). The sixth and seventh dimensions of entrepreneurial competencies constitute “Ethical Competency” and “Familism” respectively; and each dimension was measured by 4 items that were adopted from Ahmad (2007). In addition, one global item for entrepreneurial competencies was also added in this part to assess overall entrepreneurial competencies so that convergent validity of reflective-formative second-order construct (entrepreneurial competencies) could be assessed later on at the data analysis stage. The summary of these items is shown in Table 2.

A pre-test was carried out with colleagues, academics and respondents (wholesale and retail business owners) to judge the survey questions’ appropriateness, as well as to check whether the survey questions were clear and simple, free from jargon and grammatically correct (Bowden *et al.*, 2002). The other characteristics including format, the flow of the survey, length, and completion time were also assessed. This is a method of interaction in which continuous feedback is received with each cycle of adjustment. The pre-test process constitutes two main phases or rounds. The first phase or round involves receiving feedbacks from 4 academics, 4 PhD students and 3 wholesale and retail business owners, which were then analysed and summarised. Revisions were made based on feedback. The second round emphasizes on receiving detailed feedbacks from 6 wholesale and retail business owners. Drawing on the feedback from the respondents, the original items were further simplified and refined, the survey’s layout was improved, and some measures were discarded from the survey.

The card sort method was adopted for pre-testing among six entrepreneurs from Malaysian

wholesale and retail SMEs. The researcher used her social contacts to identify and access the ethnic entrepreneurs (experts) from the Malaysian wholesale and retail SMEs. The card sort method is also referred to as the “Q Method” which was first mentioned by William Stephenson in 1935 (Brewer *et al.*, 2000; Jahrami *et al.*, 2009). This method comprises an exploratory approach with the emphasis on describing the unique interpretation as well as the understanding of studied concepts or issues. It measures the attitudes, opinions and beliefs of individuals about a particular subject area. The card sort method has been proven as a viable tool to determine individuals’ perceptions regarding various issues or concepts such as competencies (Jahrami *et al.*, 2009). This method involves an activity in which subjects (items) are given a set of cards and respondents are then asked to identify and organise the cards according to the specific constructs. The process of card sorting involved 3 stages in this study. At the first stage, the experts were asked to identify the items and put them into the boxes representing the specific constructs. After doing so, at the second stage of pretesting, the researcher improved and modified the wordings of some items for clear understanding according to the suggestions of experts. Once the items were improved in terms of their wordings, then at the third stage of this process, the experts, in this case, the entrepreneurs of the wholesale and retail Malaysian SMEs were asked to identify and select the most relevant items (questions), the key items of each of the constructs that could be included in the survey instrument for the final study. Additionally, a global item related to entrepreneurial competencies was also pre-tested and was slightly adapted according to the suggestions of the experts. Furthermore, before deployment into the field, feedbacks on the revised survey were also sought from 5 entrepreneurs from wholesale and retail SMEs.

### ***Sample and Sampling Techniques***

The target respondents were the entrepreneurs selected from Malaysian wholesale and

Table 2: Items of Entrepreneurial Competencies

---

1. Strategic Competency (Source: Ahmad, 2007; Man, 2001)	
SC1.	I always monitor progress towards strategic goals.
SC2.	I prioritize work in alignment with business goals.w
SC3.	I usually assess and link short term, day to day tasks in the context of long term direction.
SC4.	I evaluate results against strategic goals.
SC5.	I align current actions with strategic goals.
2. Conceptual Competency (Source: Ahmad, 2007; Man, 2001)	
CC1.	I understand the broader business implications of ideas, issues and observations.
CC2.	I translate ideas, issues, and observations into the business context.
CC3.	I take reasonable job-related risks.
CC4.	I monitor progress towards objectives in risky actions.
CC5.	I am well planned in making decisions.
CC6.	I remain proactive and responsive to changes.
3. Opportunity Competency (Source: Ahmad, 2007; Man, 2001)	
OC1.	I sought high quality business opportunities.
OC2.	I take an idea or concept and make something out of it.
OC3.	I scan the environment to explore opportunities.
4. Learning Competency (Source: Ahmad, 2007; Man, 2001)	
LC1.	I learn proactively.
LC2.	I learn as much as I can in my field.
LC3.	I keep up to date in my field.
LC4.	I apply learned skills and knowledge to actual practice.
5. Personal Competency' (Source: Ahmad, 2007; Man, 2001)	
PC1.	I maintain a positive attitude.
PC2.	I prioritize tasks to manage my time.
PC3.	I recognize and work on my own weaknesses.

---

---

 6. Ethical Competency (Source: Ahmad, 2007)

- EC1. I always keep promises.
- EC2. I engage in fair, open and honest marketing practices.
- EC3. I try to be transparent and honest in business dealings.
- EC4. I strive to be committed in offering goods and services at fair prices.

## 7. Familism Competency (Source: Ahmad, 2007)

- FC1. I cultivate an entrepreneurial culture in my family.
- FC2. I cooperate with and help others (especially with close associates) in business.
- FC3. I identify and seek help from employees I trust.
- FC4. I build a foundation for the next generation to continue the business.

 8. Global Item (Over all Perception regarding Entrepreneurial Competencies)  
 (Source: Self-constructed)

---

ECC\_global. The extent to which you believe that you possess all above entrepreneurial competencies to run your business.

retail SMEs. A total of 450 respondents had participated in this survey including 150 Malaysian Chinese, 150 Malay, and 150 Indians. The survey was conducted from October 2016 until January 2017 to collect primary data from the target respondents from 13 states of Malaysia including Kuala Lumpur, Terengganu, Putrajaya, Negeri Sembilan, Perak, Malacca, Selangor, Kedah, Johor, Perlis, Pahang, Penang, and Kelantan. Few local undergraduates and graduate enumerators had provided their assistance for data collection. Furthermore, the full sample represented 58% female and 42% male respondents. Additionally, most of the respondents, i.e. about 50.2%, belonged to the age group of 41-50 years. Likewise, the bachelor's degree was found to be the highest educational attainment among 63.6% of the respondents. Table 3 shows the number of total respondents participated in this survey from these Malaysian states.

Non-probability sampling techniques including quota sampling and snowball sampling techniques were utilised to select the respondents. Since the data on Malaysian SMEs

are not easily available, particularly, up to date data and detailed database are not accessible for the Malaysian service sector, choosing the sampling frame for Malaysian SMEs in the service sector is very difficult (Ahmad, 2007). Hence, in view that the complete list of the total population was not available to researchers, non-probability sampling techniques were used in this study. The techniques of non-probability sampling including snowball and quota techniques were used because of their various advantages as described by Kumar (2011). For instance, for snowball sampling, we needed only a few contacts to direct us to other entrepreneurs from the wholesale and retail SMEs. However, since snowball sampling technique was not enough to get a large number of respondents for our current study, quota sampling was also used as the most suitable sampling technique for our research. This technique was considered because of the easy access to the sample population. Since Malaysian wholesale and retail businesses are dominated by three main ethnic groups of entrepreneurs namely Malaysian Chinese, Malay, and Indian, the researchers decided to employ the equal number of these ethnic



Table 3: Collected Sample from Target Malaysian State

Categories/ Firm location	Full Sample (N= 450)		Chinese Sample (N= 150)		Malay Sample (N= 150)		Indian Sample (N= 150)	
	Frequency	Percentages	Frequency	Percentages	Frequency	Percentages	Frequency	Percentages
Selangor	144	32.0	53	35.3	43	28.7	48	32.0
Kuala Lumpur	166	36.9	56	37.3	58	38.7	52	34.7
Putra Jaya	10	2.2	5	3.3	2	1.3	3	2.0
Perlis	12	2.7	4	2.7	2	1.3	6	4.0
Kedah	11	2.4	5	3.3	3	2.0	3	2.0
Penang	14	3.1	5	3.3	3	2.0	6	4.0
Perak	13	2.9	3	2.0	4	2.7	6	4.0
Kelantan	11	2.4	2	1.3	6	4.0	3	2.0
Terengganu	12	2.7	2	1.3	6	4.0	4	2.7
Pahang	10	2.2	3	2.0	5	3.3	2	1.3
Malacca	14	3.1	3	2.0	7	4.7	4	2.7
Johor Baru	16	3.6	5	3.3	5	3.3	6	4.0

entrepreneurs in this study. Therefore, the quota sampling technique was also used to collect data from the required number of ethnic respondents. We preferred these two techniques because they are the less expensive way of selecting the sample and they guarantee the inclusion of required respondents for our study. In addition, we could make our sample more representative of our study population by selecting it from various locations where people of interest to us were likely to be available (Kumar, 2011). Furthermore, literature has evidenced that researchers have used one type or two types of non-probability sampling techniques to collect data from Malaysian respondents due to the absence of entire population list (Fontaine & Richardson, 2005; Chong, 2012; Budin *et al.*, 2013).

### Data Analysis

The PLS-SEM was utilised to validate the model as it constitutes both reflective as well as formative constructs and violates the multivariate normality's assumption (Gefen & Straub, 2005; Ali *et al.*, 2016). This technique has been used by many researchers because it provides a robust method in examining survey data (Herath & Rao, 2009; Simkin & McLeod, 2010). PLS-SEM requires an appropriate sample size (Peng & Lai, 2012) and Hair *et al.* (2014;

2017) highly recommend the G\*power analysis to compute the minimum required sample size. Thus, G\*Power 3 software, which is the latest version, was utilised to determine the sample size (Faul *et al.*, 2007). As the PLS model involved seven constructs, to create a power of 0.80, a minimum sample size of 98 was needed for this PLS model with the medium effect size (Hair *et al.*, 2014; 2017). Nonetheless, we had managed to collect data from 450 entrepreneurs; hence, creating a power of 0.99 for the PLS model with medium effect size. Therefore, the sample size for this model had exceeded the minimum requirement. The analysis was done by using Smart PLS (Version 3.2.6; Ringle *et al.*, 2015) software and the technique of bootstrapping was applied to evaluate the significance of factors' loadings, as well as path coefficients. Additionally, a two-step approach proposed by Anderson and Gerbing (1988) was then adopted for analysis. Thus, firstly, the measurement model was evaluated by analysing the reliability and validity of each of the items. This is then followed by the structural model's evaluation which involves the paths' estimation between the constructs, determining the significance of the relationships of these paths as well as the Goodness of Fit of the model.

### ***Single source bias assessment***

#### ***Harman's Single-Factor Test***

This study had used Harman's single factor test to detect the common method bias. Using this test, all the constructs' items were entered into the principal component analysis (PCA) with the unrotated factor solution. This is to assess if a single factor emerges or single general factor accounts majority of the co-variation among constructs (Greene & Organ, 1973; Schriesheim, 1979; Andersson & Bateman, 1997; Aulakh & Gencturk, 2000; Steensma *et al.*, 2005; Krishnan *et al.*, 2006; Tehseen *et al.*, 2017). The results revealed that the first factor captured only 29.510% of the variance in data. Additionally, no single factor had emerged and most of the variances were not produced by the first factor as shown in Table 4. Thus, common method variance is not a serious issue in this study.

#### ***Correlation Matrix Procedure***

The issue of common method bias can also be detected through the correlation matrix procedure. This method was suggested by Bagozzi *et al.* (1991). Based on this method, the common method bias issue is evident in any studies if the correlation among the principal constructs is more than 0.9. Thus, the correlations of latent variables were assessed among the main constructs in the correlation matrix. However, none were found to be more than 0.9 as revealed by Table 5. Therefore, this study has no issue of common method bias.

### ***Conceptual Background of Hierarchical Component Models***

The term "Hierarchical Component Model" represents the multidimensional construct that is at the abstraction's higher level and is associated with other latent variables at the same abstraction's level (Chin, 1998; Becker *et al.*, 2012). According to Hair *et al.* (2018), HCMs minimize the structural model's relationships to make PLS path model more parsimonious. Becker *et al.* (2012) have described the second-order constructs as the common concept that

can either be represented as reflective or formative by their sub-dimensions, which are also known as lower or first-order constructs. In a reflective-reflective type of second-order constructs, the first-order latent constructs are always reflectively measured and have a high correlation with each other. Since each of the entrepreneurial competencies' dimensions indicates a separate concept, these domains are not conceptually united and do not share a common cause among themselves. Therefore, the construct of entrepreneurial competencies has been taken as reflective-formative type II second-order construct.

#### ***Estimation of higher-order constructs (HOC) in PLS-SEM through repeated indicator approach***

Using the repeated indicator approach, the higher-order construct could be constructed by specifying a latent variable that describes all the items of the underlying first-order construct (Lohmöller, 1988; Becker *et al.*, 2012). Thus, the entrepreneurial competencies as a second-order construct constitute seven dimensions including strategic, conceptual, opportunity, personal, learning, ethical, and familism as underlying lower-order constructs, each with their particular manifest variables as shown in Table 6. Therefore, entrepreneurial competencies as a second-order latent variable can be specified using all (30) manifest variables of the underlying domains that are taken as lower-order constructs. As a result, the manifest variables have been used twice: (i) for the first-order latent variables where they indicate primary loadings, and (ii) for the second-order latent variable where they represent the secondary loadings. Thus, the outer model was specified this way. Additionally, the inner model accounts for the HCM, and the path coefficients between the first-order construct and second-order constructs indicate the weights of the second-order construct. This is because the dimensions of entrepreneurial competencies have been taken as the formative indicators for the second-order latent variable.

Table 4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.558	29.510	29.510	8.558	29.510	29.510
2	2.368	8.165	37.675	2.368	8.165	37.675
3	1.836	6.330	44.004	1.836	6.330	44.004
4	1.391	4.796	48.800	1.391	4.796	48.800
5	1.251	4.312	53.113	1.251	4.312	53.113
6	1.128	3.891	57.003	1.128	3.891	57.003
7	1.125	3.878	60.881	1.125	3.878	60.881
8	1.020	3.518	64.399	1.020	3.518	64.399
9	.960	3.310	67.708			
10	.843	2.909	70.617			
11	.775	2.673	73.290			
12	.695	2.397	75.687			
13	.688	2.372	78.059			
14	.617	2.128	80.187			
15	.551	1.901	82.089			
16	.529	1.825	83.914			
17	.504	1.739	85.653			
18	.492	1.698	87.351			
19	.438	1.511	88.863			
20	.413	1.423	90.285			
21	.396	1.364	91.649			
22	.366	1.263	92.912			
23	.342	1.178	94.090			
24	.333	1.148	95.238			
25	.313	1.080	96.318			
26	.291	1.003	97.321			
27	.270	.930	98.252			
28	.256	.882	99.134			
29	.251	.866	100.00			

Extraction Method: Principal Component Analysis.

The main advantage of the repeated indicator's approach is that it can estimate all the constructs simultaneously instead of assessing the second-order and first-order constructs individually. Additionally, the repeated indicator's approach allows researchers to

decide on the measurement's mode for the second-order construct and also for the inner weighting scheme. For any construct in a PLS-SEM model, the measurement's mode is taken either as "Mode A" or "Mode B". In general, the "Mode A" measurement is relevant to the reflective constructs and "Mode B" is relevant to

Table 5: Latent Variable Correlation

	CC	EC	ECC	FC	LC	OC	PC	SC
<b>CC</b>	<b>1.000</b>							
<b>EC</b>	0.367	<b>1.000</b>						
<b>ECC</b>	0.813	0.638	<b>1.000</b>					
<b>FC</b>	0.537	0.430	0.711	<b>1.000</b>				
<b>LC</b>	0.568	0.430	0.703	0.492	<b>1.000</b>			
<b>OC</b>	0.425	0.303	0.668	0.372	0.330	<b>1.000</b>		
<b>PC</b>	0.321	0.289	0.559	0.233	0.235	0.459	<b>1.000</b>	
<b>SC</b>	0.524	0.388	0.786	0.433	0.372	0.558	0.475	<b>1.000</b>

Table 6: Indicators of Constructs

Entrepreneurial Competencies (First-Order Constructs)	Manifest Variables of First-Order Constructs	Number of Manifest Variables
<b>Strategic Competency</b>	SC1, SC2,SC3,SC4,SC5	5
<b>Conceptual Competency</b>	CC1,CC2,CC3,CC4,CC5,CC6	6
<b>Opportunity Competency</b>	OC1,OC2,OC3	3
<b>Learning Competency</b>	LC1,LC2,LC3,LC4	4
<b>Personal Competency</b>	PC1,PC2,PC3	3
<b>Ethical Competency</b>	EC1,EC2,EC3,EC4	4
<b>Familism</b>	FC1,FC2,FC3,FC4	4
<b>7 Constructs</b>		29

formative constructs (Henseler *et al.*, 2009). On the other hand, as a standard approach, the Mode A has been suggested to be used for the repeated indicators on a second-order construct (Wold, 1982), where it is usually suitable for reflective-reflective type models. Therefore, Mode A is used to assess the formative type models, particularly when the lower-order constructs are reflective (reflective-formative type) (Chin, 2010; Ringle *et al.*, 2012). Since the seven dimensions of entrepreneurial competencies have been taken as the reflective lower-order latent variable and as formative indicators for the higher-order construct, Mode A was used for the repeated indicators of the higher-order construct.

**Assessment of Measurement Model**

The measurement model was assessed for the convergent validity which was evaluated

through composite reliability (CR), average variance extracted (AVE), and factor loadings (Hair *et al.*, 2006; Hair *et al.*, 2014; 2017; Ramayah *et al.*, 2018). CR represents the internal consistency of the latent variables proposed by Hoffmann and Birnbrich (2012). 0.70 is the minimum acceptable value for CR (Herath & Rao, 2009) and all the constructs involved were found to have exceeded the minimum value. Additionally, the constructs' convergent validity was evaluated by assessing the factor loadings and the average variance extracted (AVE). Hair *et al.* (2017) state that the factor loadings' values ranging between 0.4-0.7 are acceptable. Additionally, they mention that items having outer loadings between 0.40 and 0.70 should be evaluated. This means that if the deletion of such items increases the CR and AVE from their threshold values, only then items having outer loadings between 0.40 and 0.70 should be

deleted; otherwise such items should be retained on the construct (Hair *et al.*, 2014; 2017). All items were retained due to appropriate values of CR and AVE. Similarly, AVE value that is higher than 0.5 suggests the acceptable value of convergent validity (Bagozzi & Yi, 1988; Hair *et al.*, 2017). All the constructs' AVE values

and factor loadings were above their suggested levels. Table 7 reveals the results of CR, factor loadings, Cronbach's alpha, AVE, and Rho\_A for all the latent variables.

Hair *et al.* (2017) have suggested examining the discriminant validity using three criteria including cross-loadings, Fornier-Lacker

Table 7: Evaluation of AVE, CR, Cronbach's Alpha, and Rho\_A

Construct	Items	Factor Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
<b>Conceptual Competency (CC)</b>	CC1	0.750	0.814	0.826	0.867	0.525
	CC2	0.798				
	CC3	0.746				
	CC4	0.724				
	CC5	0.769				
	CC6	0.526				
<b>Ethical Competency (EC)</b>	EC1	0.769	0.799	0.803	0.869	0.624
	EC2	0.821				
	EC3	0.793				
	EC4	0.775				
<b>Familism (FC)</b>	FC1	0.786	0.709	0.714	0.821	0.535
	FC2	0.720				
	FC3	0.672				
	FC4	0.744				
<b>Learning Competency (LC)</b>	LC1	0.760	0.750	0.752	0.842	0.571
	LC2	0.748				
	LC3	0.733				
	LC4	0.780				
<b>Opportunity Competency (OC)</b>	OC1	0.825	0.710	0.713	0.838	0.633
	OC2	0.781				
	OC3	0.779				
<b>Personal Competency(PC)</b>	PC1	0.834	0.744	0.747	0.854	0.661
	PC2	0.802				
	PC3	0.804				
<b>Strategic Competency(SC)</b>	SC1	0.758	0.820	0.822	0.874	0.581
	SC2	0.789				
	SC3	0.783				
	SC4	0.749				
	SC5	0.731				

Table 8: Cross-Loadings

	CC	EC	FC	LC	OC	PC	SC
CC1	<b>0.750</b>	0.29	0.418	0.421	0.283	0.285	0.427
CC2	<b>0.798</b>	0.246	0.382	0.435	0.365	0.250	0.428
CC3	<b>0.746</b>	0.282	0.423	0.402	0.286	0.222	0.398
CC4	<b>0.724</b>	0.297	0.444	0.489	0.28	0.220	0.328
CC5	<b>0.769</b>	0.274	0.393	0.402	0.366	0.245	0.397
CC6	<b>0.526</b>	0.199	0.250	0.306	0.266	0.156	0.282
EC1	0.229	<b>0.769</b>	0.305	0.286	0.236	0.248	0.336
EC2	0.344	<b>0.821</b>	0.352	0.385	0.251	0.229	0.299
EC3	0.313	<b>0.793</b>	0.397	0.371	0.273	0.251	0.335
EC4	0.265	<b>0.775</b>	0.293	0.306	0.190	0.179	0.251
FC1	0.428	0.339	<b>0.786</b>	0.397	0.311	0.178	0.353
FC2	0.356	0.272	<b>0.720</b>	0.331	0.296	0.158	0.336
FC3	0.329	0.331	<b>0.672</b>	0.249	0.288	0.230	0.337
FC4	0.453	0.314	<b>0.744</b>	0.454	0.195	0.120	0.241
LC1	0.460	0.327	0.465	<b>0.760</b>	0.254	0.121	0.262
LC2	0.369	0.283	0.287	<b>0.748</b>	0.297	0.205	0.309
LC3	0.388	0.348	0.292	<b>0.733</b>	0.230	0.194	0.267
LC4	0.492	0.341	0.429	<b>0.780</b>	0.22	0.194	0.288
OC1	0.347	0.308	0.314	0.297	<b>0.825</b>	0.388	0.456
OC2	0.371	0.195	0.306	0.230	<b>0.781</b>	0.318	0.434
OC3	0.297	0.214	0.268	0.258	<b>0.779</b>	0.389	0.441
PC1	0.293	0.243	0.206	0.212	0.427	<b>0.834</b>	0.400
PC2	0.218	0.268	0.182	0.172	0.350	<b>0.802</b>	0.368
PC3	0.269	0.194	0.179	0.187	0.339	<b>0.804</b>	0.391
SC1	0.358	0.322	0.384	0.278	0.423	0.323	<b>0.758</b>
SC2	0.445	0.359	0.321	0.309	0.484	0.472	<b>0.789</b>
SC3	0.377	0.293	0.341	0.261	0.395	0.342	<b>0.783</b>
SC4	0.389	0.250	0.310	0.330	0.451	0.370	<b>0.749</b>
SC5	0.427	0.245	0.292	0.235	0.365	0.289	<b>0.731</b>

criterion, and HTMT. In evaluating the cross-loadings, the item's outer loading should be greater on its respective construct than its cross-loadings on other constructs (Hair *et al.*, 2017). Table 8 reveals greater outer loading of each item on its respective construct than the cross-loading on other constructs.

Fornell-Larcker criterion is the second approach to assess the discriminant validity where the square root of AVE of every construct should be higher than its correlation with other constructs (Hair *et al.*, 2017). Table 9 reveals that discriminant validity has been established by assessing the Fornell-Larcker criterion.

Table 9: Fornell-Larcker Criterion

	CC	EC	FC	LC	OC	PC	SC
CC	0.724						
EC	0.367	0.790					
FC	0.537	0.430	0.732				
LC	0.568	0.430	0.492	0.756			
OC	0.425	0.303	0.372	0.330	0.795		
PC	0.321	0.289	0.233	0.235	0.459	0.813	
SC	0.524	0.388	0.433	0.372	0.558	0.475	0.762

Table 10: HTMT Criterion

	CC	EC	FC	LC	OC	PC	SC
CC							
EC	0.452 (0.338, 0.561)						
FC	0.702 (0.594, 0.802)	0.566 (0.458, 0.671)					
LC	0.724 (0.614, 0.817)	0.551 (0.434, 0.639)	0.665 (0.735, 0.785)				
OC	0.561 (0.439, 0.655)	0.396 (0.260, 0.514)	0.525 (0.387, 0.648)	0.453 (0.328, 0.596)			
PC	0.408 (0.285, 0.522)	0.372 (0.253, 0.498)	0.322 (0.196, 0.452)	0.315 (0.181, 0.449)	0.629 (0.501, 0.770)		
SC	0.64 (0.550, 0.730)	0.474 (0.348, 0.591)	0.568 (0.467, 0.676)	0.474 (0.357, 0.585)	0.729 (0.616, 0.841)	0.603 (0.471, 0.709)	

Henseler *et al.* (2015) have recommended examining the correlations' heterotrait-monotrait ratio (HTMT) to assess discriminant validity. This latest approach reveals the estimation of the true correlation between the two constructs. Here, 0.90 is the threshold value suggested for HTMT (Henseler *et al.*, 2015). Any values that are higher than 0.90 indicate the lack of discriminant validity. Moreover, the confidence interval's value of HTMT should not include the value of 1. Table 10 reveals that the HTMT

criterion has been established for our PLS model.

**Assessment of Second-order Construct**

Hair *et al.* (2017) and Ramayah *et al.* (2018) have recommended three basic steps in the assessment of the formative measurement model including (i) examining the convergent validity; (ii) assessing the collinearity issues; (iii) and analysing the significance as well as the relevance of formative items. Therefore,

following Ramayah *et al.* (2018) and Hair *et al.* (2017), entrepreneurial competencies as a reflective-formative construct were examined as follows:

**Reflective-Formative Measurement Model's Evaluation**

*Convergent Validity's Assessment*

Hair *et al.* (2017) and Ramayah *et al.* (2018) suggest using two approaches in examining formative constructs' convergent validity. The first approach deals with the assessment of the correlation between formative construct and its other reflective items. The magnitude of path coefficient should be at the minimum value of 0.70 between two latent variables. Meanwhile, the R<sup>2</sup> value should be at least

0.50 for endogenous latent variable. To avoid the fatigue of respondents and to minimize the response rates, we used the second approach in which we assessed the reflective-formative latent variable's validity by using a global item (Hair *et al.*, 2017; Ramayah *et al.*, 2018). The entrepreneurial competencies' global item summarizes the essence of this construct. Additionally, the self-constructed global item was also pretested before its inclusion in the final questionnaire to examine the convergent validity of the entrepreneurial competencies. The analysis reveals a magnitude of 0.702 for the path coefficients between the latent variables, and the R<sup>2</sup> value of 0.492 (almost nearing 0.50) for the endogenous latent variable (see Figure 2).

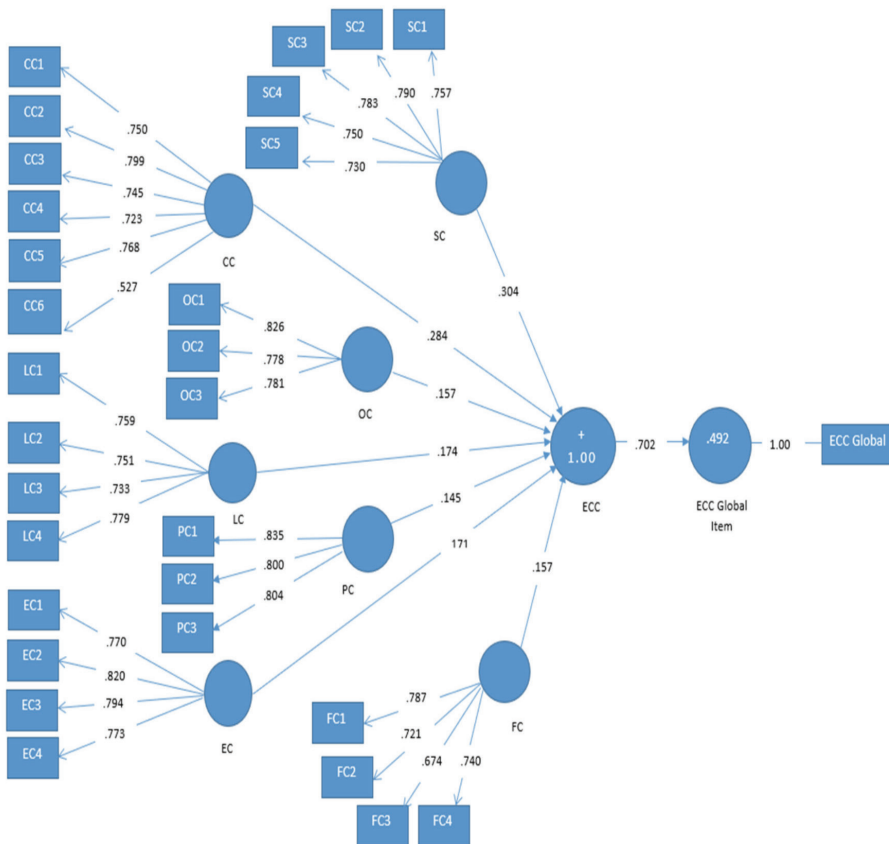


Figure 2: Assessment of Second-Order Construct's Convergent Validity



**Assessment of Indicator’s Collinearity**

In general, high correlations are not expected among the items of formative measurement models. On the other hand, collinearity is usually indicated by formative items’ high correlation which could be problematic for such models (Hair *et al.*, 2014; Ramayah *et al.*, 2018). Variance Inflation Factor (VIF) is used to assess the collinearity between the formative indicators of the latent variables. For the reflective-formative type of second-order latent variable, inner VIF values should be examined to determine collinearity’s issues. Thus, we evaluated the latent variables which include SC, CC, OC, PC, LC, EC and FC for collinearity as predictors of entrepreneurial competencies (ECC). Hair *et al.* (2017) have mentioned that the VIF’s threshold value is less than 5. Table 11 reveals that the values of VIF for all the predictor latent variables are less than 5. Thus, collinearity is not an issue between the latent variables’ formative items (Hair *et al.*, 2011; Hair *et al.*, 2014).

**Evaluation of Indicator Weights’ Significance and Relevance**

The significance of each indicator’s weight shows its relative importance. Meanwhile,

Table 11: VIF Values

Constructs	Inner VIF
Strategic Competency (SC)	1.895
Conceptual Competency (CC)	1.936
Opportunity Competency (OC)	1.634
Learning Competency (LC)	1.683
Personal Competency (PC)	1.411
Ethical Competency (EC)	1.405
Familism (FC)	1.656

loading describes the absolute importance and this can be assessed through bootstrapping. The bootstrapping’s procedure needs cases of at least equal in number to an original observation of sample (Hair *et al.*, 2011). Smart PLS (version 3.2.6; Ringle *et al.*, 2015) was utilised to assess the significance as well as the relevance of items’ weights. The bootstrapping’s procedure uses 1000 resamples (Chin, 2010) to evaluate the weights’ significance of the formative indicators. Lohmöller (1989) has suggested that the weight of >0.1 shows the significance of an indicator. The results show that the weights of indicators were all above the suggested value of 0.1. Table 12 shows the significant t-values of

Table 12: Testing of Significance of Weights

Dimensions	Std. Beta	Stdev	t-value	p-value
<b>Strategic Competencies → Entrepreneurial Competencies</b>	0.267	0.013	***21.135	p < .001
<b>Conceptual Competencies → Entrepreneurial Competencies</b>	0.299	0.014	***20.751	p < .001
<b>Opportunity Competencies → Entrepreneurial Competencies</b>	0.148	0.011	***13.816	p < .001
<b>Learning Competencies → Entrepreneurial Competencies</b>	0.187	0.012	***15.222	p < .001
<b>Personal Competencies → Entrepreneurial Competencies</b>	0.129	0.012	***10.53	p < .001
<b>Ethical Competencies → Entrepreneurial Competencies</b>	0.185	0.011	***17.231	p < .001
<b>Familism Competencies → Entrepreneurial Competencies</b>	0.178	0.009	***19.73	p < .001

Note: Critical t value \*\*\*2.57 (significance level= 1%)

all formative indicators, revealing the empirical support to retain all of them (Hair *et al.*, 2011).

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

The  $Q^2$  evaluates the predictive validity by using the blind folding’s procedure that omits data for a given set of items; and the omitted part is then estimated based on calculated parameters. Thus,  $Q^2$  reveals the reconstruction of empirically collected data with the assistance of model and PLS-SEM’s parameters (Akter *et al.*, 2011; Hair *et al.*, 2017).  $Q^2$  is attained through the procedure of cross-validated redundancy as suggested by Chin (2010). According to Hair *et al.* (2017), when  $Q^2$  is greater than 0, then the model possesses the predictive relevance. On the other hand, when  $Q^2$  is less than 0, it means that the model lacks predictive relevance. Additionally, the  $Q^2$  value are 0.15, 0.02, 0.35, hence describing medium, small, and large relevance for certain endogenous construct, respectively (Hair *et al.*, 2017). Table 13 reveals that 0.272 is the  $Q^2$  value for entrepreneurial competencies, showing the endogenous latent variable’s (i.e., entrepreneurial competencies) large relevance.

**The Implications of Study and Future Recommendations and Conclusion**

**Implications of Study**

This study has provided theoretical support and modelled the construct of entrepreneurial competencies as a second-order reflective-

formative type using the PLS-SEM approach suggested by Hair *et al.* (2017). This study argues that by studying only a few dimensions as first-order constructs of entrepreneurial competencies, the scope of studies would be limited. This is because researchers might not be able to assess the impact of overall entrepreneurial competencies on various dependent variables in different contexts. Thus, the main implication of this study is that considering the construct of entrepreneurial competencies as a reflective-formative type of second-order construct would not only make PLS models more parsimonious but would also enable researchers to analyse the overall influence of entrepreneurial competencies on different dependent variables under various contexts. This study intends to analyse the construct of entrepreneurial competencies as a reflective-formative type of second-order construct to avoid the misspecifications that may occur while calculating the results of  $R^2$  values and path coefficient’s values. Moreover, while modelling the entrepreneurial competencies as a second-order reflective-formative construct, researchers need to be careful in their assessment of the measurement model. This is because when entrepreneurial competencies (HOCs) are formed by dimensions (LOCs) as a reflective-formative HCM, they are similar to formative measurement models. Therefore, researchers need to carefully evaluate the measurement models of LOCs as well as measurement model of HOCs. The measurement models of reflective

Table 13:  $Q^2$  of the Cultural Orientation

Construct	SSO	SSE	$Q^2 (=1-SSE/SSO)$
CC	2,700.00	2,700.00	
EC	1,800.00	1,800.00	
ECC	13,050.00	9,494.65	0.272
FC	1,800.00	1,800.00	
LC	1,800.00	1,800.00	
OC	1,350.00	1,350.00	
PC	1,350.00	1,350.00	
SC	2,250.00	2,250.00	

Note:  $Q^2 > 0$

LOCs (entrepreneurial dimensions) should be evaluated by analysing the indicator reliability (outer loadings), internal consistency (composite reliability), and discriminant validity (cross-loadings, Fornell-Lacker criterion, and HTMT criterion) and convergent validity (average variance extracted). On the other hand, the assessment of formative measurement model of the second-order construct of entrepreneurial competencies should include the analyses of convergent validity, indicators' collinearity, and outer weights' significance as well as relevance (Hair *et al.*, 2014).

### **Future Recommendations**

Researchers need to determine and analyse entrepreneurial competencies formative and should select the context-specific indicators (dimensions). This is because the indicators selected for measuring the entrepreneurial competencies (formative construct) should completely cover the entire scope of construct and, should be completely enumerated as well (Bollen & Lennox, 1991). Moreover, in this study, all the dimensions of entrepreneurial competencies were identified as specific dimensions in the Malaysian context as earlier reported by Ahmad (2007). Thus, researchers from other developing or developed countries should first identify their context-specific dimensions of entrepreneurial competencies from existing literature. Then, they should take all specific dimensions as formative indicators for the second-order construct of entrepreneurial competencies. This is because every dimension would define and indicate the construct's unique characteristic and any changes in the indicator's value are expected to describe the construct's changes as well. Moreover, the deletion of an indicator may change the construct's conceptual domain (Mackenzie *et al.*, 2005). Moreover, researchers who plan to use reflective-formative modelling are recommended to try out the PLS-SEM instead of CB-SEM. This is because the PLS approach is the most appropriate method for the modelling of a formative construct due to two reasons. First, PLS allows the researcher to test a formative construct in isolation. Second,

it works well on residual distributions, small sample size, and on non-normal data (Chin, 1998; Chin *et al.*, 2003; Roy *et al.*, 2012). The future researchers are also suggested to study the second-order construct of entrepreneurial competencies instead of studying its different dimensions separately. This is because firstly, HCM is measured at the abstraction's higher level while including the related subcomponents or dimensions as LOCs, which cover the construct's concrete traits. Secondly, HCMs minimizes the number of structural model relationships which results in a more parsimonious PLS path model; by increasing the content's bandwidth covered by the respective constructs (Hair *et al.*, 2018). Future researchers are suggested to study "entrepreneurial competencies" as a multidimensional construct that represents a single theoretical concept measured by its relevant latent variables. The conceptualization of entrepreneurial competencies as a multidimensional construct would enable researchers to build relationship theories between multi-part complex concepts within the broader nomological networks (Wong *et al.*, 2008). Researchers should appropriately define entrepreneurial competencies as a multidimensional construct based on strong measurement theory in a specific context. This means researchers should use the validated measures to operationalize the dimensions of entrepreneurial competencies for the specific context. The construct of entrepreneurial competencies should be analysed as a reflective-formative second-order construct using PLS-SEM techniques. Researchers should study the entrepreneurial competencies based on the focus of their studies. For instance, if the studies focus on the complex concept of entrepreneurial competencies, then the researchers should analyse the measurement model with its important conceptual distinctions to thoroughly test and assess them. The researchers also need to evaluate it as a reflective-formative second-order construct. Nevertheless, when research emphasizes only on the part of the complex relationships, then researchers can evaluate entrepreneurial competencies as the first-

order constructs or second-order construct by taking a single measure for each dimension. Researchers should be aware of the differences that may exist due to variation in the research context. Therefore, the operationalization of entrepreneurial competencies should focus according to the specific context.

Additionally, researchers should be aware of the use of global fit and SRMR values in their PLS-SEM studies. Although Tenenhaus *et al.* (2004) suggested global goodness of fit measure for PLS-SEM, research shows that global fit value is not suitable in the assessment of misspecified models for PLS-SEM studies (Henseler & Sarstedt, 2013; Ramayah *et al.*, 2016). As a result, PLS-SEM's researchers depend on measures that show the predictive capabilities of the model to judge its quality (Henseler *et al.*, 2014). Furthermore, Henseler & Sarstedt (2013) also explain that Tenenhaus *et al.*'s (2004) GoF does not indicate a fit measure, and therefore researchers should not use it in PLS-SEM's studies.

However, Henseler & Sarstedt (2013) state on the usefulness of GoF for PLS multigroup analysis (PLS-MGA) that deals with the comparison of PLS-SEM's results among different groups for the same type of PLS path model. Likewise, based on studies of Ramayah *et al.* (2016) and Hair *et al.* (2017), SRMR which stands for root mean square residual was introduced by Henseler *et al.* (2014) as a goodness of fit measure for PLS-SEM. However, it does not add any value to PLS-SEM analyses in general. This is because PLS-SEM emphasizes more on prediction rather than on explanatory modelling. Therefore, it needs a different type of validation. As such, we suggest future researchers to analyse the SRMR value only for their PLS multigroup model, and not for general PLS-SEM models. This implies that if future studies intend to analyse the entrepreneurial competencies among multiple groups, only then SRMR values should be reported.

## Conclusion

This paper describes the seven context-specific dimensions of entrepreneurial competencies namely strategic, opportunity, conceptual, learning, ethical, familism, and personal competencies that could be considered vital for sustainable entrepreneurship. Since sustainable entrepreneurship emphasizes on entrepreneurs' entrepreneurial competencies (Wals & Jickling, 2002), this paper has focused on the seven context-specific dimensions of entrepreneurial competencies. These competencies are important to the achievement of economic, social, and environmental goals of SMEs for their long-term sustainability. Also, entrepreneurial competencies are essential for the attainment of competitive advantage as well as sustainable entrepreneurship in any specific context. Therefore, it is important to understand the measurement of context based on entrepreneurship competencies' dimensions. This paper has presented the measurement of entrepreneurial competencies as reflective-formative measurement model (second-order construct) using PLS-SEM approach. This paper has highlighted the literature review on the specific dimensions of entrepreneurial competencies; and also described the theoretical differences between formative and reflective measurement models. From the literature, the seven dimensions including strategic, personal, conceptual, familism, ethical, learning, opportunity competencies have been identified as context-specific dimensions of entrepreneurial competencies. Using the primary survey data in the Malaysian context, the construct of entrepreneurial competencies has been measured as a reflective-formative second-order construct using PLS-SEM approach as recommended by Hair *et al.* (2017) and Ramayah *et al.* (2018). Moreover, this paper has also discussed the influence of possible misspecification of the measurement model on its parameters. Based on existing literature, we have found misspecification in the scale of the measurement model. Therefore, we suggest the formative formulation for the construct of entrepreneurial competencies. We have also

suggested some guidelines for the modelling of entrepreneurial competencies as a reflective-formative construct. This paper has addressed entrepreneurial competencies as an important latent variable for SEM-based research in the field of entrepreneurship. As the outcome of this study, we expect future researchers to measure entrepreneurial competencies as a reflective-formative second-order construct to avoid misspecifications in the parameters using PLS-SEM approach.

### Acknowledgements

This research is part of a PhD thesis entitled “Impact of cultural orientations, entrepreneurial competencies and innovativeness on business success: A comparative study among selected ethnic entrepreneurs in Malaysian wholesale and retail SMEs” which was submitted as a fulfilment to meet requirements for the degree of Doctor of Philosophy at Universiti Kuala Lumpur Business School (UniKL BiS), Universiti Kuala Lumpur, Malaysia. We are thankful to UniKL BiS that has helped us in carrying out this research. We are also thankful to all those respondents who participated in this study.

### References

- Ahmad, N. H. (2007). *A cross cultural study of entrepreneurial competencies and entrepreneurial success in SMEs in Australia and Malaysia* (Doctoral dissertation).
- Ahmad, N. H., Suseno, Y., Seet, P. S., Susomrith, P., & Rashid, Z. (2018). Entrepreneurial Competencies and Firm Performance in Emerging Economies: A Study of Women Entrepreneurs in Malaysia. In *Knowledge, Learning and Innovation* (pp. 5-26). Springer, Cham.
- Ahmad, N. H., Ramayah, T., Wilson, C. & Kummerow, L. (2010). Is entrepreneurial competency and business success relationship contingent upon business environment? A study of Malaysian SMEs. *International Journal of Entrepreneurial Behavior & Research*, 16(3), 182–203.
- Ahmad, N. H., Wilson, C., Kummerow, L., (2011). A cross-cultural insight into the competency-mix of SME entrepreneurs in Australia and Malaysia. *International Journal of Business and Management Science*, 4(1), 33-50.
- Ahmed, Y.A, Kar, B., & Ahmed, H.M.S. (2018). Critical Factors of Entrepreneurial Competencies for Successfully Managing Micro and Small enterprise in Ethiopia. *Journal of Business and Management*, 20(7), 84-91.
- Akter, S., D’Ambra, J., & Ray, P. (2011). An evaluation of PLS based complex models: The roles of power analysis, predictive relevance and GoF index. Proceedings of the 17th Americas Conference on Information Systems (AMCIS2011) (pp. 1-7). Detroit, USA: Association for Information Systems.
- Aldrich, H. E. & Yang, T. (2014). How do entrepreneurs know what to do? learning and organizing in new ventures. *Journal of Evolutionary Economics*, 24(1), 59–82.
- Ali, F., Amin, M., & Cobanoglu, C. (2016). An integrated model of service experience, emotions, satisfaction, and price acceptance: An empirical analysis in the Chinese hospitality industry. *Journal of Hospitality Marketing & Management*, 25(4), 449-475.
- Ali, F., Rasoolimanesh, S.M., Sarstedt, M., Ringle, C.M. & Ryu, K. (2018). An assessment of the use of partial least squares structural equation modeling (PLS-SEM) in hospitality research. *International Journal of Contemporary Hospitality Management*, 30(1), 514-538. <https://doi.org/10.1108/IJCHM-10-2016-0568>
- Ali, K. A. M., & Yunoh, M. N. M. (2016). The Effect of Business Innovation Capability on the Relationship between TQM and Malaysian SME Performance: A Conceptual Framework. *International Journal of Business, Economics and Law*, 10(2), 7-13.

- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411.
- Andersson, L. M., & Bateman, T. S. (1997). Cynicism in the workplace: Some causes and effects. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *18*(5), 449-469.
- Anis, S. N. M., Rasli, A. M., & Hashim, N. H. (2016). Through the looking glass: Enhancing Public University Librarians' entrepreneurial competencies in facing the impact of globalization (Conceptual Paper). *International Review of Management and Marketing*, *6*(4S), 70-79.
- Argote, L. & Miron-Spektor, E. (2011). Organizational learning: From experience to knowledge. *Organization Science*, *22*(5), 1123-1137.
- Aulakh, P. S., & Gencturk, E. F. (2000). International principal-agent relationships: Control, governance and performance. *Industrial Marketing Management*, *29*(6), 521-538.
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74-94.
- Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, 421-458.
- Barazandeh, M., Parvizian, K., Alizadeh, M., & Khosravi, S. (2015). Investigating the effect of entrepreneurial competencies on business performance among early stage entrepreneurs Global Entrepreneurship Monitor (GEM 2010 survey data). *Journal of Global Entrepreneurship Research*, *5*(1), 18.
- Becker, J. M., Klein, K., & Wetzels, M. (2012). Hierarchical latent variable models in PLS-SEM: guidelines for using reflective-formative type models. *Long Range Planning*, *45*(5-6), 359-394.
- Bergevoet, R. & Woerkum, C. V. (2006). Improving the entrepreneurial competencies of Dutch dairy farmers through the use of study groups. *Journal of Agricultural Education and Extension*, *12*(1), 25-39.
- Bertrand, M. & Schoar, A. (2006). The Role of family in family firms. *The Journal of Economic Perspectives*, *20*(2), 73-96.
- Bird, B. (1995). Towards a Theory of entrepreneurial competency. *Advances in Entrepreneurship, Firm Emergence and Growth*, *2*(1), 51-72.
- Bollen, K., Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin*, *110*(2), 305-314.
- Bontis, N, Keow, W. C. C., & Richardson, S (2000). Intellectual capital and business performance in Malaysian industries. *Journal of Intellectual Capital*, *1*(1), 85-100.
- Bosma, N, Van Praag, M, Thurik, R, & De Wit, G (2004). The value of human and social capital investments for the business performance of startups. *Small Business Economics*, *23*(3), 227-236.
- Bowden, A., Fox-Rushby, J., Nyandieka, L. & Wanjau, J. (2002). Methods for Pre-Testing and Piloting Survey Questions: Illustrations from the KENQOL Survey of Health-Related Quality of Life. *Health Policy and Planning*, *17*(3), 322-330.
- Brewer, G. A., Selden, S. C., Facer, I. & Rex, L. (2000). Individual Conceptions of Public Service Motivation. *Public Administration Review*, *60*(3), 254-264.
- Budin, D., Kamisah, A. & Wafa, S. A. (2013). The Relationship between Gender and Ethnicity upon Hofstede's Cultural Dimensions among Sabah Ethnicities. *IOSR Journal of Business and Management*, *10*(6), 55-58.

- Cambra-Fierro, J., Hart, S. & Polo-Redondo, Y. (2008). Environmental respect: ethics or simply business? A study in the small and medium enterprise (SME) context. *Journal of Business Ethics*, 82(3), 645–656.
- Chandler, G. N. & Hanks, S. H. (1994). Market attractiveness, resource-based capabilities, venture strategies and venture performance. *Journal of Business Venturing*, 9(4), 331–349.
- Chandler, GN, & Jansen, E (1992). The founder's self-assessed competence and venture performance. *Journal of Business Venturing*, 7(3), 223–236.
- Cheah, J. H., Sarstedt, M., Ringle, C. M., Ramayah, T., & Ting, H. (2018) Convergent validity assessment of formatively measured constructs in PLS-SEM: on using single-item versus multi-item measures in redundancy analyses. *International Journal of Contemporary Hospitality Management*.
- Chin, W. W. (1998). Commentary: Issues and opinion on structural equation modeling. *MIS Quarterly*, 22(1), 7-16.
- Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares* (pp. 655-690). Springer, Berlin, Heidelberg.
- Chin, W. W., Marcolin, B. L., Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research*, 14(2), 189-217.
- Choi, Y.R. & Shepherd, D. A. (2004). Entrepreneurs' decisions to exploit opportunities. *Journal of Management*, 30(3), 377–395.
- Chong, W.Y. (2012). Critical Success Factors for Small and Medium Enterprises: Perceptions of Entrepreneurs in Urban Malaysia. *Journal of Business and Policy Research*, 7(4), 204–215.
- Cope, J. & Watts, G. (2000). Learning by doing—an exploration of experience, critical incidents and reflection in entrepreneurial learning. *International Journal of Entrepreneurial Behaviour & Research*, 6(3), 104–124.
- Deakins, D. & Freel, M. (1998). Entrepreneurial learning and the growth process in SMEs. *The Learning Organization*, 5(3), 144–155.
- Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P. & Kaiser, S. (2012) Guidelines for choosing between multi-item and single-item scales for construct measurement: A predictive validity perspective. *Journal of the Academy of Marketing Science*, 40(3), 434-449.
- Drolet, A.L. & Morrison, D.G. (2001) Do we really need multiple-item measures in service research? *Journal of Service Research*, 3(3), 196-204
- Darcy, C., Hill, J., McCabe, T. J., & McGovern, P. (2014). A consideration of organisational sustainability in the SME context: A resource-based view and composite model. *European Journal of Training and Development*, 38(5), 398-414.
- Faggian, A, & McCann, P (2009). Human capital and regional development. *Handbook of regional growth and development theories*, 133–151.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, 39(2), 175-191.
- Fontaine, R. & Richardson, S. (2005). Cultural Values in Malaysia: Chinese, Malays and Indians Compared. *Cross Cultural Management: An International Journal*, 12(4), 63–77.
- Fuchs, C. & Diamantopoulos, A. (2009) Using single-item measures for construct measurement in management research: conceptual issues and application

- guidelines. *Business Administration Review*, 69(2), 195-210. <https://doi.org/10.1021/ja01488a024>
- Gardner, D.G., Cummings, L.L., Dunham, R.B. & Pierce, J.L. (1998) Single-item versus multiple-item measurement scales: an empirical comparison. *Educational and Psychological Measurement*, 58(6), 898-915. <https://doi.org/10.1177/0013164498058006003>
- Ghezzi, S. (2016). Familism in the Firm an Ethnographic Approach to Italian Family Capitalism. *Ethnologie française*, (2), 241-254.
- Garzón, M. D. (2010). A comparison of personal entrepreneurial competences between entrepreneurs and CEOs in service sector. *Service Business*, 4(3-4), 289-303.
- Gefen, D., & Straub, D. (2005). A practical guide to factorial validity using PLS-Graph: Tutorial and annotated example. *Communications of the Association for Information systems*, 16(1), 5.
- Gefen, D., E.E. Rigdon, & D. Straub (2011). An Update and Extension to SEM Guidelines for Administrative and Social Science Research. *MIS Quarterly* (35)2, iii-xiv.
- Greene, C. N., & Organ, D. W. (1973). An evaluation of causal models linking the received role with job satisfaction. *Administrative Science Quarterly*, 95-103.
- Gutauskaite, G. & Ramonien'e, L. (2015). The role of entrepreneurial learning on entrepreneurial intensions in lithuanian creative industries. Gutauskaite, G. *The Role of Entrepreneurial Learning on Entrepreneurial Intensions in Lithuanian Creative Industries [Manuscript]*. Vilnius, ISM University of Management and Economics, 2015.
- Gwadabe, U. M., & Amirah, N. A. (2017). Entrepreneurial Competencies: SMEs Performance Factor in the Challenging Nigerian Economy. *Academic Journal of Economic Studies*, 3(4), 55-61.
- Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.
- Hair, J. F., Hult, G. T. M., Ringle, C. & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (1st ed.). Thousand Oaks, CA: Sage.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, 19(2), 139-152.
- Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P., (2018). *Advanced issues in partial least squares structural equation modeling*. (3rd ed.). Thousand Oaks, CA: Sage.
- Hair, J., Black, W., Babin, B. anderson, R. & Tatham, R. (2006). *Multivariate Data Analysis* (6th eds) Upper Saddle River, Pearson Prentice Hall. New Jersey.
- Hall, J. K., Daneke, G. A., & Lenox, M. J. (2010). Sustainable development and entrepreneurship: Past contributions and future directions. *Journal of Business Venturing*, 25(5), 439-448.
- Hamilton, E. (2011). Entrepreneurial learning in family business: A situated learning perspective. *Journal of Small Business and Enterprise Development*, 18(1), 8-26.
- Harrison, R. T. & Leitch, C. M. (2005). Entrepreneurial learning: Researching the interface between learning and the entrepreneurial context. *Entrepreneurship Theory and Practise*, 29(4), 351-371.
- Hashim, N.A.B., Raza, S., & Minai, M. S. (2018). Relationship between Entrepreneurial Competencies and Small Firm Performance: Are Dynamic Capabilities the Missing Link? *Academy of Strategic Management Journal*, 17(2), 1-10.



- Hayton, J.C., & Kelley, D.J. (2006). A competency based framework for promoting corporate entrepreneurship. *Human Resource Management, 45*(3), 407–427.
- Hee Park, T. (2004). The influences of familism on interpersonal trust of Korean public officials. *International Review of Public Administration, 9*(1), 121–135.
- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., ... & Calantone, R. J. (2014). Common beliefs and reality about PLS comments on Rönkkö and Evermann (2013). *Organizational Research Methods, 17*(2), 182-209.
- Henseler, J., Ringle, C. M. & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135.
- Henseler, J., Ringle, C. M. & Sinkovics, R. R. (2009). The Use of Partial Least Squares Path Modeling in International Marketing. *Advances in International Marketing, 20*(1), 277–319.
- Henseler, J., & Sarstedt, M. (2013). Goodness-of-fit indices for partial least squares path modeling. *Computational Statistics, 28*(2), 565-580.
- Herath, T., & Rao, H. R. (2009). Encouraging information security behaviors in organizations: Role of penalties, pressures and perceived effectiveness. *Decision Support Systems, 47*(2), 154-165.
- Ho, P. & Barnes, L. (2013). An examination of how entrepreneurs in Hong Kong perceive personal success through business activities. *Journal of Marketing Development and Competitiveness, 7*(1), 63–72.
- Hoffmann, A. & Birnbrich, C., (2012), “The impact of fraud prevention on bank-customer relationships: An empirical investigation in retail banking”, *International Journal of Bank Marketing, 30*(5), 390 – 407.
- Hu, H., Wu, J. & Shi, J. (2015). Strategic HRM and organisational learning in the Chinese private sector during second-pioneering. *The International Journal of Human Resource Management, 27*(1), 1–20.
- Inyang, B. J. & Enuoh, R. O. (2009). Entrepreneurial competencies: The missing links to successful entrepreneurship in Nigeria. *International Business Research, 2*(2), 62-71.
- Jackson, A. J. (2015). Can strategic management techniques be applied to small and medium enterprises. Retrieved from <http://dx.doi.org/10.2139/ssrn.2670540>
- Jahrami, H., Marnoch, G. & Gray, A. M. (2009). Use of Card Sort Methodology in the Testing of a Clinical Leadership Competencies Model. *Health Services Management Research, 22*(4), 176–183.
- Jarvis, C.B., MacKenzie, S.B., & Podsakoff, P.M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research, 30*(2), 199-218.
- Johara, F., Yahya, S., & Tehseen, S. (2017). Determinants of Future Entrepreneurship and Entrepreneurial Intention. *Global Business and Management Research: An International Journal, 9*(4), 80–96.
- Kaur, H. & Bains, A. (2013). Understanding the concept of entrepreneur competency. *Journal of Business Management & Social Sciences Research, 2*(11), 31-33.
- Korsakiene, R. & Diskiene, D. (2015). Do competencies of entrepreneurs and managers influence internationalization processes? investigation of Lithuanian SMEs. In *Proceedings of the 10th European Conference on Innovation and Entrepreneurship ECIE 2015*, 17–18 September 2015, The University of Genoa, Italy. Sonning Common, UK.
- Kraus, S, Rigtering, JPC, Hughes, M, & Hosman, V (2012). Entrepreneurial orientation

- and the business performance of SMEs: a quantitative study from the Netherlands. *Review of Managerial Science*, 6(2), 161–182.
- Krishnan, L. (2013). The role of competencies and personality in determining success of entrepreneurs in SMEs in Karnataka, India. *International Business Management*, 7(4), 258–266.
- Krishnan, R., Martin, X., & Noorderhaven, N. G. (2006). When does trust matter to alliance performance? *Academy of Management journal*, 49(5), 894-917.
- Kuada, J. (2015). Theories and perspectives on entrepreneurship. In *Private Enterprise-Led Economic Development in Sub-Saharan Africa* (pp. 153-163). Palgrave Macmillan UK.
- Kumar, R. (2011). *Research Methodology: A Step-by-Step Guide for Beginners*. Thousand Oaks: Sage.
- Lahdesmaki, M. (2005). When ethics matters—interpreting the ethical discourse of small nature-based entrepreneurs. *Journal of Business Ethics*, 61(1), 55–68.
- Lans, T., Versteegen, J. & Mulder, M. (2011). Analysing, pursuing and networking: towards a validated three-factor framework for entrepreneurial competence from a small firm perspective. *International Small Business Journal*, 29(6), 695–713.
- Lauwere, C.D., Rawlikowska, A.M., Stalgiene, A., Klopčic, M., & Kuipers, A. (2018). Entrepreneurship and competencies of dairy farmers in Lithuania, Poland and Slovenia. *Transformations In Business & Economics*, 17(3), 237-257.
- Lawal, F. A., Iyiola, O. O., Adegbuyi, O. A., Ogunnaike, O. O., & Taiwo, A. A. (2018). Modelling the relationship between entrepreneurial climate and venture performance: The moderating role of entrepreneurial competencies. *Academy of Entrepreneurship Journal*, 24(1), 1-15.
- Lee, C., Hallak, R., & Sardeshmukh, S. R. (2016). Innovation, entrepreneurship, and restaurant performance: A higher-order structural model. *Tourism Management*, 53, 215-228.
- Lee, D. Y. & Tsang, E. W. (2001). The effects of entrepreneurial personality, background and network activities on venture growth. *Journal of Management Studies*, 38(4), 583–602.
- Li, X. (2009). *Entrepreneurial Competencies as an Entrepreneurial Distinctive: An Examination of the Competency Approach in Defining Entrepreneurs* (master's thesis). Singapore Management University.
- Lohmöller, J. B. (1988). The PLS program system: Latent variables path analysis with partial least squares estimation. *Multivariate Behavioural Research*, 23(1), 125-127.
- Lu, X. F., Shan, B. A. & Chen, B. (2016). Entrepreneurial passion definition, antecedent, outcome and model building. In *Proceedings of the 6th International Asia Conference on Industrial Engineering and Management Innovation* (pp. 1055-1062). Atlantis Press.
- MacKenzie, S. B., Podsakoff, P. M., Jarvis, C. B. (2005) The problem of measurement model misspecification in behavioural and organizational research and some recommended solutions. *Journal of Applied Psychology*, 90(4), 710-730.
- McGee, J. E., & Peterson, M. (2017). The long-term impact of entrepreneurial self-efficacy and entrepreneurial orientation on venture performance. *Journal of Small Business Management*, 1-18.
- Makhbul, Z. M. & Hasun, F. M. (2011). Entrepreneurial success: An exploratory study among entrepreneurs. *International Journal of Business and Management*, 6(1), 116-125.
- Mamun, A. A., Subramaniam, P., Nawi, C. N., & Zainol, N. R. (2016). Entrepreneurial Competencies and Performance of

- Informal Micro-Enterprises in Malaysia. *Mediterranean Journal of Social Science*, 7(3), 273-281.
- Man, T. W. & Lau, T. (2000). Entrepreneurial competencies of SME owner/managers in the Hong Kong services Sector: A qualitative analysis. *Journal of Enterprising Culture*, 8(03), 235–254.
- Man, T. W. & Lau, T. (2005). The context of entrepreneurship in Hong Kong: An investigation through the patterns of entrepreneurial competencies in contrasting industrial environments. *Journal of Small Business and Enterprise Development*, 12(4), 464–481.
- Man, T. W., Lau, T. & Snape, E. (2008). entrepreneurial competencies and the performance of small and medium enterprises: An investigation through a framework of competitiveness. *Journal of Small Business & Entrepreneurship*, 21(3), 257–276.
- Man, T. W., Lau, T., & Chan, K. F. (2002). The competitiveness of small and medium enterprises: A conceptualization with focus on entrepreneurial competencies. *Journal of Business Venturing*, 17(2), 123-142.
- Man, T.W.Y. (2006). Exploring the behavioural patterns of entrepreneurial learning: A competency approach. *Education + Training*, 48(5), 309–321.
- Man, W. Y. T. (2001). *Entrepreneurial Competencies and the Performance of Small and Medium Enterprises in the Hong Kong Services Sector* (unpublished doctoral dissertation). The Hong Kong Polytechnic University.
- Markman, G. D. & Baron, R. A. (1998). Social skills and entrepreneurs' financial success: Evidence that the ability to get along with others really matters. *Frontiers of Entrepreneurship Research*, 88–102.
- McClell, D. C. (1987). Characteristics of successful entrepreneurs. *The Journal of Creative Behavior*, 21(3), 219–233.
- Minai, M.S., Raza, S., Hashim, N.A.B., Zain, A.Y.M., & Tariq, T.A. (2018). Linking entrepreneurial education with firm performance through entrepreneurial competencies: A Proposed Conceptual framework. *Journal of Entrepreneurship Education*, 21(4), 58-69.
- Mitchell, R. K., Smith, B., Seawright, K. W. & Morse, E. A. (2000). Cross-cultural cognitions and the venture creation decision. *Academy of Management Journal*, 43(5), 974–993.
- Mitchelmore, S. & Rowley, J. (2013). Entrepreneurial competencies of women entrepreneurs pursuing business growth. *Journal of Small Business and Enterprise Development*, 20(1), 125–142.
- Mitchelmore, S., & Rowley, J. (2010). Entrepreneurial competencies: A literature review and development agenda. *International journal of entrepreneurial Behavior & Research*, 16(2), 92-111.
- Mohsin, A. M. B. A., Halim, H. A., & Farhana, N. (2017). Assessing the role of entrepreneurial competencies on innovation performance: a partial least squares (PLS) approach. *The Journal of Business Inquiry*, 16(1 Spec), 88-101.
- Mojab, F, Zaefarian, R, & Azizi, AHD (2011). Applying competency based approach for entrepreneurship education. *Procedia-Social and Behavioral Sciences*, 12, 436–447.
- Ngah, R., Salleh, Z., Ab Wahab, I., & Azman, N. A. (2016, October). Intellectual Capital, Knowledge Management and Sustainable Competitive Advantage on SMEs in Malaysia. In *International Conference on Intellectual Capital and Knowledge Management and Organisational Learning* (p. 348). Academic Conferences International Limited.
- Nagy, M.S. (2002) Using a single-item approach to measure facet job satisfaction. *Journal of Occupational and Organizational*

- Psychology*, 75(1), 77-86. <https://doi.org/10.1348/096317902167658>
- Nassiuma, B. K. (2017). Entrepreneurial Competencies and Livelihood Improvement: The Moderating Role of Gender. *Advances in Social Sciences Research Journal*, 4(22), 78-87.
- Ng, H. S., & Kee, D. M. H. (2013). Effect of entrepreneurial competencies on firm performance under the influence of organisational culture. *Life Science Journal*, 10(4), 2459-2466.
- Ng, H. S., & Kee, D. M. H. (2018). The core competence of successful owner-managed SMEs. *Management Decision*, 56(1), 252-272.
- Orme, G. & Ashton, C. (2003). Ethics-a foundation competency. *Industrial and Commercial Training*, 35(5), 184-190.
- Peng, D. X., & Lai, F. (2012). Using partial least squares in operations management research: A practical guideline and summary of past research. *Journal of Operations Management*, 30(6), 467-480.
- Polites, G., N. Roberts, & J. Thatcher (2012). Conceptualizing Models Using Multidimensional Constructs: A Conceptual Review and Guidelines for Their Use. *European Journal of Information Systems*, (21)1, 22-48.
- Parnell, J. A., Lester, D. L., & Menefee, M. L. (2000). Strategy as a response to organizational uncertainty: an alternative perspective on the strategy-performance relationship. *Management Decision*, 38(8), 520-530.
- Quagraine, F. A. (2018). Family values and practices promoting entrepreneurial competencies among Ghanaian women. *International Journal of Entrepreneurship and Small Business*, 33(2), 202-219.
- Rahman, S. A., Ahmad, N. A., Taghizadeh, S. K., (2015). *Entrepreneurial Competencies of the BoP Entrepreneurs in Achieving Business Success: A Study on the Mom and Pop Shops in Urban Cities of Bangladesh*. Proceedings of 11th Asian Academy of Management International Conference (AAMC 2015), 1552-1563.
- Rahman, S. A., Ahmad, N. H., & Taghizadeh, S. K. (2016). Entrepreneurial competencies of BoP entrepreneurs in Bangladesh to achieve business success. *Journal of General Management*, 42(1), 45-63.
- Rahman, S. A., Amran, A., Ahmad, N. H. & Taghizadeh, S. K. (2014). Prospective entrepreneurial competencies to ensure subjective wellbeing of the entrepreneurs at the base of pyramid. In *Proceedings Book of ICBSSS, 2014, Malaysia* (pp. 56-64).
- Rahman, S. A. (2015). *Organisational Support to Business Success among Base of Pyramid Entrepreneurs: A Case of Gameenphone Bangladesh Limited* (Unpublished PhD thesis), USM, Malaysia.
- Ramayah, T., Cheah, J., Chuah, F., Ting, H., Memon, M.A., (2018). *Partial Least Squares Structural Equation Modelling (PLS-SEM) using SMARTPLS 3.0: An Updated and Practical Guide to Statistical Analysis (2<sup>nd</sup> ed)*. Pearson: Malaysia.
- Ramayah, T., Cheah, J., Chuah, F., Ting, H., Memon, M.A., (2016). *Partial Least Squares Structural Equation Modelling (PLS-SEM) using SMARTPLS 3.0: An Updated and Practical Guide to Statistical Analysis (1<sup>st</sup> ed)*. Pearson: Malaysia.
- Rasmussen, E., Mosey, S., & Wright, M. (2011). The evolution of entrepreneurial competencies: A longitudinal study of university spin-off venture emergence. *Journal of Management Studies*, 48(6), 1314-1345.
- Ringle, C. M., Sarstedt, M., & Straub, D. W. (2012). Editor's Comments: A Critical Look at the Use of PLS-SEM in "MIS Quarterly". *MIS quarterly*, iii-xiv.

- Ringle, C. M., Wende, S., & Becker, J. M. (2015). SmartPLS 3. Boenningstedt: SmartPLS GmbH.
- Roy, S., Tarafdar, M., Ragu-Nathan, T. S., & Erica, M. (2012) The Effect of Misspecification of Reflective and Formative Constructs in Operations and Manufacturing Management Research. *Electronic Journal of Business Research Methods*, 10(1), 34-52.
- Sánchez, J. (2012). The influence of entrepreneurial competencies on small firm performance. *Revista Latinoamericana de Psicología*, 44(2), 165-177.
- Santandreu-Mascarell, C., Garzon, D. & Knorr, H. (2013). Entrepreneurial and innovative competences, are they the same? *Management Decision*, 51(5), 1084–1095.
- Sarstedt, M., Diamantopoulos, A., Salzberger, T. & Baumgartner, P. (2016) Selecting single items to measure doubly concrete constructs: a cautionary tale. *Journal of Business Research*, 69(8), 3159-3167. <https://doi.org/10.1016/j.jbusres.2015.12.004>
- Schriesheim, C. A. (1979). The similarity of individual directed and group directed leader behavior descriptions. *Academy of Management Journal*, 22(2), 345-355.
- Shin, B., & G. Kim (2011). Investigating the Reliability of Second-Order Formative Measurement in Information Systems Research. *European Journal of Information Systems*, (20)5, 608–623.
- Stonehouse, G., & Pemberton, J. (2002). Strategic planning in SMEs—some empirical findings. *Management Decision*, 40(9), 853-861.
- Simkin, M. G., & McLeod, A. (Solesvik 2010). Why do college students cheat? *Journal of Business Ethics*, 94(3), 441-453.
- Solesvik, M. (2012). Entrepreneurial competencies in emerging economy context. In *17th Nordic Conference on Small Business Research, Helsinki. 2012. 23-25 May 2012*.
- Soejono, F., Mendari, A. S., & Rinamurti, M. (2015). Competency, Entrepreneur Characteristic and Business Performance: Study of the Pempek Business in Palembang. *Journal of Indonesian Economy and Business*, 30(1), 30-41.
- Spence, L. J. & Rutherford, R. (2001). Social responsibility, profit maximisation and the small firm owner-manager. *Journal of Small Business and Enterprise Development*, 8(2), 126–139.
- Steensma, H. K., Tihanyi, L., Lyles, M. A., & Dhanaraj, C. (2005). The evolving value of foreign partnerships in transitioning economies. *Academy of Management Journal*, 48(2), 213-235.
- Stokes, D. & Blackburn, R. (2002). Learning the hard way: The lessons of owner-managers who have closed their businesses. *Journal of Small Business and Enterprise Development*, 9(1), 17–27.
- Sugiyarti, G. (2015). Creation marketing capabilities as antecedents for success marketing performance. *Journal of Research in Marketing*, 5(1), 321-329.
- Sundah, D. I. E., Langi, C., & Maramis, D. R. S. (2018, January). Developing entrepreneurial competencies for successful business model canvas. In *Journal of Physics: Conference Series* (Vol. 953, No. 1, p. 012040). IOP Publishing.
- Taylor, Z. E., Larsen-Rife, D., Conger, R. D. & Widaman, K. F. (2012). Familism, interparental conflict and parenting in mexican-origin families: A cultural–contextual framework. *Journal of Marriage and Family*, 74(2), 312–327.
- Tehseen, S., Ramayah, T., & Sajilan, S. (2017). Testing and controlling for common method variance: A review of available methods. *Journal of Management Sciences*, 4(2), 142-168.
- Tehseen, S., Ahmed, F. U., Qureshi, Z. H., & Uddin, M. J. (2019). Entrepreneurial competencies and SMEs' growth: the mediating role of

- network competence. *Asia-Pacific Journal of Business Administration*, 11(1), 2-29.
- Tenenhaus, M., Amato, S., & Esposito Vinzi, V. (2004, June). A global goodness-of-fit index for PLS structural equation modelling. In *Proceedings of the XLII SIS scientific meeting* (Vol. 1, pp. 739-742).
- Thompson, J. E., Stuart, R. & Lindsay, P. R. (1996). The competence of top team members: A framework for successful performance. *Journal of Managerial Psychology*, 11(3), 48–66.
- Tseng, C. C. (2013). Connecting self-directed learning with entrepreneurial learning to entrepreneurial performance. *International Journal of Entrepreneurial Behavior & Research*, 19(4), 425–446.
- Umar, A., Omar, C. M. Z. C., Hamzah, M. S. G., & Hashim, A. (2018). The Mediating Effect of Innovation on Entrepreneurial Competencies and Business Success in Malaysian SMEs. *International Business Research*, 11(8), 142-153.
- Wang, M. C. & Fang, S. C. (2012). The moderating effect of environmental uncertainty on the relationship between network structures and the innovative performance of a new venture. *Journal of Business & Industrial Marketing*, 27(4), 311–323.
- Wagner, M., & Schaltegger, S. (2010). Classifying entrepreneurship for the public good: empirical analysis of a conceptual framework. *Journal of Small Business & Entrepreneurship*, 23(3), 431-443.
- Wals, A. E., & Jickling, B. (2002). “Sustainability” in higher education: From doublethink and newspeak to critical thinking and meaningful learning. *International Journal of Sustainability in Higher Education*, 3(3), 221-232.
- Wickramaratne, A., Kiminami, A. & Yagi, H. (2014). Entrepreneurial Competencies and Entrepreneurial Orientation of Tea Manufacturing Firms in Sri Lanka. *Asian Social Science*, 10(18), 50-62.
- Wijaya, Y. (2008). The prospect of familism in the global era: A study on the recent development of the ethnic-Chinese Business, with particular attention to the Indonesian context. *Journal of Business Ethics*, 79(3), 311–317.
- Wold, H. (1982). Soft modelling: The basic design and some extensions. *Systems under indirect observation, Part II*, 36-37.
- Wong, C. S., Law, K. S., & Huang, G. H. (2008). On the importance of conducting construct-level analysis for multidimensional constructs in theory development and testing. *Journal of Management*, 34(4), 744-764.
- Wright, R. T., Campbell, D. E., Thatcher, J. B., & Roberts, N. H. (2012). Operationalizing Multidimensional Constructs in Structural Equation Modeling: Recommendations for IS Research. *CAIS*, 30(23), 367-412.
- Xiu-qing, P. & Li, C. (2013, July). The relationship between entrepreneurial learning and entrepreneurial knowledge. In *Management Science and Engineering (ICMSE), 2013 International Conference* (pp. 1314-1319). IEEE. Harbin.
- Yusoff, A., Ahmad, N. A, Halim, H. A., (2015). Addressing the Gap in the Proximal Determinant of Entrepreneurial Behavior: The Moderating Role of Entrepreneurial Competencies in Intention-Behavior Linkage. *Proceedings of 11th Asian Academy of Management International Conference (AAMC 2015)*. 1610-1618.
- Zairi, M. & Peters, J. (2002). The impact of social responsibility on business performance. *Managerial Auditing Journal*, 17(4), 174–178.
- Zeiders, K. H., Updegraff, K. A., Umaña-Taylor, A. J., McHale, S. M. & Padilla, J. (2016). Familism values, family time and Mexican-origin young adults’ depressive symptoms. *Journal of Marriage and Family*, 78(1), 91–106