Achieving Competitive Advantage Through Dynamic Capabilities: A Study of ICT Industry in Sri Lanka

T.S.S. Fernando

*Lecturer, University of Peradeniya, Sri Lanka
sampaths@pdn.ac.lk*

G.A.T.R. Perera

*Senior Lecturer, University of Colombo, Sri Lanka
ravinda@mos.cmb.ac.lk*

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ABSTRACT

The current study investigates the impact of dynamic capabilities on competitive advantage of ICT industry in Sri Lanka considering the three categories of dynamic capabilities namely adaptive capabilities, absorptive capabilities and innovative capabilities. Convenient sampling was used to draw the sample and survey data were collected from 167 ICT firms. Structural Equation Modeling (SEM) was used to analyze the relationship between variables. Finding of the study shows that dynamic capabilities have significantly positive impact on competitive advantage. In addition, the empirical evidence verifies that, innovative capabilities are more positively related to competitive advantage than other two types of dynamic capabilities while adaptive and absorptive capabilities also show the positive impact on competitive advantage.

Keywords: *Absorptive Capability, Adaptive Capability, Competitive Advantage, Dynamic Capability, ICT Firms, Innovative Capability*

ORCID of authors: T.S.S. Fernando - <https://orcid.org/0000-0001-7300-5716>

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1. INTRODUCTION

The Resource Based View (RBV) explores how organizations can use distinctive capabilities to achieve competitive advantage (Johnson, Whittington, & Scholes, 2008). To achieve competitive advantage within very dynamic and competitive environment is difficult, since the resources and competencies that organizations are using are not changing in line with environmental changes. Therefore, Over the past decade, the dynamic capability perspective has developed as one of the most important theoretical lenses in the study of strategic management. (Schilke, 2014). Dynamic capabilities enable organizations to take advantage of environmental changes and competition while questioning them (kaur & Metha, 2017).

As a research area, research in dynamic capabilities is still in infancy (Helfat & Peteraf, 2009) and there is no consensus among researchers as to the exact nature of the relationship between dynamic capabilities and competitive advantage of firms (Krzakiewicz, 2013). Some researchers found that dynamic capabilities cannot be a source of competitive advantage (Eisenhardt & Martin, 2000; Ogunkoya, Hassan, & Shobayo, 2014) while some other researchers revealed that dynamic capabilities can be a source for competitive advantage of an organization (Ambrosini & Bowman, 2009; Helfat & Peteraf, 2009; Li & Liu, 2014).

Information Technology sector has the cut-throat competition and in such a high-technology industry demands an extended paradigm to guide firms to gain competitive advantage (Kaur & Metha, 2017). The ICT sector has become a key driver of economic growth in Sri Lanka and it provides a great deal of benefits to the people of the country. The ICT industry creates job opportunities for young people and women, enhances universal access to information that promotes social inclusion and justice, helps the economy by increasing market efficiency, connects communities to global value chains and increases the productivity of economic activities and stimulates innovation.

In addition, it plays a major role in converting Sri Lanka into a knowledge hub (Sri Lankan ICT workforce survey, 2013). Further, according to Rathnayake (2014), “Sri Lankan IT/BPM industry made significant progress over the last five years. Export revenue increased from USD 213 million in 2007 to an estimated USD 720 million in 2013. Total employment increased from 33,700 in 2007 to an estimated 75,100 employees in 2013, and the number of companies in the industry increased from 170 in 2007 to over 220 in 2013”. According to ICTA workforce survey (2019), The sector has become the fifth largest source of foreign earnings in the country over relatively short period of time. Further. It emphasizes that earnings from the ICT sector have been growing steadily at 7-8% annual rate and the telecommunication, computer and information services represent a key growth component within the service sector that generated US\$ 995 million revenues in 2018 despite relative slowdown in other sectors of the economy as per the Central Bank of Sri Lanka (2018).

As a booming industry in Sri Lanka, each and every firm in the ICT industry faces huge competition locally and globally. Achieving competitive advantage is difficult without changing their capabilities in line with market requirements. Thus, dynamic capability plays a major role to update the capabilities with the environmental changes and enable ICT firms to achieve competitive advantage.

This study aims to achieve two objectives. First objective is to investigate the impact of dynamic capabilities on competitive advantage in ICT industry in Sri Lanka. Second objective aims to study which dynamic capability shows the more impact on competitive advantage in ICT industry in Sri Lanka. Therefore, this study is significant in many ways as it makes numerous contributions to literature as well as to practice. In particular, the study examines the overall impact and impact of each dimension of dynamic capabilities (adaptive capabilities, absorptive capabilities and innovative capabilities) on competitive advantage which have not been empirically examined in previous studies in Sri Lankan context. Further, ICT industry is constantly changing due to rapid changes happening in the technological environment. In that context, if the strategies formulating is not addressed the changing nature, achieving competitive advantage is unrealistic. Thus, this study gives insights for managers to formulate strategies based on dynamic capabilities in order to achieve competitive advantage in ICT industry in Sri Lanka.

The rest of the paper is structured as follows: In the following section, the theoretical background and hypotheses are presented. Then the research method and the results of the statistical analysis are given. Finally, the paper concludes with the discussion, implications of the findings and directions for future research.

2. LITERATURE REVIEW

2.1. Dynamic Capability

The idea of dynamic capability was introduced in the working paper by Teece, Pisano and Shuen (1990) and it was first formally published by Teece and Pisano in 1994. Dynamic capabilities were defined by the authors as the ability of an organization to “integrate, build, and reconfigure internal and external competencies to address rapidly changing environment”. According to Tondolo and Bitencourt (2014), dynamic capabilities highlight two main aspects of the development of new forms of competitive advantage. They are ‘the dynamics’ and ‘capability.’ Further, they explain the term dynamics as the character of environmental change requiring strategic responses whereas ‘capability’ as the role of strategic management in addressing the changes required through internal organizational adaptation. Thus, dynamic capabilities are those that enable organizations to unexpectedly respond in new and falling situations (Karimi & Walter, 2015). Over the years different authors have endeavored to define and redefine the concept of dynamic capabilities in different perspective according to the context.

However, they have failed to give a concise and comprehensive definition for dynamic capabilities (Protopogrou, Caloghirou, & Lioukas, 2012). This study uses the definition given by Kuar and Metha (2017), which is as the higher order construct comprising of three dynamic capabilities, namely, adaptive capacity, absorptive capacity and innovative capability. Several authors have made theoretical contributions to dynamic capabilities in attempts to describe the main elements. According to Teece and Pisano (1994), and Teece et al. (1997), dynamic capabilities contain several classes of factors which are processes, position and paths. They can be considered as the main variables of dynamic capabilities. Li and Liu (2014) have also identified three components of dynamic capabilities such as strategic sense-making capacity, timely decision-making capacity and change implementation capacity. As mentioned above, this study uses the three components of dynamic capabilities, namely adaptive capability, absorptive capacity and innovative capability. Wang and Ahmed (2007) emphasized that adaptive capability, absorptive capacity and innovative capability are the most important component factors of dynamic capabilities and strengthen a firm's ability to integrate, reconfigure, renew and recreate its resources and capabilities in line with external changes. Furthermore, according to Wang and Ahmed, (2007), the three factors that they have used are interrelated, but conceptually different. As cited by Wang and Ahmed (2007), Cockburn et al., (2000), Eisenhardt and Martin (2000), Mota and de Castro (2005) have found that the three component factors are indeed common across several industries, although firms may develop their dynamic capabilities from their unique starting points and through their unique paths.

2.2. Adaptive Capability

Gibson and Birkinshaw (2004) defined adaptive capability as the ability of a firm to quickly coordinate and reconfigure resources in response to sudden environmental changes while sustaining the previous level of performance. They further, say that an organization's ability to identify as well as take the advantage of the opportunities emerging in the market. According to Hooley et al. (1992), adaptive capability is defined as ability of a firm to identify and take advantage of emerging market opportunities. Sanchez (1995) highlighted that adaptive capability is manifested through strategic flexibility. It means flexibility of the resources available to the firm and flexibility in use of these resources.

As cited by Wang and Ahmed (2007), Oktemgil and Gordon (1997) say measures for adaptive capability are multidimensional. Measures include a firm's ability to adapt their product–market scope to react to external opportunities; to scan the market, monitor customers and competitors and allocate resources to marketing activities; and to respond to changing market conditions in a quick manner. Moreover, they have cited that adaptability can be measured through assessing whether the firm's management systems encourage people to challenge old traditions, practices, enable the firms to respond quickly to changes in the market and move quickly in response to shifts in its business priorities (Gibson & Birkinshaw, 2004). As cited by Kaur and Metha (2017), Oktemgil and Gordon (1997) say

that capability to adapt highlights the importance of flexibility of resources and capabilities of a firm more aligned with environmental changes. Further, they explain that it is the ability to analyze changes in market trends and allocate resources accordingly.

2.3. Absorptive Capability

According to Kuar and Metha (2017), absorptive capacity means ability of an organization to gather and understand new knowledge acquired through business collaborations in order to improve the skill-set possessed by the company. Cohen and Levinthal (1990) explain absorptive capability as the ability of a firm to recognize the value of new external information, assimilate it, and apply it to commercial ends and the ability to evaluate and utilize outside. Firms with higher absorptive capability demonstrate stronger ability to learn from partners, integrating external information and transforming it into firm-embedded knowledge.

As cited by Wang and Ahmed (2007), Woiceshyn and Daellenbach (2005) highlight the differential absorptive capability across firms in several aspects. Such as more efficacious adopters vs. less efficacious ones (i) demonstrate long term commitment of resources in the face of uncertainty (vs. short-term limited commitment and reverse at the first sign of failure); (ii) learn from various partners and own research and experience and develop first-hand knowledge of the new technology (vs. competitive imitation and second-hand knowledge); (iii) thoroughly analyze the new drilling technology and share information within multidisciplinary teams (vs. superficial analysis and functional structure); (iv) develop and use complementary technologies (vs. no complementary technologies used); and (v) possess a high level of knowledge and skills in areas relevant to applying the new technology.

According to Zahra and George (2002), an absorptive capability is a multidimensional concept and there are four component factors of the absorptive capability, namely knowledge acquisition, assimilation, transformation and exploitation. Moreover, they explain knowledge acquisition and assimilation characterize potential absorptive capacity, knowledge transformation and exploitation create realized absorptive capacity.

2.4. Innovative Capability

Organizations should develop innovative capabilities in organizations with the help of adaptive and absorptive capacities. Innovative capability means an organization's ability to offer superior products and services to customers that provide unique benefits (Kuar & Metha, 2016a, 2016b). Wang and Ahmed (2007) define innovative capacity as a firm's ability to develop new products and/or markets through aligning strategic innovative orientation with innovative behavior and processes. Manuj, Omar, and Yazdanparast (2013) explain that innovative capacity is an ability of a firm to exhibit innovative behaviors while constantly translating knowledge into new products and processes. As cited by Wang

and Ahmed (2007), Schumpeter (1934) proposes different kinds of innovations such as new products or services, new methods of production, new markets, new sources of supply and new organizational forms. Miller and Friesen (1983) suggest four dimensions, namely new product or service innovation, methods of production or rendering of services, risk taking by key executives and seeking unusual and novel solutions. Further, Capon et al. (1992) identified three dimensions of innovativeness such as market innovativeness, organizational innovativeness, and technological sophistication. Some studies reveal that innovative capacity is more critical to firms in some industries for evolution and survival in light of external competition and change. The more innovative firms have more dynamic capabilities (Lazonick & Prencipe, 2005).

2.5. Competitive Advantage

As cited by Sigalas and Pekka (2013), Barney (1991), Eisenhardt and Martin (2000), and O'Shannassy (2008) explain that there is a great deal of literature on strategic management and sources and determinants of competitive advantage, amazingly available literature does not provide any clear definition of competitive advantage. Further, Sigalas and Pekka, Economou (2013) also emphasized that there are various meanings of competitive advantage and there is no agreement among the authors on a single conceptually clear and unambiguous definition. Similarly, Sigals and Pekka (2013) highlight that apart from few definitions most of definitions that are available in the literature are fuzzy. All the definition on competitive advantage can be categorized into two streams, namely definitions based on the terms of performance (Grahovac & Miller, 2009) and definitions based on the sources or determinants of the competitive advantage (Wiggins & Ruefli, 2002).

Peteraf and Barney (2003) explain that a firm can achieve competitive advantage if it is able to create more economic value than the marginal (breakeven) competitor in the market. According to Newbert (2008), competitive advantage is the extent to which a firm has exploited opportunities, neutralized threats and reduced costs. Barney (1991) highlighted that a firm can achieve competitive advantage if a firm implements a value creating strategy which is not being executed by any existing or potential competitors, according to Porter (1985), competitive advantage occurs out of value which a firm is able to create for their customers that exceeds the firm's cost of creating it. Further, he (1985) explains that there are two basic types of competitive advantage namely cost leadership and differentiation. Further, he emphasized that these two basic types of competitive advantage generate three different strategies: cost leadership, differentiation and focus. Kuar and Metha (2017) define competitive advantage as the ability to gain and maintain a higher market share by offering superior products and services while earning a greater sales revenue and higher profit growth rate vice versa competitors.

3. CONCEPTUALIZATION

According to the nature of the objectives, this study comes under the positivist paradigm. as the researcher works with observable social realities and the end result can be generalized to similar settings (Remenyi, 2002). According to Saunders, Lewis and Thornhill (2009) in positivist research researcher use existing theory to develop hypotheses. Then, these hypotheses are tested and established and these studies lead to the further development of theory which then may be tested by further research. Further, as cited by Saunders, Lewis and Thornhill (2009) Gill and Johnson (2002) positivist researcher uses a highly structured methodology in order to facilitate repetitions, so that quantifiable observations can be analyzed through statistical analysis. Based on this research philosophy, this study uses the dynamic capability view as the theory and developed the hypotheses based on that theory. The research strategy that this study uses is survey. As per Saunders, Lewis and Thornhill (2009) the survey strategy permits researcher to collect quantitative data which can be analyzed quantitatively using descriptive and inferential statistics. By using the data collected through survey strategy can be used to analyze the relationships among the variables and reasons for them.

Following section focuses on the hypotheses. Hypotheses were developed based on the theory of dynamic capability view and the previous literature. This study develops four hypotheses. H1 is main hypothesis related to dynamic capabilities and competitive advantage. There are three types of dynamic capabilities and researcher tests the relationship between each type of dynamic capability and competitive advantage. Therefore, those hypotheses were named as H1a, H1b and H1c.

3.1. Dynamic Capabilities and Competitive Advantage

As per Johnson, Whittington, and Scholes (2008), the Resource Based View argues that the competitive advantage and superior performance of an organization is described by the distinctiveness of its capabilities. It says that unique resources and core competencies of an organization provide competitive advantage for an organization. Dynamic capability view emphasizes that those resources and competencies should be integrated, built and reconfigured to address rapidly changing environments.

Schilke (2014) mentions that the impact of dynamic capabilities on competitive advantage is universally applicable and further as cited Li and Liu (2014), dynamic capabilities help firms to be sensitive to opportunities and threats, grab possible chances and to execute necessary changes to enhance environmental adaptability and finally, achieve competitive advantage (Doving & Gooderham, 2008).

As per Supriyadi (2017), their study found that dynamic capability has a positive and significant impact on sustainable competitive advantage. He further, says that if a firm wants to increase sustainable competitive advantage, the firm is required to improve the dynamic capabilities. Dynamic capabilities can be improved by updating the skills in line with the environmental changes, conveying the

knowledge they possess to other employees, structuring the power of resources in the face of rapid environmental changes (Supriyadi, 2017). Although several schoolers believe that dynamic capabilities are not a source of competitive advantage (Eisenhardt & Martin, 2000; Ogunkoya, Hassan, & Shobayo, 2014; Winter, 2003; Zahra, Sapienza, & Davidsson, 2006), a number of scholars argue that dynamic capabilities can be a source of competitive advantage. (Ambrosini & Bowman, 2009; Helfat et al., 2007; Helfat & Peteraf, 2009; Teece, 2007; Teece & Pisano, 1994). Thus, following hypothesis is proposed.

H1: Dynamic capabilities have an impact on competitive advantage

3.2. Adaptive Capability and Competitive Advantage

Wang and Ahmed (2007) highlight that if an organization has adaptive capabilities it is able to quickly respond to changes in accordance with organizational priorities. The ability to react to external product market opportunities, the investment in marketing activities and the quick response to changing market conditions are the key elements of adaptive capabilities (Chakravarthy, 1982).

As cited by Biedenbach and Muller (2012), Snow and Hrebiniak (1980) mention that adaptability should lead to improved performance of an organization. According to Rouse and Ziestma (2008), value of organizational resources may be lost, access to valuable resources may be lost, and survival of organization may not be ensured if an organization is lack of adaptive capabilities. Hence, as cited by Kuar and Metha (2017), adaptive capability can be a promising source of competitive advantage for a firm (Adeniran, 2011; Dixon, Meyer, & Day, 2013; Kaur & Mehta, 2016a). Therefore, researcher proposes the following research hypothesis

H1 (a): Adaptive capability has an impact on competitive advantage.

3.3. Absorptive Capability and Competitive Advantage

Lane, Koka, & Pathak, (2006) suggest a model where absorptive capabilities create knowledge and commercial output that will lead to firm's overall performance and moreover, he has emphasized that absorptive capabilities enable learning and innovation processes which implies project and portfolio performance as well. In addition, Zhou and Li (2010) remark that multinational corporations require absorptive capability for obtaining competitive advantage and they further say that more a multinational corporation absorbs external knowledge, higher are its chances of gaining competitive advantage.

As cited by Kaur and Metha (2017), Adeniran and Johnston (2012), Cadiz, Sawyer, and Griffith (2009) Zhou and Li (2010) suggest that absorptive capability can be a potential source of competitive advantage, since it enables the transformation of the new or acquired knowledge into usable knowledge. Thus, as a component of dynamic capabilities, with respect to absorptive capability, following hypothesis is proposed.

H1 (b): Absorptive capability has an impact on competitive advantage.

3.4. Innovative Capability and Competitive Advantage

As cited by Biedenbach and Muller (2012), Sher and Yang (2005) have found that there is a positive effect of innovative capabilities on firm performance. In addition, Oltra and Flor (2003) show that innovative capabilities have an influence on innovation output. As per Zhou and Wu (2010), innovative capability is vital for facing changing environment in order to achieve competitive advantage. It distinguishes a firm other firm and enables firms to act as a barrier for entry and exit of competitors (Annavarjula & Mohan, 2009).

As cited by Kaur and Metha (2017), Adeniran (2011), Adeniran and Johnston (2012), Agbim et al. (2014), Alfirevic and Talaja, (2013), Alrubaiee, Alzubi, Hanandeh, and Ali (2015), Dixon et al. (2013), Fogg (2012), Granados (2015), Wijekoon and Galahitiyawee, (2015) and Wuryaningrat (2013) emphasize that firms which are having innovative capabilities beat competitors in the market, earn higher profitability, ensure higher probability of survival and ultimately it guarantees the competitive advantage. Thus, the following hypothesis has been proposed.

H1(c): Innovative capability has an impact on competitive advantage

Accordingly, this study proposes the following conceptual research framework based on the literature review and the Dynamic Capability View (see Figure 1)

Figure 1: Conceptual research framework

4. OPERATIONALIZATION AND METHODOLOGY

As cited by Saunders, Lewis and Thornhill (2009) Robson (2002) lists five sequential stages of deductive research, such as develop hypotheses, expressing the hypothesis in operational terms, testing this operational hypothesis, examining the specific outcome of the inquiry and if necessary, modifying the theory in the light of the findings. Since this study also uses these steps, this is a deductive research. Further, this research is a cross sectional study as data have been gathered during several weeks to answer research questions (Sekaran & Bougie, 2009).

4.1. Participants and Procedure

In this study, the population of the study includes the total number of ICT firms in Sri Lanka. As per the Export Development Board, the Sri Lankan ICT sector serves a number of Industry verticals with over 300 companies at present. From this study, convenience sampling technique was employed to draw the sample from the population since the exact number and details of ICT firms in Sri Lanka is unknown. According to National ICT Workforce Survey (2013), Sri Lankan ICT sector comprises diverse range of actors that offer variety of products and services. They are suppliers of ICT products and services (ICT companies), suppliers of IT-enabled services (ITeS; BPO companies) and ICT training organizations. Sample also drawn from these firms and most of them are members of Sri Lanka Association for Software Services Companies in order to minimize the biases of convenience sampling. The unit of analysis was a firm According to the research questions, impact of dynamic capabilities of ICT firms was tested. Moreover, it studied the different types of dynamic capabilities and competitive advantage of a firm not of an individual or a group.

The questionnaire comprises of 21 questions to measure the 4 constructs (adaptive capability, absorptive capability, innovative capability and competitive advantage). The survey questionnaire is divided into two parts. The part (A) includes questions formulated in order to obtain a general understanding of the participants, such as their levels of management and length of experience. The part (B) includes dynamic capabilities related information such as, adaptive capability (4 items), absorptive capability (4 items) and innovative capability (5 items). Adaptive capability was measured using items such as constantly observing competitors' actions, keeping a check on changes in the market, encouraging employees to adopt new marketing techniques and keeping a check on technical changes in the industry. The items that have been used to measure the absorptive capabilities are encouraging employees to collect industry information through informal means, visiting other firms in the industry by employees, regularly approaching third parties such as accountants and consultants by employees, encouraging employees to frequent interactions with other companies to acquire new knowledge. Inspiring employees to provide clients with innovative ideas and solutions, encouraging to acquire new skills/equipment to improve the service process, emphasizing innovative and creative capability while

recruiting staff, encouraging employees to contribute to activities like product development and development of new ideas and providing clients with services/products that offer unique benefits superior to those of competitors. Items related to dynamic capabilities have been borrowed from Kuar and Metha (2017). According to Kuar and Metha (2017), they have borrowed items from Akgün et al. (2012), Kaur and Mehta (2016a, 2016b), Kaehler et al. (2014) and Liao et al. (2007). Kuar and Metha (2017) have done their study in IT multinationals in India. Thus, the items used are suitable for Sri Lankan ICT sector also.

Following part consists of information related to competitive advantage which consists of 7 items namely, higher profit growth rate, higher sales revenue growth rate, lower operating cost, better product and service quality, higher market share more profitable old customers and more profitable new customers. Items related to competitive advantage were borrowed from Li and Liu (2014). All three constructs under dynamic capabilities and competitive advantage were measured with five-point Likert scale.

Based on the previous literature, data were collected from upper-level managers and middle managers who have been working in the same firm within ICT industry for over one year to guarantee the quality of data (Li & Liu, 2014). Both personal and online methods were used in administering the survey. Accordingly, 50 questionnaires personally distributed by the researcher among the sample and 200 online questionnaires were sent to respondents via e-mails. Only 184 responses out of 250 were received. Then, the questionnaires were screened and incomplete questionnaires rejected. Accordingly, 167 questionnaires were forwarded for the data analysis. The data was analyzed using Structural Equation Modeling (SEM) with the aid of AMOS (Analysis of Moment Structures) 23.0.

4.2. Data Analysis and Results

A pre-test was conducted by sending a questionnaire to three senior lecturers who have expertise in strategic management and three senior managers in ICT industry. A pilot survey also was conducted using 30 respondents to identify and eliminate potential problems in the questionnaire design (Malhotra & Peterson, 2006) and to examine the validity and reliability of the measures used in the questionnaire (Sekaran & Bougie, 2009). The Cronbach's alpha coefficient of the pilot survey was greater than 0.7 for all constructs which is an acceptable value for a pilot test (Kline, 2011).

After the pilot survey, the data collected for this study were first entered in to the IBM Statistical Package for Social Science (SPSS) software version 23.0. Box plot analysis was carried out to identify scores which are unusually high or low compared to all the others in a particular set of data. Based on the box plot analysis, 37 outliers were identified and removed from the data set. 167 cases were forwarded for missing value analysis. In this study, there were no missing values in the 167 questionnaires. After missing value data analysis and outlier detection, the data was tested for

multivariate assumptions such as normality, linearity, homoscedasticity and multicollinearity. Normality was tested by skewness and kurtosis where the all-skewness values and kurtosis values were less than one (Garson, 2009) (see appendix 1). To measure linearity and homoscedasticity scatter plots and plotting predicted values and residuals on a scatter plot using SPSS were drawn respectively (Hair et al., 2010) and no deviations were identified.

Finally, multi-collinearity was assessed using tolerance value and Variation inflation factor (VIF) value of each constructs for the initial measurement model (See appendix 2). Tolerance value of each construct is more than 0.2 and VIF value of each construct is less than 10 (Field, 2005). Therefore, no multi-collinearity is in existence. The Kaiser-Meyer-Olkin (KMO) was used to measure the adequacy of the sample of the study. KMO results showed that the sample adequacy of all constructs is greater than 0.5 which specifies that the sample is adequate (Malhotra & Dash, 2011). The unidimensionality of all constructs was ensured using Exploratory Factor Analysis (EFA). Cronbach's alpha was used to measure the reliability of all constructs and its value is greater than 0.7 (see appendix 3), and thus, it can be concluded that the reliability is established for all constructs. Thereafter, descriptive data were analyzed and other data was forwarded for multivariate analysis.

Out of 167 of respondents, 46 (28%) respondents belonged to the upper-level management while 121 (72%) belong to middle level management. In addition to that, data was collected about the length of experience of respondents of a firm in which they currently work. Out of 167 respondents, no any response received from respondents who have experience less than one year. Most of the respondents in the sample (57%) have 1- 3 years of working experience in the particular firm, while 31% of respondents have experience of 4-6 years and also sample represents 12% of those who have more than 6-year category. The aim was collecting those data was to enhance the quality of data (Kuar & Metha, 2017; Li & Liu, 2014). If respondents belong to middle or upper level, they are aware of the constructs that the researcher measured namely dynamic capability and competitive advantage. They are very subjective and sensitive areas of a firm. Further, respondents should have at least 1-year experience to familiarize with the constructs in a particular firm. Thus, the researcher has collected the data about level of management and length of experience of respondents.

4.3. The Measurement Model

The measurement model “specifies the indicators for each construct, and enables an assessment of construct validity” (Hair et al., 2010). Based on the conceptual model, there are 4 latent variables, namely, adaptive capability (ADC), absorptive capability (ABC), innovative capability (IC), and competitive advantage (CA). As the initial measurement model portrayed a poor fit, the model was improving using modification indices. Thus, covariances were drawn between the error terms of several

items for improvement purpose. The goodness of fit indices of final measurement model showed in Table 1.

Table 1: Model-fit statistics of measurement model

Absolute					Incremental		Parsimony
CIMIN/DF	GFI	AGFI	RMSEA	IFI	TLI	CFI	PRATIO
2.661	.890	.884	.072	.911	.896	.905	.915

According to Hair et al. (2010), researchers should evaluate goodness of fit indices when assessing a fit of a measurement model. Further, he says that use of three to four indices provides adequate model fit and besides the X^2 value, one absolute fit index ($X^2/df/p$ value/GFI/RMSR/RMSEA), one incremental index (NFI/CFI/TLI/RNI) and one parsimony index (PRATIO/PCFI/PNFI) should be reported. According to above table, final measurement model was found to fit the data reasonably well.

Table 2: Convergent and discriminant validity

	AVE	CR	ADC	ABC	IC	CA
ADC	.705	.895	.705			
ABC	.771	.964	.352	.771		
IC	.742	.933	.458	.233	.742	
CA	.827	.931	.309	.298	.550	.827

Note: Diagonal entries (in bold) are the square root of AVE for all constructs; sub-diagonal entries are the correlation coefficients estimates between for each construct

The Confirmatory Factor Analysis (CFA) was used to further test convergent and discriminant validity of the constructs. As explained by Malhotra & Dash (2011), 0.5 or higher factor loading and 0.5 or greater Average Variance Extracted (AVE) assures satisfactory convergent validity. In addition, Composite Reliability (CR) must be 0.7 or higher. Generally, discriminant validity can be ensured if The AVE of all constructs should be higher than the square of the correlation estimates between that construct and all other constructs (Malhotra, 2008). Moreover, the correlation coefficients among the study constructs do not exceed 0.85 (Kline, 2011). Thus, all the constructs in the study represent different concepts. As all of above requirements are fulfilled, the convergent and discriminant validities are satisfactory, as shown in Table 2.

4.4. The Structural Model

Structural model 1 was developed to test the direct relationship between dynamic capabilities (DC) and competitive advantage (CA). The output path diagram of the structural model 1 is shown in Figure 3. Structural model 2 was developed to test the direct relationship between three types of dynamic capabilities (adaptive capability (ADC), absorptive capability (ABC) and, innovative capability (IC))

and competitive advantage (CA). Figure 2 shows the output path diagram of the structural model 2. All hypotheses were tested at the significant 0.05 level.

Table 3: Model-fit statistics of structural model 1

Absolute					Incremental		Parsimony
CIMIN/DF	GFI	AGFI	RMSEA	IFI	TLI	CFI	PRATIO
2.570	.815	.782	.068	.908	.892	.898	.914

Model fit statistics for the structural model 1 are summarize in Table 3. Accordingly, model fit statistics values of structural model 1 shows a good model fit. Hypothesis testing (H1) result of direct path is depicted in Figure 3.

Figure 2: Structural Model 1

Note: *Significant at 0.05 level

As shown in Figure 3, it was hypothesized that dynamic capabilities (DC) have an impact on Competitive advantage (CA). The result of hypothesis 1 shows that DC have a significant positive impact on CA. ($\beta = 0.68$, $p = 0.000$) at the 0.05 significant level.

Table 4: Model-fit statistics of structural model 2

Absolute					Incremental		Parsimony
CIMIN/DF	GFI	AGFI	RMSEA	IFI	TLI	CFI	PRATIO
2.449	.886	.872	.069	.922	.878	.916	.929

Model fit statistics for the structural model 2 are summarized in Table 4. The structural model of H1a, H1b, and H1c was found fit the data reasonably. Hypothesis testing H1a, H1b, and H1c results of direct paths are depicted in Figure 3.

Figure 3: The structural model 2

Note: *Significant at 0.05 level

As depicted in Figure 3, hypothesis 2a investigates the relationship between adaptive capabilities (ADC) and competitive advantage (CA). It was hypothesized that there would be a relationship between ADC and CA. The result demonstrates positive and significant paths from ADC and CA ($\beta = 0.52, p = 0.000$). Thus, hypotheses 2a is supported. Hypothesis 2b tested the relationship between absorptive capabilities (ABC) and competitive advantage (CA). It was hypothesized that there would be a relationship between ABC and CA. The result suggests that the relationship between ABC and CA is positive and statistically insignificant ($\beta = 0.28, p = 0.001$). Thus, hypothesis 2b is supported. Hypothesis 2c investigated the relationship between innovative capability (IC) and competitive advantage (CA). It was hypothesized that there would be a relationship between IC and CA. The results revealed that the relationship between IC and CA is positive and statistically significant ($\beta = 0.65, p = 0.000$). Hence, a hypothesis 2c is supported.

5. DISCUSSION

First research objective investigates impact of dynamic capabilities on competitive advantage in ICT industry in Sri Lanka. The empirical evidence indicates that dynamic capabilities have significantly positive impact on competitive advantage. This finding is consistent with the previous studies (Ambrosini & Bowman, 2009; Helfat et al., 2007; Helfat & Peteraf, 2009; Teece, 2007; Teece & Pisano,

1994). Further, Schilke (2014) mentions that the impact of dynamic capabilities on competitive advantage is universally applicable and as cited Li and Liu (2014), dynamic capabilities enable to achieve competitive advantage, as they allow firms to identify opportunities and threats, grab probable chances and implement required changes to enhance environmental adaptability. (Doving & Gooderham, 2008).

However, as cited by Kaur and Metha (2017), some researchers claim that dynamic capabilities cannot be a source of competitive advantage, since they do not evident the characteristics of heterogeneity .(Easterby-Smith & Prieto, 2008; Eisenhardt & Martin, 2000; Ogunkoya et al., 2014; Winter, 2003; Zahra, Sapienza, & Davidsson, 2006) and that the role of dynamic capabilities is inadequate when achieving competitive advantage (Zott, 2003) and the relationship can be indirect (Cepeda & Vera, 2007; Nieves & Haller, 2014; Wang & Ahmed, 2007). However, according to the findings of this study in Sri Lankan ICT sector dynamic capabilities play a major role in achieving competitive advantage.

Second research objective explores that which dynamic capability has more impact on competitive advantage. Three types of dynamic capabilities are adaptive capability, absorptive capability and innovative capability. The findings of the current study reveal that, three types of dynamic capabilities have significant positive impact on competitive advantage. More importantly, innovative capability shows the more impact on competitive advantage than other two. Innovative capability is of crucial importance adapting to fast-changing turbulent environment and to achieve competitive advantage (Zhou & Wu, 2010). Kuar & Metha (2017) also reveal that innovative capability has the maximum impact, followed by adaptive capability and absorptive capability respectively on competitive advantage in ICT multinational companies in India. As mentioned at the outset, Sri Lankan ICT sector is growing rapidly and it focuses more exports. In order to cater for export market and compete in world market, ICT sector should take into consideration more innovations. That demands more innovative capabilities in Sri Lankan ICT sector too.

Compare to adaptive capability and innovative capability, absorptive capability shows the less positive impact on competitive advantage. Reasons may be employees who are working in Sri Lankan companies are less probability to visit other firms in the industry, less probability to collect industry information through informal means. Therefore, it can be generalized that Sri Lankan ICT firms consider more about innovative capability, then adaptive capability and give less emphasis on absorptive capability.

6. IMPLICATIONS, LIMITATIONS AND FUTURE DIRECTIONS

6.1. Theoretical Implications

This study makes important contributions to the literature in terms of providing a more understanding of dynamic capabilities and competitive advantage. The conceptual model developed in this study can be used for examine the relationship among above mentioned variables in different industries and countries. Since as a field of research domain, dynamic capabilities research is still in its infancy and there is no consensus among researchers on the true nature of relationship between dynamic capabilities and competitive advantage of firms, an investigation of this relationship in the current study provides deeper understanding of the relationships between dynamic capabilities and competitive advantage. There was a dearth of research which had been conducted on dynamic capabilities in Sri Lankan context. Therefore, this provides insights for scholars in Sri Lanka who are interested in doing research on dynamic capabilities and scholars who undertake research on dynamic capabilities in developing countries.

6.2. Practical Implications

The results of the current study have several important implications for managers in ICT sector. As mentioned in the outset, ICT sector in Sri Lanka is very competitive in locally and globally in the current context and will become more competitive in future with the new vision which is “to reach to USD 5 billion in revenue, create 200,000 direct jobs and 1,000 startups by 2022” according to the Sri Lankan IT/BPM industry review 2014. Therefore, ICT sector is very important for Sri Lankan economy in terms of revenue, employment, foreign earnings and etc. Further, review reveals that Sri Lanka’s “competitive advantage in IT/BPM is built around agility, cost, a niche talent base, ethics, cultural adoptability and superior quality of life as a destination for doing business”, since ICT sector is one of the major exporting sectors in Sri Lanka.

Managers in ICT industry in Sri Lanka can develop and execute strategies to develop dynamic capabilities. It means, they are required to choose strategies to develop and implement adaptive capability, absorptive capability and especially innovative capability to achieve competitive advantage. Managers should analyze the business environment including competitors’ actions in local market and global market time to time since the ICT industry is rapidly changing and employees should be encouraged to keep an eye on market and technical changes that are happening in the industry. Further, they should be trained to facilitate to adaptability. According to the National ICT workforce survey in Sri Lanka, 63% of workforce has degree or above qualification. It is a good sign and it should be increased by the managers by encouraging employees to enhance their qualifications with the current requirements. Acquiring new knowledge is a must for the workforces who are working in ICT industry to achieve competitive advantage. Therefore, employees should be encouraged to approach to

professional (such as consultants, accountants and etc.) and have more interactions with other organizations. In addition, managers can make the learning environment within the organization to share the knowledge that each and every employee has.

The findings of the current study reveal that innovative capabilities are more important than other two capabilities in dynamic capabilities. Managers are able to implement several strategies to enhance the innovative capabilities within the firms. Managers can inspire and reward employees who provide client with innovative ideas and solutions. In addition, organizations are able to emphasize innovative and creative capabilities when recruiting new employees to the organization and organizations should offer unique benefits superior to those of competitors by giving quality products and services. More importantly, managers in ICT industry or any other industry in Sri Lanka or other context are able to adapt the insights mentioned above to achieve competitive advantage.

6.3. Limitations

Despite the contributions and implications, this study has several limitations too. One limitation is that the proposed study has inherent limitations in measuring constructs such as dynamic capability, organizational culture and competitive advantage which are essentially subjective constructs. This study is a cross sectional study and is not a longitudinal one. The variables that the researcher used can be studied deeply, if the researcher would have used longitudinal study since variables are changing overtime especially dynamic capabilities with the environmental changes. Specifically, this study is likely to have common method bias because the same respondents answered the dependent variable and the independent variable, in a cross-sectional manner. Although the researcher used procedural and statistical remedies for minimizing the common method bias, it is worth to collect data from different sources. Even though the researcher drew the sample which has the characteristics of population, convenient sampling has inherent biases.

6.4. Future Directions

It can be suggested some interesting directions for future research based upon the limitations discussed above and careful considerations of the research potentials. The use of single respondent to represent what are supposed to be intra/inter-organization wide variables may generate some inaccuracy, more than the usual amount of random error. Therefore, future research should follow to utilize multiple respondents from each participating organization in order to enhance reliability of research findings. As mentioned above this study can be done as a longitudinal study since the concepts of dynamic capabilities are varying overtime. There may be special dynamic capabilities related with different industries and they can also be analyzed in future research.

7. CONCLUSION

One of the objectives of the study was to investigate impact that dynamic capabilities have on competitive advantage. Empirical evidences support the idea that dynamic capabilities are related to competitive advantage and dynamic capabilities have significantly positive impact on competitive advantage in ICT industry in Sri Lanka. In addition, three dimensions of dynamic capabilities namely adaptive capability, absorptive capability and innovative capability were tested separately with competitive advantage to achieve the second objective of the study that is to investigate which dynamic capability has more impact on competitive advantage in ICT industry in Sri Lanka. Empirical results show that each dimension has significantly positive impact on competitive advantage and innovative capability, adaptive capability and absorptive capability influence on competitive advantage respectively in ICT industry in Sri Lanka.

8. DECLARATION OF CONFLICTING INTERESTS

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

9. REFERENCES

- Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Reviews* , 11(1), 29-49. doi:10.1111/j.1468-2370.2008.00251.x
- Ambrosini, V., Bowman, C., & Collier, N. (2009). Dynamic capabilities: An exploration of how firms renew their resource base. *British Journal of Management*, 20, 9-24. doi:10.1111/j.1467-8551.2008.00610.x
- Annavarjula, M., & Mohan, R. (2009). Impact of technological innovation capabilities on the market value of firms. *Journal of Information and Knowledge Management* , 8(3), 241-250. doi.org/10.1142/S0219649209002361
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage . *Journal of Management*, 99-120. doi:10.1177/014920639101700108
- Biedenbach, T., & Muller, R. (2012). Absorptive, innovative and adaptive capabilities and their impact on project and project portfolio performance. *International Journal of Project Management*. 30(5), 621–635. doi:10.4236/ajibm.2014.412080
- Cameron, K. S., & Quinn, R. E. (1999). *Diagnosing and changing organizational culture: Based on the value competing framework*. United States of America: Addison-Wesley.
- Capan , N., Farley, J. U., Hulbert, J., & Lehmann, D. R. (1992). Profiles of product innovators among large US manufacturers. *Management Science*, 38, 157-169. doi: 10.1287/mnsc.38.2.157
- Chakravarthy, B. S. (1982). Adaptation: a promising metaphor for strategic management. *Academy of Management Review*, 7(1), 35-44. doi.org/10.5465/amr.1982.4285438

- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive Capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152. doi.org/10.2307/2393553
- Cooper, D. R., & Schindler, P. S. (2003). *Business research methods* (8th ed.). New York.: McGraw-Hill.
- Doving , E., & Gooderham, P. N. (2008). Dynamic capabilities as antecedents of the scope of related diversification: The case of small firm accountancy practices. *Strategic Management Journal*, 29(8), 841-857. doi.org/10.1002/smj.683
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic Capabilities: What are they? *Strategic Management Journal*, 21, 1105-1121. doi.org/10.1002/1097-0266(200010/11)21:10<1105::AID-SMJ133>3.0.CO;2-E
- Field, A. (2005). *Discovering statistics using SPSS*. London: Sage.
- Garson, G. D. (2012). *Testing statistical assumptions*. Asheboro, NC: Statistical Associates Publishing.
- Gibson, C. B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, 47(2), 209-226. doi.org/10.2307/20159573
- Grahovac, J., & Miller, D. J. (2009). Competitive advantage and performance: the impact of value creation and costlines of imitation. *Strategic Management Journal*, 30(11), 1192-1212. doi.org/10.1002/smj.778
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed.). Pearson Prentice Hall.
- Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 10, 997-1010. doi: 10.1002/smj.332
- Helfat, C. E., & Peteraf, M. A. (2009). Understanding dynamic capabilities: progress along a development path. *Strategic Organization*, 7, 91-102. doi.org/10.1177/1476127008 100133
- Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., & Teece, D. J. (2007). *Dynamic capabilities: Understanding strategic change in organization*. Oxford: Blackwell Publishing .
- Hooley, G. J., Lynch, J. E., & Jobber, D. (1992). Generic marketing strategies . *International Journal of Research in Marketing*, 9, 75-89. doi.org/10.1016/0167-8116(92)90030-O
- Information and Communication Technology Agency in Sri Lanka. (2013). *National ICT Workforce Survey-2013*. Retrieved from www.icta.lk: <http://srilankaitbpm.com/wp-content/uploads/2015/10/ICT-Workforce-Survey-Report-2013.pdf>
- Information and Communication Technology Agency in Sri Lanka. (2019). National IT-BPM Workforce Survey-2019. Retrieved from www.icta.lk: <https://www.icta.lk/projects/national-it-bpm-workforce-survey-2019/>
- Johnson , G., Scholes, K., & Whittington, R. (2008). *Exploring corporate strategy* (8th ed.). Harlow: Pearson Education Limited.
- Kaehler, C., Busatto, F., Becker, G. V., Hansen, P. B., & Santos , J. S. (2014). Relationship between Adaptive Capability and Strategic Orientation: An Empirical Study in a Brazilian Company. *iBusiness*, 6, 1-9. doi: 10.4236/ib.2014.61001
- Karimi, J., & Walter, Z. (2015). The role of dynamic capabilities in responding to digital disruption: A factor-based study of the news paper industry. *Journal of Management Information Systems* , 32(1), 39-81. doi: 10.1080/07421222.2015.1029380
- Kaur, V., & Metha, V. (2016(b)). Knowledge-based dynamic capabilities: A new Perspectives for achieving global competitiveness in IT sector. *Pacific Business Review International* , 1(3), 96-106.

- Kaur, V., & Metha, V. (2017). Dynamic Capabilities for Competitive Advanatge . *Paradigm*, 21(1), 31-51. doi.org/10.1177/0971890717701781
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3 ed.). New York: The Guilford Press.
- Krzakiewicz, K. (2013). Dynamic capabilities and knowledge management . *Management* , 17(2), 1-15. doi:10.2478/manment-2013-0051
- Lane, P. J., Koka, B. R., & Pathak, S. (2006). The reification of absorptive capacity: a critical review and rejuvenation of the construct. *Academy of Management review*, 22(2), 833-863. doi: 10.5465/AMR.2006.22527456
- Lazonick, W., & Prencipe, A. (2005). Dynamic capabilities and sustained innovation: strategic control and financial committment at Rolls-Royce Plc. *Industrial and Corporate Change*, 14, 501-542. doi.org/10.1093/icc/dth061
- Li, J., & Liu, D. (2014). Dynamic capabilities, environmental dynamism, and competitive advanatge: Evidence from China. *Journal of Business Research* , 1-7. DOI: 10.1016/j.jbusres.2012.08.007
- Liao, S. H., Fei, W. C., & Chen, C. C. (2007). Knowledge sharing, absorptive capacity, and innovation capability: An empirical study of Taiwan's knowledge-intensive industries. *Journal of Information Science*, 33(3), 340-359. doi.org/10.1177/01655515 06070739
- Malhotra, N. K., & Dash, S. (2011). *Marketing Research an Applied Orientation*. Pearson Publishing.: London.
- Malhotra, N. K., & Peterson , M. (2006). *Basic marketing research: A decision making approach* (2nd ed.). Upper Saddle River: Pearson.
- Manuj, I., Omar, A., & Yazdanparast, A. (2013). The quest for competitive advantage in global supply chains. *Transportation Journal* ,52(4), 463-492. doi.org/10.5325/trans portationj.52.4.0463
- Miller, D., & Friesen, P. H. (1983). Strategy-making and environment: the third link. *Strategic Management Journal*, 4, 221-235. doi.org/10.1002/smj.4250040304
- Ogunkoya, A., Hassan, B. A., & Shobayo, P. A. (2014). Dynamic capabilities and competitive advanatge: An analysis of the nigerian baning sector. *Journal of Accounting and Management* , 4(2), 29-36.
- Oltra, M. J., & Flor, M. (2003). The impact of technical opportunities and innovative capabilities on firms' output innovation. *Creativity and Innovation Managemet*, 12(3), 137-144. doi.org/10.1111/1467-8691.00277
- Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource based tangle. *Managerial and Decision Economics* , 24(4), 309-323. doi.org/10.1002/mde.1126
- Porter, M. E. (1985). *Competitive Advanatge: Creating and sustaining superior performance*. New York: The Free Press.
- Protogerou, A., Caloghirou, Y., & Lioukas, S. (2012). Dynamic capabilities and their indirect impact on firm performance. *Industrial and Corporate Change*, 21(3), 615-647. doi:10.1093/ICC/DTR049
- Remenyi, D. (2002). Research strategies—beyond the differences. *Electronic Journal of Business Research Methods*, 1(1), 38-41.
- Sanchez, R. (1995). Strategic flexibility in product competition. *Strategic Management Journal*, 16, 135-160. doi.org/10.1002/smj.4250160921

- Saunders, M. K., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5 ed.). Harlow , United Kingdom: Pearson Education Limited.
- Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage. *Strategic Management Journal*, 35, 179-203. doi.org/10.1002/smj.2099
- Sekaran, U., & Bougie, M. (2013). *Research methods for business: A skill building approach* (6th ed.). New York: John Wiley & Sons.
- Sigalas, C., & Pekka, E. V. (2013). Revisiting the concept of competitive advantage: problems and fallacies arising from its conceptualization. *Journal of Strategy and Management*, 6(1), 61-80. doi: 10.1108/17554251311296567
- Signals, C., Economou, V. P., & Georgopoulos, N. B. (2013). Developing a measure of competitive advantage . *Journal of Strategy and Management*, 6(4), 320-342. doi.10.1108/JSMA.03.2013-0015
- Sri Lankan Association of Software and Service Companies. (2014). *Sri Lankan IT/BPM Industry 2014 Review*. Retrieved from www.slasscom.lk: //slasscom.lk/sites/default/files/Sri Lankan IT-BPM Industry Review 2014.pdf
- Supriyadi. (2017). Analysis Effect of Resources and Dynamic Capabilities to Sustainable Competitive Advantages and Its Implications to the Firms Performance. *International Business Research* , 10(10), 209-222.
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 40(3), 55-79. doi.org/10.1002/smj.640
- Teece, D. J., & Pisano, G. (1994). The dynamic capabilities of firms: An Introduction. *Industrial and Corporate Change*, 45(1), 537-556.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management . *Strategic Management Journal*, 18(7), 509-533. doi.org/10.1002/(SICI)1097-0266 (199708)18:7<509::AID-SMJ882>3.0.CO;2-Z
- Wang, C. L., & Ahmed, P. K. (2007). Dynamic Capabilities: A review and research agenda . *International Journal of Management Reviews* , 9(1), 31-51. doi.org/10.1111/j.1468-2370.2007.00201.x
- Wiggins, R. R., & Ruefli, T. W. (2005). Schumpeter's ghost: is hypercompetition making the best of times shorter? *Strategic Management Journal*, 26(9), 887-911. doi.org/10.1002/smj.492
- Winter, S. (2003). Understanding dynamic capabilities . *Strategic Management Journal*, 24(10), 991-995. doi.org/10.1002/smj.318
- Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185-203. doi.org/10.5465/amr. 2002.6587995
- Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies*, 43(1), 917-955. doi.org/10.1111/j.1467-6486.2006.00616.x
- Zhou, K. Z., & Li, C. B. (2010). How strategic orientations influence the building of dynamic capability in emerging economies. *Journal of Business Research*, 63(3), 224-231. doi: 10.1016/j.jbusres.2018.08.007
- Zhou, K. Z., & Wu, F. (2010). Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal* , 31(5), 547-561. doi.org/10.1002/smj.830

APPENDICES

Appendix 1

Normality Test

Variable	Skewness	Kurtosis
Adaptive Capability	-0.977	-0.838
Absorptive Capability	-0.321	-0.898
Innovative Capability	-0.956	0.771
Competitive Advantage	-0.265	-0.982

Source: Survey Data, 2019

Appendix 2

Multicollinearity Coefficients

Coefficients		
Variables	Collinearity Statistics	
	Tolerance	VIF
Adaptive Capability	.476	2.100
Absorptive Capability	.657	1.521
Innovative Capability	.547	1.828
Dependent Variable: CA		

Source: Survey Data, 2019

Appendix 3

Reliability of Measurement Items

Constructs	Cronbach's Alpha	No of items
Adaptive Capability	.864	4
Absorptive Capability	.809	4
Innovative Capability	.822	5
Competitive Advantage	.864	7

Source: Survey Data, 2019