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SUMMARY OF DISSERTATION

Exploring the mediating role of dynamic capabilities in the relationship between intellectual capital and performance of information and communications technology firms

HO CHI MINH CITY……

CHAPTER 1
INTRODUCTION

1.1 Research background

Many countries are in the process of transforming from manufacturing- to knowledge-based economies. This trend has created a need for innovative and in which information and communications technology (ICT) has had an increasingly large impact on economic and social life, especially in Industrial Revolution 4.0 era. The development of ICT has enabled "information societies" of more than three billion people to access the Internet, with eight out of 10 Internet users owning a smartphone (VietNamNet, 2020). The demand for ICT services is increasing by leaps and bounds. This rapid growth has led ICT to become the one of the main drivers of economic growth as well as a cornerstone of daily life in many countries. Vietnam is no exception. Vietnam's ICT sector grew substantially between 2010 and 2019, with its total revenue reaching US $134 billion in 2019 as the country emerged as a production center for ICT hardware and software products and services (VietNamNet, 2020). The government of Vietnam has increasingly recognized the important impact of the ICT industry on social and economic activities and recently devised a master plan for ICT called the "taking-off strategy," which specifies targets for 2020 and aims to continue the transformation of Vietnam into an advanced ICT country, especially in Industrial Revolution 4.0 era. (VietNamNet, 2020).

However, in term of inputs and management knowledge, unlike other manufacturing industries, ICT involves short product life cycles, high customer demand, and very unpredictable technological changes. Accordingly, acquiring and managing "valuable, rare, inimitable, and non-substitutable" (VRIN) sources like intellectual capital is crucial to achieving outstanding performance in ICT (Wang et al., 2018). To follow the worldwide ICT trend, ICT firms that are able to survive and develop in a highly competitive and uncertain institutional environment must increase their capabilities in terms of intellectual capital development. Intellectual capital is often referred to as the value created by three types of intangible resources: *human capital*, which describes individual knowledge, skills, and education; *organizational capital*, which includes all

non-human knowledge containers (e.g., information and communication systems, databases, process manuals, strategies, routines); and *social capital,* which refers to the social relationships within an organization as well as individual relationships with customers, investors, competitors, or suppliers (Wang et al., 2018**)**. While Western empirical research on intellectual capital is popular, it is built on the assumption that intellectual capital is the key source of superior performance. Very few studies have been conducted to validate or operationalize this assumption in developing countries where the business environment is highly unstable, such as Vietnam.

The interaction between the external environment—especially the dynamic environment—and firm strategies is expected to be related to performance (Hsu & Wang, 2012). To maximize performance, managers must pursue competitive strategies that best match the conditions of the external environment. In other words, managers' perceptions of the external environment are expected to affect firm strategy. Therefore, a firm's strategy must involve deploying its resources, especially intellectual capital, to seize opportunities in the market. dynamic capabilities offer a bridge to debates in the strategy field proposing either a resource-based view that a firm's resources, particularly those that are intangible, are more likely to contribute to the firm's ability to sustain superior performance or the emerging discourse surrounding the dynamic environment (Hsu & Wang, 2012). While there is a wealth of literature on intellectual capital (Zhou et al., 2017), very few studies have addressed how dynamic capabilities mediate the impact of IC on firm performance. Drawing on previous studies related to dynamic theories (Singh & Rao, 2016; Zhou et al., 2017), this dissertation proposes an alternative mechanism for the intellectual capital–performance relationship whereby dynamic capabilities mediate the effect of intellectual capital on firm performance.

1.2 Problem Identification

When physical or tangible assets of wealth like land and natural resources, basis for firm performance improvement, become scared or harder to obtain, economy must find develop other resources to maintain competitive advantages of the economy system. (Vuong et al. 2014). As a result, the concept of intellectual capital was developed. Its cornerstone drives firm performance include reputation, brands, intellectual properties, knowledge, organizational procedure and social networks (Inkinen, 2015). Inkinen

(2015) suggests intellectual capital representing knowledge, skills, experiences and culture that are converted into profit. To be more precise, they are defined as the sum of capabilities, knowledge, culture, strategy, process, intellectual property, and relational networks of a company (Kenny and Bourne, 2015). They are also conceptualized as the knowledge and dynamic capability of an organization representing one of the most relevant antecedents of innovation, which has been fundamental for achieving competitive advantage (Kenny and Bourne, 2015). Therefore, their importance for innovation has attracted researchers interested in determining its elements and the process by which it enhances the capabilities and performance of firms.

Many studies of the intellectual capitals are sourced out of Western countries. There are only a few studies on those capitals as well as their roles in the business community's development of the developing countries. In Vietnam, at the macro-level, since the renovation in 1986, Vietnam has achieved rapid changes in its industrialization and modernization process. The economy has shifted away from a centrally planned economy toward a market economy remarkably (Vuong et al., 2014). However, in many years, most strategic transformations only concentrated on labor intensive industries and natural resources exploration; there are little focuses on how to develop intellectual capital in the transition stage in Vietnam.

To modernize the economy system, Vietnam has been transforming the manufacturing-based economy toward a knowledge-based economy in which service sectors, such as finance and banking, tourism, media, biotechnology, and information communication technology, key knowledge intensive sectors now have been contributed increasingly to GDP in the 2009-2019 period. The contribution of service sectors to GDP has increased by 5%, from 41% up to 46% depended on the use of the intellectual capitals intensively. (Malesky, Tuan, Thach, Ha, Lan & Hang, 2019).

Furthermore, Vietnam's ICT industry grew substantially during 2010-2019 and total revenue in 2019 reached USD 134 billion and has been emerging as production and outsourcing center for both ICT hardware and software outsourcing (Enriquez, Grijpink, Manyika, Moodley, Sandoval, Sprague & Strandell-Jansson, 2019). The impacts of ICT on social and economic activities have been considered a tech trends to

drive economic growth. The Vietnamese government has recently devised a master plan on ICT which is called “Taking-off strategy” specifying targets for 2020 and aims at turning Vietnam into an advanced ICT country. However, unlike other well-developed or manufacturing-industries are based on natural resource inputs or labor-intensive production, ICT with short product life cycles, very unpredictable customer demand and technological changes, attaining and managing valuable, rare, inimitable, and non-substitutable (VRIN) sources such as social, human and organizational capital, the key source of superior performance, are very important. To follow the worldwide ICT trend, ICT firms surviving and growing in a highly competitive and uncertain institutional environment must increase their efforts to develop intellectual capital components and dynamic capabilities.

1.3 Rationale and Deficiencies for Current Research

There are reasons for undertaking this study which is presented as the followings:

At first, Vietnamese ICT firms are unfamiliar with the idea of developing intellectual capitals through motivating innovative activities as a valuable resource. In a knowledge-based economy, Intellectual capitals play an essential role in terms of creating and maintaining the firm’s competitive advantages, furtherly, improving performance. Therefore, there is a need for empirical research on the importance of the intellectual capital to help SMEs understand their contribution to the performance.

Second, the impact of intellectual capitals on ICT firm performance differs from developed countries to developing countries. A review of literature indicates that many previous studies on the impact of intellectual capitals on firm performance in western countries in which business environment, macro policies, regulation are transparent and stable, while large extent ignoring developing countries like Vietnam in which business environment and regulation are unstable.

Finally, Vietnam is striving to achieve sustainable economic development where intellectual capitals become one of the main drivers of economic growth. Intellectual capital help nation to shift from labor-intensive economy to the knowledge-intensive economy in which high-tech and service sectors are key players. The industries having key influences of the Intellectual capital on firm performance are finance and banking, tourism, media, biotechnology, and information communication technology. There are a

few studies on the relationship between Intellectual capital and ICT performance in an unstable environment in developing countries like Vietnam. However, they do not mention on how we measure the mediating role of the dynamic capabilities on the impacts of the intellectual capitals on firm performance in which understanding of that mediating role may improve internal and external factors related to corporate performance such as the working environment, human resource policies and corporate relationships (Chih, Hsing Liu & Gilbert & Broome, 2017). It is research gap that we want to fill up in this dissertation.

1.4 Purpose statement

This study investigates the impact of the Intellectual capital's component on firm performance and the mediating role of the dynamic capability on that impact. Specifically, this study focuses on : (1) the effect of intellectual capital on ICT firm performance, (2) The effects of Intellectual capitals directly on each of dynamic capabilities, respectively. (3) the mediating role of each DCs on the link between the ICs and firm performance.

CHAPTER 2
LITERATURE REVIEW

2.1 Resource-based view

Knowledge on how to effectively manage intellectual capitals are vital, especially, in sectors that are innovation oriented and non-manufacturing. The ICT sector is a service sector possessing intellectual capitals resulting from knowledge and skills of employees, processes, information systems, and customer relationships. It is acknowledged that ICT firms with strong intangible resources can achieve sustainable competitive advantages and differentiate themselves from their competitors. For this reason, I use the resource-based view (RBV) as a theoretical framework for this study. RBV has been established for more than 20 years and has become one of the most influential theoretical tools used to determine the strategic resources available to a firm.

The main development of the RBV occurred from 1985 to 1995 after it is first introduced by Werner felt in 1984 (Campbell & Park, 2017; Lin & Wu, 2014). Subsequently, many researchers contributed remarkably to the conceptual development of RBV (Campbell & Park, 2017; Kull, Mena, & Korschun, 2016; Lin & Wu, 2014; Sodhi, 2015). After the academic publication of Prahalad and Hamel (1990), the use of RBV became popular, especially, the significant contributions of Barney (2015) are well-known as the first application of the RBV into a comprehensive theoretical framework.

The RBV looking inside the company for resources of superior outcome is valuable, rare, not available to other competitors, imperfectly imitable, not easily implemented by others and non-substitutable and not able to be replaced by some other non-rare resource. These attributes are also known as VRIN attributes of the firm resources (Demir, 2017). These resources are further categorized in physical and intellectual capitals (social, human and organizational capital). Barney (2015) proposed that firms obtain these resources may achieve competitive advantages over other competitors. Therefore, it is argued that the management and development of capitals are a vital means of a firm's outcome or performance. Some previous researches also mention to how the intellectual capitals, VRIN resources, on firm performance. Campbell & Park,

(2017)'s article is well known as the research focusing on testing factors believed to affect small business performance of the service firms, utilizing RBV and the instrumental stakeholder framework approach. Within the research stream, the RBV framework has considered the relationship of one type of the intellectual capitals, social capital, with business performance. Han & Li (2015) mention to RBV of firm holds that competitive advantage comes from resources such as social and human capital are both supportive and necessary for innovative performance, especially is very important indirectly for ICT or service firm' performance.

The RBV has long recognized the role of intangible resources as a source of competitive advantage. These intangible resources, such as technology, human capital and reputation, are said to be of greatest strategic importance for firm performance (Gomez-Mejia & Balkin, 2002). Barney (1986) and Grant (1991) included organizational culture, a type of the organizational capital, as a strategic intangible resource for firm development. Although the RBV has been applied widely in many studies, there are some criticisms is that RBV is appropriate for explaining firm's competitive advantages in a stable environment, is not insufficient to explain the competitive advantages of the firm in environments like Vietnam in which is unpredictable and continuous changes.

To advance the RBV, the clear definitions of resources and capabilities are needed. Many scholars argued that the broad and unclear of resources are issues that make confusion in how to apply the RBV to explain theoretical questions (Bromiley, Philip, 2016). Grant (2016) suggested that resources can be classified into three main types: tangible, intangible and person-based resources. Tangible resources include financial and physical assets such as currencies, gold, properties, house, plant and equipment. Intangible resources refer to copy rights, patents, company's brand or product's brand, internal and external relationships. Person-based resources refer to human resource's skills and education backgrounds. Tangible resources can be obtained from the external environment via business transactions, while intangible and personnel-based resources can be developed via the internal activities of the firm such as training, motivating, research and development (R&D) activities. Therefore, firms may achieve competitive advantages if they own intangible assets and personnel-based resource difficult to be

copied by competitors. However, to develop those resources, the firm must have capabilities to assemble, integrate, deploy and transform those VRIN resources into business solutions (Ahmed, A., Khuwaja, F. M., Brohi, N. A., Othman, I., & Bin, 2018).

Under pressure of rapid changing and unpredictable environment like Vietnam, relying solely on RBV to explain how firm achieving long-term competitive advantages and superior performance may be inadequate, so, we propose that RBV should extend to another theoretical discussion, dynamic capabilities view, because RBV has been sufficient and specific to explain to firms running in traditional sectors and stable environments.

2.2 Dynamic Capabilities View

In the early 1990s, due to the rapidly changing business environment, many scholars criticized that the RBV is suitable to explain for a stable environment and it neglected the influence of market dynamism. Since the 2000s, the dynamic capabilities view has increasingly attracted academic attention within the strategic management literature. Such an interest has resulted in a large extent from the longstanding importance given to the relationships between firms' strategic decision and environmental impacts in the strategy and organization theory literature. However, there is still no consensus regarding the definition of dynamic capabilities.

At first, Dynamic capabilities depicted as learning mechanisms. Nelson and Winter (1982) provide some of the foundations for conceptualizing dynamic capabilities as learning mechanisms when they describe 'routine-guided, routine-changing processes' within an organization, which constrain or enable change. The routines are said to operate on three distinct levels. The first level resides in those routines governing 'short-run behavior' or 'operating characteristics'. The second level of routines guides year on year investment decisions (such as building a new plant). These are 'predictable patterns of behavior in the firm' and are likened to the firm's 'genes'. Finally, a third level of routines serves to enable change in the firm. This level can be found, for example, in the research and development or the marketing functions of the firm. This third level of routines comprises 'searches', which are routine-guided, routine-changing processes. They are the biological equivalent of 'mutations'. The depiction of dynamic capabilities in Zollo and Winter (2002) shares the same roots as Nelson and Winter (1982) in

evolutionary economics and both works develop evolutionary metaphors to present their ideas. In Nelson and Winter (1982), the response to change is compared to biological characteristics, genes and mutations. Zollo and Winter's analogy (2002) also reflects the ideas of organizational learning theorists by depicting how organizations use knowledge to adapt (Argyris & Shoen, 1978). Zollo and Winter propose that dynamic capabilities are 'shaped by the coevolution of these learning mechanisms'. The distinct role identified for managers in deploying learning mechanisms also demonstrates a clear differentiation in Zollo and Winter's paper from contingency theory, which portrays managers as supine victims of the process of evolutionary culling (e.g. Burns and Stalker, 1961). Zollo and Winter (2002) present dynamic capabilities as increasingly robust 'routines' which will be performed more consistently and reliably if they are codified. The paper identifies some of the risks of not codifying, one of which is that the knowledge, if it remains undocumented, may be lost to the organization if that member of staff leaves. Following the writers' logic, those tasks which need to be done more frequently or those which are homogenous or complex, should all be considered for codification. Zollo and Winter recognize that codification can be counter-productive when its advantages are outweighed by the time and costs of implementation.

Secondly, Dynamic capabilities depicted as processes. Nelson and Winter's (2002) depiction of 'routines' is also acknowledged by Eisenhardt and Martin (2000) and reflected in their own depiction of dynamic capabilities (2000). Eisenhardt and Martin describe 'the firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die'. Eisenhardt and Martin's definition also suggests a strong link between resource-based view theory and dynamic capabilities theory, whereby the core resources are not replaced, but rather reconfigured. Their evolutionary approach perceives dynamic capabilities as operating 'more through repeated recombination patterns of stable organizational factors, than through disruption of existing practices' (Salvato, 2003). However, the depiction of dynamic capabilities as processes also presents difficulties.

Lastly, dynamic capabilities depicted as capacities It can be argued that greater weight should be placed on the conceptualization presented by Teece (2007), than on any earlier conceptions. Teece's own credibility as a major contributor to the body of work on dynamic capabilities has been discussed in the brief history section. In addition, by 2007, Teece had had 13 years in which to reflect upon and refine the ideas which he originally presented about dynamic capabilities with Pisano (1994). Teece describes the micro-foundations of dynamic capabilities as 'the distinct skills, processes, procedures, organizational structures, decision rules, and disciplines— which undergird enterprise-level sensing, seizing, and reconfiguring capacities. The three capacities serve: (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets. Teece's relatively recent depiction of dynamic capabilities as capacities arguably prioritizes the human aspect of dynamic capabilities over some earlier conceptualizations which depict dynamic capabilities as routines or processes. Chambers (Macdonald, 1974) offers the following definition: 'capacity is power of holding, containing, absorbing or grasping: room: ability: power of mind: character in which one does something'. The word capacity also reasserts the central role which Teece perceives for strategic management and the 'entrepreneurial management function' (Teece, 2007). This contrasts to dynamic capabilities serving as an enabling tool of strategic management, as might be interpreted in a reading of those writers portraying dynamic capabilities as processes (p.24-26). Teece's terminology also serves to endorse the notion of dynamic capabilities as grounded in the accumulated learning of an organization (Zollo and Winter, 2002). The three capacities of sensing, seizing and reconfiguration (Teece, 2007) echo the three learning mechanisms of '(1) experience accumulation, (2) knowledge articulation, and (3) knowledge codification' (Zollo and Winter, 2002, p.339). Yet, whilst Zollo and Winter's vocabulary implies three progressions in amassing organizational learning, Teece's vocabulary additionally imbues each of his progressions with an action-based dimension. Furthermore, Teece implies more strategic creativity than is evident in organizational learning theorists. Teece makes regular reference to 'opportunities' and 'threats' around which the capacities of sensing, seizing and reconfiguration are

‘shaped’ and ‘reshaped’ (2007). Teece’s capacities (of sensing, seizing and reconfiguration) can be summarized as follows: (1) sensing capabilities allow firms to spot opportunities and threats in the market. Sensing capabilities may underpin the development of new products, a sophisticated research and 28 development capability in industries such as pharmaceuticals, or the conceptualizing of customer needs in industries such as technology. Organizations must extend the sensing activity ‘to the periphery of their business ecosystem’ and embrace a range of ‘potential collaborators – customers, suppliers, complementors’ (Teece, 2007); (2) seizing activities include the building of new competencies or the implementation of new ‘business models’ which respond to specific opportunities (Teece, 2007). Eisenhardt and Martin depict the integrative capability evident in Toyota’s product design as such a dynamic capability (2000); (3) reconfiguration is wider in scope and exercised less frequently than seizing. Reconfiguration seeks to retain the organization’s ‘evolutionary fitness’. It embraces ‘the ability to recombine and to reconfigure assets and organizational structures as the enterprise grows, and as markets change’ (Teece, 2007). It includes the realignment of the organization through acquisitions and mergers. Both aspects of the mode are reflected in the example of Cisco, whose decentralized, relatively flat management structure facilitated the acquisition and integration of 136 businesses over a ten-year period, without any significant loss of impetus (Helfat et al., 2007).

Based on previous literatures in above, this dissertation conceptualizes dynamic capability as a firm’s capability to learn, integrate, and reconfigure its resource base to address changing business conditions.

In environment of rapid technological change and high velocity market, it is hard to predict and discern the trajectories of future development. New information and new knowledge can create opportunities for innovation. Therefore, it is important for firms to scan, search, and explore opportunities across technologies and markets. Those activities were defined as learning capability (Teece et al., 2007). Learning involves investment in research activity and the probing and reproving of technological possibilities. Previous studies have emphasized that research activity will increase firm’s own knowledge and the relevant prior knowledge is critical for organizations to evaluate the new information (Todorova & Durisin, 2007). It has been identified that

externally available information and resources affect all innovation activities and development of a firm (Yam et al., 2011). External technological ideas and discoveries that fall beyond a firm's search zone might be possibly overlooked because the firm cannot easily comprehend them (Rosenkopf & Nerkar, 2001). Following this line of reasoning, experienced firms are likely to have routinized learning strategies to improve the organizational innovation (Rosenkopf & Nerkar, 2001).

Integration capability has been identified as one of the three classes of managerial functions, i.e. integration, learning and reconfiguration which are relevant to dynamic capabilities (Teece, Pisano, & Shuen, 1997). Coase (1937) pointed out that the most obvious cost of organizing production is cost that make internal activities within firm efficiently. Therefore, the Coasian view of firms believes that a firm should minize the internal transaction costs. Following this logic, centralized research and development (R&D) could generate innovations that have broader impact on subsequent technological evolution by reducing the internal transaction costs associated with R&D coordination across units in the organization (Argyres & Silverman, 2004). However, in order to keep flexibility and responsiveness, resources should be decentralized while firm is growing. Therefore, structural complexity and the amount of the organizational units will be increased. It leads to the increase of the transaction cost across organizational units (Teece, 2007). The integrating capability focuses more on the efficient and effective transfer of technology/information between and among the various organizational units of firm. It is believed that integration capability could help firms to connect units because it can help easing potential contractual problems. Moreover, integration capability also opens pathways for learning, sharing of know-how and expertise through transfer of technology and know-how within a firm (Teece, 2014a).

In order to sustain profitable growth, it is important for a company to recombine and to reconfigure assets and organizational structures when markets and technology change. Knowledge and resources may depreciate over time, and it may lead to the lack of cumulative benefits from prior experiences (Sampson, 2005). Reconfiguration capability does not only support firms to maintain evolutionary fitness but also provide the possibility for them to escape from unfavorable path dependencies when it is

necessary (Teece, 2007). Reconfiguration capability includes activities in which firms engage when adding, redeploying, recombining or divesting resources or business units (Karim & Capron, 2016). Reconfiguration capability facilitates continuous evolution and can also become a mechanism for firms to obtain novel resources and capture innovation benefits. It is believed that reconfiguration capability could enhance technology innovation. In term of the technological innovation, the intra-organizational knowledge exchange could be stimulated and the existing tacit knowledge could be externalized and distributed in the company via redeploying human resources and restructuring business units (Nonaka, 1994). Galunic and Rodan (1998) have point out that knowledge and context specificity have important consequences on the likelihoods of innovation. It is also proved that the deployment of firm-specific knowledge requires specific settings. Employees who hold the key knowledge may be reluctant to make specialized human capital investments when they are deployed inappropriately (Wang, He & Mahoney, 2009). To some extent, older firms or firms with more experiences can develop and understand their technological domains and recognize optimal conditions for recombination (Zahra & George, 2002; Kotha, Zheng & George, 2011).

There were some studies that indicating about how the dynamic capabilities effects on the firm performance. Wu (2006) established that Taiwanese IT enterprises build dynamic capabilities through knowledge resources. Chien and Tsai, (2012) found that knowledge is a critical driver of dynamic capabilities in the Taiwanese restaurant chain. Mckelvin and Davidsson (2009) associated employee human capital and founder's human capital with dynamic capability in new firms. Lin and Wu, (2014) mentioned the contributory role of VRIN resources for different dynamic capabilities in Taiwanese companies. Similarly, Reijsen *et al.,* (2014) cited the significant linkage of internal social capital as opposed to external social capital with dynamic capability in large and SME's.

2.3 The firm performance

It is possible that firm performance can be understood as the result of activities of an organization which places attention on three main aspects: efficiency, effectiveness, and adaptability. Efficiency and effectiveness are reflected by the current results of business activities, whereas adaptability refers to the match between the future outcome

of the organization and external requirements of shareholders and customers. However, measuring firm performance is a major challenge for researchers. Initially, relying on a purely financial perspective, the firm performance measurements have been gradually extended to multiple dimensions (Singh, Darwish & Potočnik, 2016). Financial performance relates to accounting measurements and economic performance; Hence it examines indicators such as sale growth, earning per share and profitability which is reflected by return on investment, return on sale and return on equity.

However, operational or non-financial performance focus on factors such as product quality, productivity, and marketing effectiveness. Accordingly, to ensure that firm performance is measured accurately, Dess and Robinson (1984) recommend that firms should employ a composite measurement. Rather than relying on a single indicator, utilizing multiple indicators enables firms to measure performance via more complex and informative measures as well as assess the contribution of each indicator.

From another perspective, firm performance can be evaluated via two broad approaches; the objective approach and subjective approach. In the former approach, the absolute values of performance measures such as sales growth and profitability are used obtained either by asking the respondents to provide the facts or by examining secondary sources. Performance data collected directly from the firms are known as primary data while the secondary source is gathered from external databases. In the latter approach, respondents are asked to assess their firm's performance relative to their competitors and Westhead assert that performance comparisons with competitors may reveal important information (Lins, Servaes & Tamayo, 2017). Some researchers have employed both approaches and have demonstrated a strong correlation between subjective and objective measurements.

It has been generally accepted in the literature that objective measurements of performance are more preferred than subjective measures. However, it is very difficult for academic researchers to obtain objective data especially from a small business enterprise because many owners/managers refuse to provide firm's objective and actual performance information to outsiders and this type of data is not released publicly (Lins, Servaes & Tamayo, 2017).

In addition, they may give biased performance outcomes if they are to report such data. On the other hand, researchers propose that researchers utilize subjective measurements of firm performance as an alternative in the absence of accurate, objective measurement. Some studies do report different findings regarding the relationship between the independent variables with firm performance, depending on whether objective or subjective measures are used to operationalized performance. In a review conducted Singh, Darwish and Potocnik (2016) , they reveal almost 50% of the studies that use both objective and subjective performance measures in examining the market orientation-performance link, show a strong relationship for subjective and objective performance. From these findings, they concluded that subjective measures of performance are more correlated with market orientation and firm performance, indicating that the impact of market orientation on subjective measures of performance is stronger than its impact on objective measures.

The relationship between intellectual capital and firm performance has also been examined based on perceptions rather than absolute values. For example, Ling (2013) examines the influence of intellectual capital dimensions (comprised of human capital, organizational capital and social capital) on both financial and non-financial dimensions by using perceived performance scale. The study reveals that only structural capital is directly related to financial performance. However, all three intellectual capital types have direct positive impacts on non-performance. Following an extensive review of the variables that will be examined in this study, in relationship to the concepts of firm innovation capability and performance, a conceptual framework to investigate the impact of intellectual capital on innovation capability and firm performance is proposed below. The following section also includes an explanation regarding construct specification that formed the basis for developing the conceptual framework and the hypothesized relationships.

2.4 Intellectual capital

In manufacturing-based economy, tangible assets like land, factories, machinery, equipment, and raw materials were used as the basis for firm performance. When these sources become harder to obtain, the management line must find other ways to gain competitive advantage. In other words, they must focus on how to work smartly, not

hardly. Therefore, the knowledge-based economy concept was born. This concept supports a business model that relies on wealth creation through development, deployment, and utilization of intellectual capital. The cornerstone of intellectual capital driving firm performance includes knowledge, competence, intellectual property, brands, reputation and customer relationships. They have received considerable attention from academics. The first concept of the intellectual capital was proposed by an economist, John Kenneth Galbraith, in 1969 (Stanfield, 2016). He described that intellectual capital as behaviors requiring the exercise of the brain is understood as dynamic intellect-creating activities.

Stewart (2005) defined intellectual capital as collective brainpower reflected in different forms of knowledge, important information, intellectual property and experience. Inkinen, H (2015) assert that it possessed key importance for corporate performance. Marr and Schiuma (2004) defined intellectual capital as a group of knowledge assets attributed to an organization as most significantly contribution to the competitive advantage. A rather influential definition was given by Sullivan, who started that intellectual capital represents knowledge that can be converted into profit. Finally, Lev (2003) saw intellectual capital as a company's rights to future benefits, created by their effective and efficient uses.

Moreover, due to the appearance of the number of knowledge-intensive industries such as information communication technology (ICT), biotechnology, finance and banking and other service sectors, intellectual capital has become an interest research topic. Empirical studies examining of intangible capital on firm performance have been increasing, especially in emerging markets (Ferreira & Coelho, 2017).

There are two researching streams of the impact of intellectual capital on performance. The first stream focuses on their financial and organizational effects on performance. (Inkinen, 2016; Yu, X., Krause, R. A., Bell, G., & Bruton, 2016). On the other hand, a small set of survey-based studies aims to delineate these effects adopting a multidimensional approach to performance. Our study falls under the first stream. It is important to understand the impact of the three types of intangible assets in a study rather than the different one in isolation.

Many scholars agree that the importance of intellectual capital to firms, but, the differences in definitions and measurements of firm performance still exist. They have been categorized differently based on the research objectives and backgrounds of the studies (Mention, A. L., & Bontis, 2013). Typically, the intellectual capital of company has been measured with a tripartite framework including human, structural or organizational and social capital or relation capital (Cohen, J. F., & Olsen, 2015; Inkinen, 2016; Kianto, A., Andreeva, T., & Pavlov, 2013; Mention, A. L., & Bontis, 2013) in which human capital is a central component. Human capital refers to knowledge, education level, skills, and capabilities of the firm's employees (Keil, M., Lee, H. K., & Deng, 2013).

Structural or organizational capital regards basically all other knowledge that including documents, databases, process descriptions, databases, intellectual property and knowledge in information technology systems. Finally, social or relational capital consists of knowledge embedded in and derived from relationships with different stakeholders including customers, suppliers, distributors, and partners (Mention, A. L., & Bontis, 2013).

2.4.1 Human capital

Human capital relates to the competence of employees, which includes the knowledge, skills, experiences, and abilities (Felício, Couto, & Caiado, 2014; Felício, Couto, Caiado, et al., 2014). Generic human capital is accumulated through an individual's education and experiences and is highly transferable across the firm. On the opposite, firm-specific human capital results from idiosyncratic learning processes referring to core-competencies and skills that individuals gain in the working environment. At the individual level, knowledge generation and transfer are functions of willingness. Firm desire competitive and productive workforces. Making knowledge workers productive requires changes in basic attitudes, whereas making the manual worker more productive only requires telling the worker how to do the job.

Therefore, in terms of the desired workforce, the characteristics of human capital are creative, bright, and skilled employees, with expertise in their functions. They constitute the predominant sources of new in an organization (Gilbert, Von Ah & Broome, 2017). In short, human capital is commonly associated with the education,

skills, abilities or competencies of a person, acquired from education, experience, and specific skills.

2.4.2 Organizational capital

Organizational capital refers to the institutionalized knowledge and codified experiences preserved in and utilized through databases, patents, manuals, structures, systems, and processes (Tong, Tak & Wong, 2015; Vuong et al., 2014). Other researchers define organizational capital as the set of rules, norms, routines and organizational culture helping to the development of organizational competence (Mention, & Bontis, 2013). However, Subramanian and Youndt (2005) argue that organizational capital fits better in explaining that it is left behind in the firm when employees go home, owned by the firm and a strategic asset (Lev & Zambon, 2003; Tong, Tak & Wong, 2015).

Hence, accumulating, codifying and storing are very important for the firm. Moreover, it enables efficient communication within an organization to facilitate knowledge-related activities and eventually contributes to values and profits. Therefore, if it is incorporated into their competitive intelligence, the overall business strategy will not only creatively transform the way they gather, produce and transmit knowledge, but also gain a better position to generate higher quality, lower costs and deeper insight leading to better performance.

2.4.3 Social Capital

Social capital can be understood as a set of informal norms, values, and commons to the members of a specific group that allows the cooperation and communication among them (Whiteley, 2015). In other words, it is regarded as the knowledge embedded within, available through, and used by interactions among individuals and their networks of interrelationships (Janine Nahapiet, 2013). Therefore, at macro-level, it is considered as a key-element for human, social and economic development. At micro-level, social capital involves not only knowledge and information exchanges among employees within the firm but also extended to the association with external parties related to the firms such as customers, suppliers, and partners.

A firm with rich social capital may advance the quality of teamwork and increase communication smoothly among team members. Social capital is not owned by

individuals or organizations. It assumes an interconnecting role for intellectual capitals leveraging knowledge in groups and network of people important to the firms. In the structural dimension of Social capital focus on the presence of relationships between the actors which relates the configuration or morphology of the network described by the standards of connections through density, connectivity, stability and ties variables (Lillbacka, 2006).

The relational dimension describes the individual's relationships developed through a history of social communication and interaction. This dimension focuses on aspects that influence the behaviors, like respect and friendship, going to decide sociability, acceptance, and prestige. Two actors can occupy similar positions in a network; however, if their emotional and personal attitudes differ, their actions will be different in many aspects; therefore, it is related to a behavioral component revealing through facets as trust and distrust, participation and tolerance, obligations and expectations.

The third dimension of social capital: cognitive, refers to the resources that emanate interpretations, systems of meaning, mainly codes and narratives shared, values and other cultural elements. Some academics affirm that this dimension is not being explored in the literature (Lillbacka, 2006).

2.5 Hypothesis Development

2.5.1 The direct impact of human, organizational and social capital on firm performance

Embedded in employees, human capital may be defined as the summation of abilities, skills, attitude, commitment, experience and educational background of employees that enable them to act in ways which are economically valuable to both individual and firm (Felício, J. A., Couto, E., & Caiado, 2014). Human capital brings value to the company as a criterion of competency and creativity possessed by employees which allows them to identify business opportunities, create new knowledge and solve problems. ICT firms do not have their human capital but rather lease the acquired knowledge, skills, and experience of the employee. Quality of human capital in a firm is influenced by hiring practices and training activities (Buenechea-Elberdin, M., Sáenz, J., & Kianto, 2017).

Many scholars confirmed that human capital is the most important intangible resource of a firm's performance and development, especially in innovative sectors like ICT (Felício, Couto, Caiado, et al., 2014). Therefore, Firms must invest human capital which tends to have a great impact on performance. The hypothesis is proposed as the following:

H1a: *Human capital has a positive significant influence on firm performance*

It is acknowledged in the literature that the influence of social capital on firm performance has been increasing. However, the concept of social capital has been much debated in terms of definition, measurement, and operationalization. So far, there are three distinct theoretical perspectives of social capital proposed by scholars are the functional, network and multidimensional perspective. The functional perspective developed by Coleman and Putnam defines social capital as a functional resource that enhances collaboration among individuals in an organization (Ellinger, Bachrach, Wang & Elmadağ Baş, 2011b).

The network perspective of the social capital theory suggested by Bourdieu defines social capital as a resource embedded in social networks in which individuals or organizations are members (Felício, Couto, Caiado, et al., 2014). When a member's network is expanded, and trust is established, the members are more willing to share intellectual resources, in turn, motivating knowledge exchange activities. The last perspective, multidimensional perspective, is developed by synthesizing the functional and network perspective. Therefore, this perspective conceptualizes social capital as a resource both inherent in a network and as a resource facilitating action among network member that it is available for the productive purpose.

In general, social capital encompasses the context, stock of relationships, interpersonal trust and norms that allow certain behaviors and sustainable relationships between individuals as well as ensure conditions for organizational development and knowledge exchanges (Youndt, M. A., Subramaniam, M., & Snell, 2004). Hence, it is necessary to investigate how social capital enabling accessing, processing, synthesizing and exchanging knowledge within and across organizations will influence on the performance of knowledge-based organizations in the ICT sector. The hypothesis is the following:

H1b: *Social capital may positively relate to firm performance*

Defined as the institutionalized knowledge and codified experiences preserved in organizational image, culture, routines, procedures, information systems, and patents (Inkinen, 2015), organizational capital is a strategic intangible asset. The purpose of organizational capital is to coordinate communication and action among individuals in an organization(Gilbert, J. H., Von Ah, D., & Broome, 2017). From the literature review, scholars suggest three distinct dimensions of organizational capital as the following: (a) the structural, (b) the cultural and (c) knowledge dimension. The first dimension, structural dimension, refers to the formal procedures and processes of the organization providing the decision-making guideline. This includes human resource policies and guidelines of the labor management practices such as hiring, tasking, staffing, and disciplinary action.

The cultural dimension accounts for processes serving for the long-term strategy of the firm. This include formal objectives, strategic plan, mission, values, vision (Buenechea-Elberdin, M., Sáenz, J., & Kianto, 2017; Gilbert, J. H., Von Ah, D., & Broome, 2017), the organizational culture and tradition and corporate social responsibility (Lins, K. V., Servaes, H., & Tamayo, 2017). The knowledge dimension accounts for processes through which knowledge and information is created, utilized, exchanged and preserved. This includes investment in research and development, copyrights and patents.

Comparing with human and social capital, it is least flexible (J. Nahapiet, 1998). Major ICT firms are small and medium size, thus, developing organizational capital is less hierarchical in nature and allows for autonomy and independence in decision making allowing in increased innovation and absorption of new knowledge. As a result, the firm performance is improved. Based on these arguments, the dissertation propose the following hypothesis:

H1c: *Organizational capital positively relates to firm performance*

2.5.2 The direct impact of human capital on Learning, Integration and Configuration Capability

The primary component of Intellectual capital is human capital. Knowledge is intrinsic to human capital (Inkinen, 2015). Human capital is defined as the knowledge,

skills, and abilities residing in and used by the employees or members of an organization (Youndt et al, 2004). Taking into consideration the personal aspect of knowledge resources, existing studies have yielded sufficient evidence to show that a firm's learning, integration, and reconfiguration capabilities are highly dependent on its having knowledgeable, skilled, and experienced employees (Hussinki, et al, 2017). Experienced employees can identify changes and make superior decisions regarding resource allocation and pathfinding strategy, thereby predicting outcomes precisely. In turn, firms are more capable of adapting to changes in the business environment (Eriksson, 2014). It follows that capability has bearing on an individual's knowledge, motivation, skills, experiences, and probabilistic judgements (Singh & Rao, 2016). Hence, human capital supports the evolution of dynamic capabilities.

Some researchers posited that experienced managers support the identification and exploration of opportunities, which is central to developing integration capability (Salunke et al., 2019). Tsou & Chen (2020) highlighted that an individual's knowledge and experience act as dynamic contributors in knowledge accumulation and utilization, founding to be significantly associated with integration and reconfiguration capability. Nieves and Haller (2014) maintained that employees' knowledge and skills encourage resource renewal as well as learning and reconfiguration capabilities.

Accordingly, this dissertation proposes the following hypotheses:

H2a: *Human capital has a positive effect on learning capability.*

H2b: *Human capital has a positive effect on integration capability.*

H2c: *Human capital has a positive effect on reconfiguration capability.*

2.5.3 The direct impact of social capital on Learning, Integration and Configuration capability

Regarding the relational facet of knowledge resources, researchers have defined social capital as an essential form of knowledge located in the interactions between individuals and networks of relationships (Hongyun etal., 2019), conceptualizing it as the contingent factor behind the occurrence of social ties, new alliances and partnerships. The literature on social exchange theory highlights that strong ties and alliances play a vital role in the development of a firm's integration and reconfiguration capabilities (Eisenhardt & Martin, 2000). Strong social networks enable an organization

to acquire information related to new opportunities, gain new experience and expertise, and create new processes that enhance its capabilities to grasp opportunities (Ramadan, et al., 2017). Accordingly, network relationships contribute to the processes and routines that play an indispensable role in releasing, acquiring, and integrating resources. As such, social capital plays an important role in the development of dynamic capabilities.

Some scholars maintained that experiences with prior alliances drive learning, create knowledge, prevent mistakes, facilitate information and resource advantage, support the identification of new opportunities and threats, and thereby develop learning capabilities (Singh & Rao, 2016). Eriksson (2014) noted that network-generated learning gives rise to resource configuration. Based on the above, it is clear that a high level of social capital enhances an organization's ability to learn, integrate, and reconfigure, thus encouraging the development of dynamic capabilities.

Accordingly, the following hypotheses are proposed:

H3a: *Social capital has a positive effect on learning capability.*

H3b: *Social capital has a positive effect on integration capability.*

H3c: *Social capital has a positive effect on configuration capability.*

2.5.4 The direct impact of organizational capital on Learning, Integration and Cofiguration capability

Organizational capital is described as "institutionalized knowledge and experience" that is codified and warehoused in systems, databases, processes, manuals, routines, and patents (Inkinen, 2015). A high level of institutionalized knowledge facilitates the smooth flow of communication among partners in relationship networks, creates learning, and accelerates the acquisition of new resource bases (Prena & Kustina, 2020) which is central to the notion of knowledge integration, enhancement, and utilization. This suggests the role of organizational capital as an enabling factor for dynamic capabilities.

The literature highlights that organizational structure and processes act as formalized mechanisms to impart learning and internalize, utilize, share, and articulate organizational resources (Wang et al., 2019) that further enhance the capabilities of a firm. Youndt et al., (2004) argued that codified knowledge permits organizations to

reinforce their prevailing expertise and helps develop innovative capabilities. Wang et al., (2019) maintained the plausible role of information technology in integration capabilities, while Prena & Kustina (2020) recommended knowledge codification as an essential factor for developing integration and reconfiguration capabilities. It is argued for the positive effect of organizational capital on knowledge acquisition and integration. Hsu and Wang (2012) also stated that organizational processes and IT facilitate knowledge accumulation and utilization in an organized way, which is considered a requisite component of dynamic Capabilities. Hsu and Wang (2012) argued that new knowledge generated through experiences is a vital element in dynamic capabilities. For instance, organizational capital provides a positive culture (a contingent factor for learning), encourages individuals to acquire new knowledge, and facilitates an environment that enhances an organization's ability to create knowledge and leverage that knowledge to produce value and achieve the organization's potential.

Based on the above, hypotheses are proposed as the following:

H4a: *Organizational capital has a positive effect on learning capability.*

H4b: *Organizational capital has a positive effect on integration capability.*

H4c: *Organizational capital has a positive effect on reconfiguration capability.*

2.5.4 Mediating effects of Learning Capability

Learning in this context refers to the process of making firm operations more effective and efficient through repetition and review. In product development, learning capability allows firms to avoid repeating mistakes by using information from past lessons and enables them to explore new knowledge and develop new products (Obeidat et al., 2018). Some scholars indicated that a firm can enhance its performance by learning new knowledge, concepts and expertise through external cooperative alliances. In addition, learning orientation has been found to improve innovative capability which is important for firm operation (Lee & Falahat, 2019). Lin & Wu (2014) suggested that a firm should modify its business direction through internal and external learning by changing, acquiring, or discarding resources. Internal learning can be achieved through training, knowledge database maintenance, and knowledge sharing programs. In addition, a firm can enhance its external learning capability by anticipating industry knowledge and becoming involved in learning seminars or communities.

Accordingly, the paper posits the following hypotheses:

H5: *Learning capability has a positive influence on firm performance.*

H6a: *Learning capability mediates the positive effect of human capital on firm performance.*

H6b: *Learning capability mediates the positive effect of social capital on firm performance.*

H6c: *Learning capability mediates the positive effect of organizational capital on firm performance.*

2.5.5 Mediating effects of Integration capability

Yang, Jiang & Zhao (2019) showed that firm acquirers can gain resource exchange and integration expertise through successful alliance activities and thus improve their performance. These results provide examples of how integration capability positively transforms value resources into improved performance.

In addition, Integration capability enable firms to transform and convert resources into innovative output (Zhou et al., 2017). Integration capability could both increase technological and market innovation (Kotha, Zheng and George, 2011). In term of technological innovation, integration capability could hep firms to adopt technology from different areas and share knowledge internally. When a firm enters a new technological niche, it can divert free resources toward integrating new technological knowledge with existing technological knowledge repositories to increase innovative output (Zhou et al., 2017).

Moreover, integration capability can help transferring market information across the department within the firm. The integration capability is rooted in routines and mechanism that allow the organization to forecast customer requirements as well as interpret current market information. Therefore, in light of this research, the dissertation proposes the following hypotheses:

H7: *Integration capability has a positive influence on firm performance.*

H8a: *Integration capability mediates the positive effect of human capital on firm performance.*

H8b*: Integration capability mediates the positive effect of social capital on firm performance.*

***H8c**: Integration capability mediates the positive effect of organizational capital on firm performance.*

2.5.6 Mediating effects of reconfiguration capability

To deal with a rapidly changing industry environment, a firm must reassemble or transform its internal and external resources (Farzaneh et al, 2020). However, firms must also develop a more cost-effective process than their competitors to reconfigure and transform their resource. As a result, reconfiguration capability is generally considered a key capability for monitoring market and technology trends and for ensuring timely responses through resource transformation (Teece et al., 1997).

Lin and Wu (2014) indicated that strategic flexibility, which stresses the flexible use and reconfiguration of resources, strengthens the positive effects of technological capability and thus improves firm performance. To deal with fast-changing industry environments, firms should rapidly respond to the market and competitors. Additionally, firms should efficiently and effectively communicate with their alliance network to create competitive advantages.

Reconfiguration capability could also influence market innovation. Chakrabarti, Vidal and Mitchell (2011) argued that the development of institutional market environment strongly affects the ability of firms to reconfigure resources and business, as well as to benefit from such reconfigurations. Koza, Tallman and Ataay (2011) also illustrate an interesting case about how Renault comprehends and coordinate via using a series of reconfiguration methods such as internal development, mergers and acquisitions, to approach the new market. Base on prior studies, Zhou et al., (2017) assumed reconfiguration capability could help company to adapt to different market environment and figure out the innovative marketing strategy. Accordingly, the following hypotheses are proposed:

***H9**: Reconfiguration capability has a positive influence on firm performance.*

***H10a**: Reconfiguration capability mediates the positive effect of human capital on firm performance.*

***H10b**: Reconfiguration capability mediates the positive effect of social capital on firm performance.*

***H10c**: Reconfiguration capability mediates the positive effect of organizational capital on firm performance.*

2.6 Conceptual Model

Based on the literature review and synthesis of Intellectual capital dimensions, Resource-based view, Dynamic Capability theory and the proposed hypotheses, this dissertation suggests a conceptual framework (Figure 1).

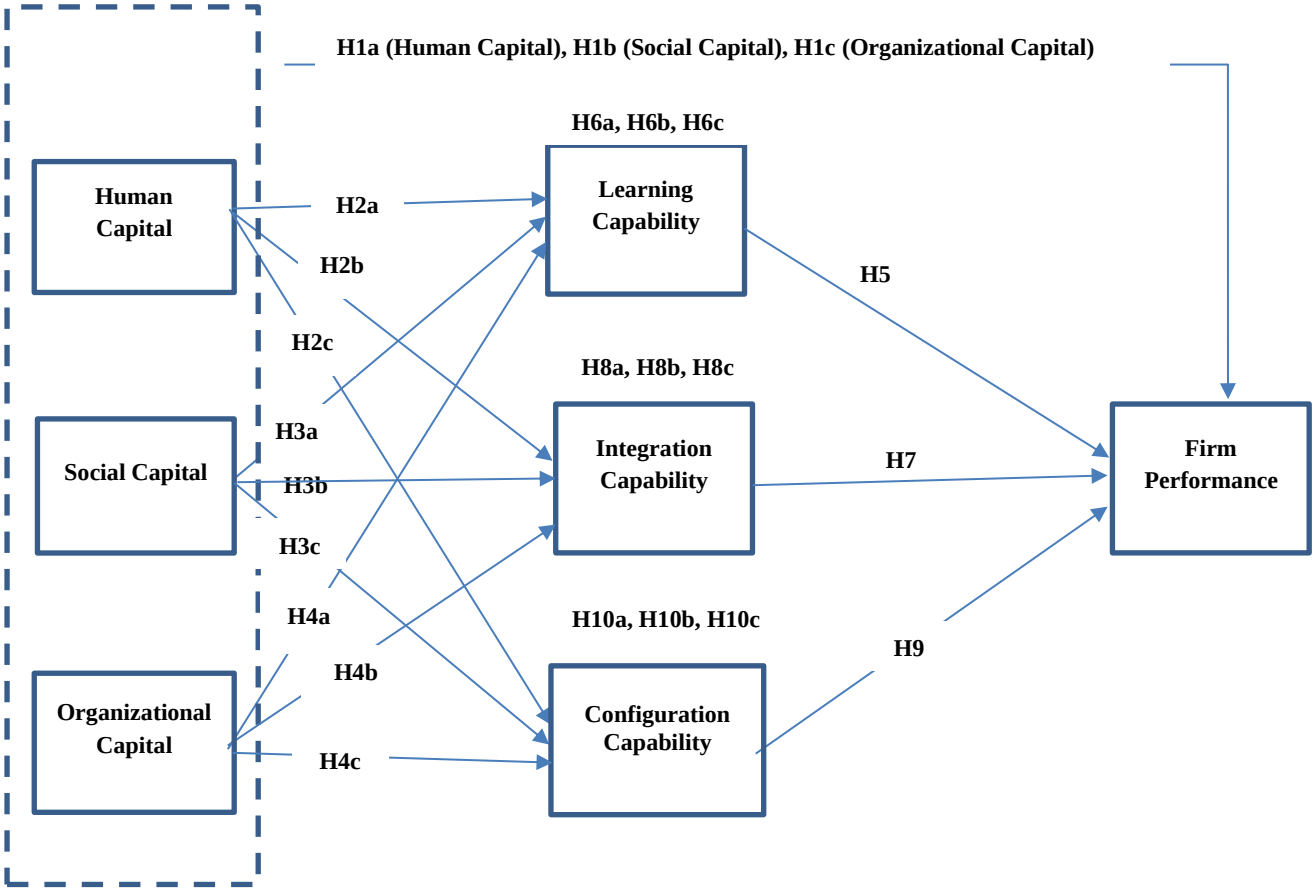

Figure 1: Conceptual Model

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Research Methodologies

Three types of methodologies are advanced: qualitative, quantitative and mix qualitative and quantitative methods. The distinction between qualitative research is framed in terms of the use of words (qualitative) rather than numbers (quantitative) or using closed-end questions (quantitative hypotheses) rather than open-end (qualitative interview questions). Qualitative research is meant for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures, data typically collected in the researcher making interpretations of meaning of the data. (Creswell, 2009).

Due to differences between the qualitative and quantitative approaches, the methodology selection of a study could depend on the objectives. It is possible that selecting an appropriate study approach is a very important step for successful research. In this respect, the quantitative method is selected for this study by following reasons. (1) The main objective of this study is to understand the cause and effect of the relationship between intellectual capital and firm performance. (2) Understanding the mediating role of dynamic capabilities including learning, integration and reconfiguration capability, on this relationship. According to Creswell (2009), the personal attributes, experiences, skills and interests of researchers can impact on the selection of methodology. In this regard, the role of personal preference has to some extend influenced the decision to accept the quantitative research approach for this study.

3.2 The category of measurement items

The survey questionnaire comprises four sections include 40 items. Section A includes 3 sub-sections relating three types of intellectual capitals. The first sub-section includes items about human capital. The second sub-section includes items about social capital, and the last sub-section includes organizational capital. Section B consists regarding firm performance. Section C includes measurements of the learning,

integration and reconfiguration capability. Section D has questioned the demographic background of respondents as well as the firm's background.

3.2.1 Measurement items of the intellectual capital types

The measurement items of the three dimensions of capital, human, organizational and social capital, were mainly derived from measurement scales developed by Subramanian and Youndt (2004). The measurement items of human capital construct reflect "overall skills, experiences and education background of the firm's employees. The measurement items of the organizational capital reflect the firm's ability to reserve the knowledge in physical repositories such as information system, manuals, and patents as well as process and corporate culture. Social capital measures "an organization's overall ability to share and leverage knowledge among a social network of employees, customers, suppliers and alliance partners. Table 1 in below presents the items used to measure the intellectual capital dimensions.

3.2.2 Measurement items of the firm performance

This dissertation has considered the view that employing multiple indicators enables assessment of a more complex and informative performance measure (Subramaniam, M., & Youndt, 2005b; Youndt, M. A., Subramaniam, M., & Snell, 2004). Respondents were asked questions to compare the firm developments in the current year with the previous year. Table 2 in below presents the items used to measure the firm performance dimensions.

3.2.3 Measurement items of Learning, Integration and Reconfiguration capability

Learning, Integration and Reconfiguration capability are measured by adopting measurements from Shuen (1997) and Eisenhardt and Martin (2000)).

3.3 Sampling method

This study deliberately targets the following survey subjects: firm performance, human capital, social capital, organizational capital, learning capability, integration capability and reconfiguration capability. Among them, managers or directors are requested to fill up the questionnaire survey.

In academic studies, it would be impossible to collect data from every participant in the population because of limited time, cost and human resource. The list of the population of ICT firms is obtained from the website: www.vietask.com.

To determine the sample size, there are some following methods. According to Hair et al (2010), sample size needs to be five times of measurement items at least, therefore, the sample size is at least 200 (50 x 4 = 200). Nonetheless, because the dissertation applied stratified random sampling, design effect (DEFF) was the most suitable. DEFF is a coefficient, which reflects how the sampling design affects the variance estimation of population characteristics due complex survey designs compared to simple random sampling (Singh, 2007, p.118). OpenEpi software was used to calculate the sample size. In the first step, the dissertation defines the target population. Once the decision to sample has been made, the first question related to sampling concerns identifying the target population that is the complete group of specific population elements relevant to the research project. For the dissertation, basing on www.vietask.com, there are total of 6000 ICT firms in 64 provinces in Vietnam. The list in the below table 1.

Table 1: The total number of ICT firms in Vietnam

No.	Province	Number of ICT firms	No.	Province	Number of ICT firms	No.	Province	Number of ICT firms
1	An Giang	53	24	TP-HCM	2374	47	Son La	3
2	Ba Ria Vung Tau	47	25	Hoa Binh	6	48	Tay Ninh	60
3	Bac Can	5	26	Hung Yen	3	49	Thai Binh	3
4	Bac Giang	5	27	Khanh Hoa	78	50	Thai Nguyen	8
5	Bac Ninh	20	28	Kien Giang	52	51	Thanh Hoa	9
6	Ben Tre	29	29	Kom Tum	0	52	Hue	14
7	Binh Dinh	24	30	Lai Chau	0	53	Tien Giang	30
8	Binh duong	95	31	Lam Dong	64	54	Tra Vinh	2
9	Binh Phuoc	13	32	Lang Son	2	55	Tuyen Quang	3
10	Binh Thuan	18	33	Lao Cai	12	56	Vinh Long	17
11	Ca Mau	25	34	Long An	46	57	Vinh Phuc	2
12	Can Tho	42	35	Nam Dinh	8	58	Yen Bai	1

13	Cao Bang	1	36	Nghe An	9	59	Hau Giang	0
14	Da Nang	234	37	Ninh Binh	1	60	Dien Bien	0
15	Dac Lac	53	38	Ninh Thuan	12			
16	Dong Nai	112	39	Phu Tho	6			
17	Dong Thap	14	40	Phu Yen	22			
18	Gia Lai	16	41	Quang Binh	7			
19	Ha Nam	6	42	Quang Nam	23			
20	Ha Noi	665	43	Quang Ngai	35			
21	Ha Tinh	6	44	Quang Ninh	9			
22	Hai Duong	3	45	Quang Tri	14			
23	Hai Phong	31	46	Soc Trang	38			

In the second step, at first, information is inputted into OpenEpi software to calculate sample. The population size is 6000, Anticipate % frequency (p): 50. The index is 50 for case researchers do not know % frequency of outcome factor. Confidence limit 5% which mean confidence level reached 95%. DEFF: because sampling method was stratified random sampling. As being presented in Figure 2, the sample size of the dissertation should be at least 362 which can represent for the whole population. This number also satisfies the sample size under Hair's, and Tabachnick & Fidell's formula.

In dissertation, researcher distributes 500 questionnaires and finally collecting 350 questionnaires filled. Table 5 show the respondents who filled the questionnaires in nationwide.

3.4 Data Analysis Procedures

Data analyses were undertaken in three stages: data screening, validation of the measurement model and evaluation of the structural model (Hair, Ringle & Sarstedt, 2011). As a preliminary step, data screening process included visual inspection of data for identifying and correcting errors in the data set as well as identification of missing data and tests violations of statistical assumptions such as normality (Hair, Money,

Samouel & Page, 2007). SPSS software version 23 was used in data screening process. Next, Exploring Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were employed for measurement assessment. Finally, Process software was used to evaluate mediating relationships in conceptual framework. The following paragraphs explain the rationale for this approach.

CHAPTER 4
RESULTS AND DATA ANALYSIS

4.1 The result of the construct reliability and validity evaluation

At first, we use Cronbach alpha **(α)** for reliability analysis in order to measure the internal consistency of the measurement scales. The acceptable value of **α** should be above 0.6 (Hair et al., 2010). The dissertation uses exploratory factor analysis (EFA) technique to conduct dimensionality analysis indicated by the factor loading score. The general purpose of factor analytic techniques is to condense the information contained in the original construct into a smaller set of new composite dimensions or factors. All factor loading scores with a suggested level of 0.5 results in the satisfaction of the condition of uni-dimensionality confirmation (Hair et al., 2010). In dissertation, with an original set of 35 measurement items, there were only 27 items which qualified the factor loading score threshold of 0.5 with a minimum score of 0.59 and **α** of human capital, social capital, organizational capital, performance, learning capability, integration capability and reconfiguration capability constructs are above 0.6. Therefore, the results in Table 13 in below satisfy reliability and validity conditions.

4.2 The result of convergent and discriminant validity evaluation

Before verifying the hypotheses, confirmatory factor analysis (CFA) was conducted to assess how the conceptual model fit data with the help of AMOS software. Regarding overall model fitness, to make sure data fit to model well, root mean square error of approximation (RMSEA) should be smaller than or equal to 0.083, Goodness-of-fit index (GFI), and Comparative fit index (CFI) should satisfy thresholds of 0.91 (Hair et al., 2010). The test resulted acceptable fit for data set (GFI =0.909, CFI = 0.975 and RMSEA = 0.034), (See Figure 2).

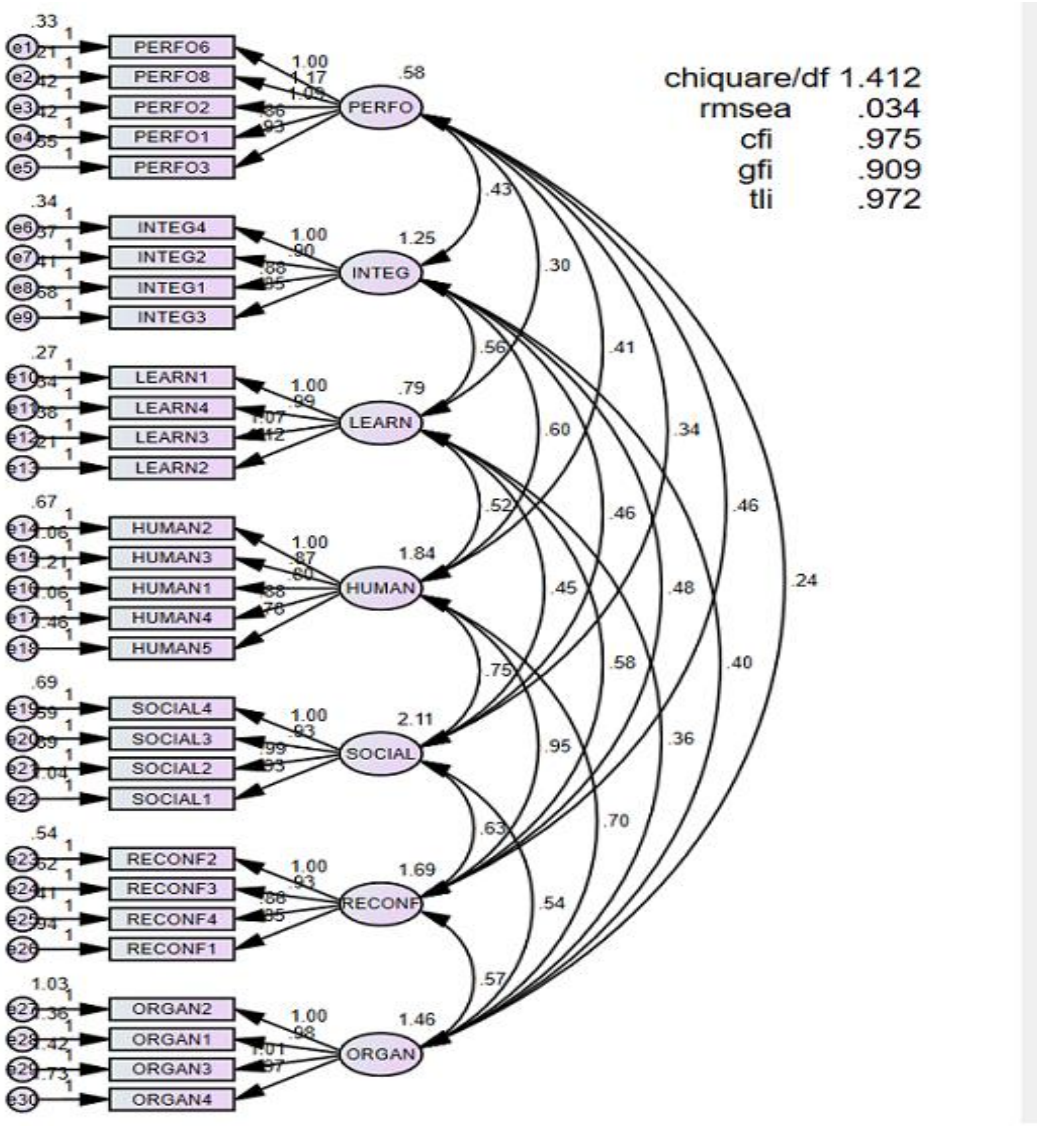

Figure 2: Confirmatory Factor Analysis

Furtherly, we use CFA technique to test convergent and discriminant validity. There are two types of validity, namely convergent and discriminant validity were examined to evaluate construct validity.

Convergent validity is evident when each measurement item correlates strongly with its theoretical construct (Gefen & Straub, 2005). Convergent validity of the construct in this dissertation is examined via average variance extracted (AVE) and composite reliabilities (CRs). Sufficient convergent validity is achieved when AVE are higher the suggested level of 0.5 and CRs are also above the proposed level of 0.7 (Hair et al., 2010). According to information are provided by Table 8, The AVE of all constructs are larger than 0.5 and The CRs of all constructs are also larger than 0.7. Therefore, *convergent validity* is satisfied.

Table 2: AVE and CRs

	CRs	**AVE**
RECONFIGURATION CAPABILITY	0.901	0.696
FIRM PERFORMANCE	0.884	0.605
INTEGRATION CAPABILITY	0.902	0.699
LEARNING CAPABILITY	0.920	0.741
HUMAN CAPITAL	0.864	0.561
SOCIAL CAPITAL	0.908	0.711
ORGANIZATIONAL CAPITAL	0.808	0.513

Discriminant validity indicates the extent to which each construct is more highly related to its measurement items than other constructs (Hair et al., 2010). Discriminant validity is achieved when two criterias are fullfiled. First, the measurement items show exhibit loadings on their theoretical constructs and must not load on other constructs (Gefen & Straub, 2005). Second, the construct show satisfactory discrimiant validity when the square root of Average Variance Extracted (AVE) Values are greater than the inter-construct correlations (Hair et al., 2010). This means that the shared variance between each construct and its indicators is greater than the variance shared among other constructs (Conpeau et al., 1999). Discriminant validity was examined through the correlation matrix of constructs are present in Table 15. The results in table 15 show that square root of AVE as the diagonal elements are larger than the off-diagonal

correlations in rows and columns. Hence, the discriminant validity at the construct level is supported.

In sum, the reliability and validity of reflective construct measurements have been confirmed.

Table 3: Discriminant Validity

	AVE	RECONF	PERFO	INTEG	LEARN	HUMAN	SOCIAL	ORGAN
RECONF	0.696	**0.834**						
PERFO	0.605	0.460	**0.778**					
INTEG	0.699	0.332	0.500	**0.836**				
LEARN	0.741	0.503	0.448	0.560	**0.861**			
HUMAN	0.561	0.541	0.397	0.392	0.430	**0.749**		
SOCIAL	0.711	0.334	0.310	0.281	0.350	0.380	**0.843**	
ORGAN	0.513	0.364	0.254	0.294	0.332	0.423	0.309	**0.716**

*Highlighted values in diagonal are square root of AVE and correlation are off-diagonal.

4.5 The result of hypotheses tests in conceptual models:

In the hypothesis verification step, we tested all hypotheses described in Figure 3 by the use of PROCESS software developed by Hayes (2013).

H1a, H1b, and H1c propose direct individual effects of human, social, and organizational capital on firm performance;

H2a, H2b, and H3c propose direct individual effects of human capital on learning, integration and reconfiguration capability;

H3a, H3b, and H3c propose direct individual effects of social capital on learning, integration and reconfiguration capability;

H4a, H4b, and H3c represent direct individual effects of organizational capital on learning, integration and reconfiguration capability;

and H5, H7, and H9 propose direct individual effects of learning, integration, and reconfiguration capability on firm performance.

H6a, H6b and H6c suggest indirect effects whereby the associations among human, social, and organizational capital and firm performance are mediated by learning capability;

H8a, H8b and H8c suggest indirect effects whereby the associations among human, social, and organizational capital and firm performance are mediated by integration capability;

H10a, H10b and H10c suggest indirect effects whereby the associations among human, social, and organizational capital and firm performance are mediated by reconfiguration capability.

The mediation effects were tested by the use of the bootstrapping analysis—a powerful method to determine the statistical significance of mediation—to confirm a significant indirect effect, following the work of Preacher and Hayes (2013).

Table 4: Regression Analysis 1

	β	SE	*p*	LLCI	ULCI
Constant	2.722	.2389	.0000	2.2528	3.1926
Human capital → firm performance (H1a)	.0888	.0335	.0085	.0229	.1548
Social capital → firm performance (H1b)	.0663	.0260	.0113	.0151	.1175
Organizational capital → firm performance (H1c)	.0690	.0301	.0224	.0098	.1281
Learning capability → firm performance (H5)	.2422	.0343	.0000	.1667	.3177
Integration capability → firm performance (H7)	.0971	.0343	.0049	.0297	.1645
Reconfiguration capability → firm performance (H9)	.0565	.0458	.2181	-.0336	.1466

We adopted Hayes's suggestion to test direct, indirect effects. Firstly, according to H1a, H1b, H1c, human, organizational and social capital should be regressed on firm performance. The results in table 16 showed that human capital (β= 0.0888, $p<0.05$), social capital (β= 0.0663, $p<0.05$) and organizational capital (β= 0.0690, $p<0.05$) have positive influences on firm performance in which, among three type of intellectual capitals, human capital has strongest effect on firm performance. Therefore, H1a, H1b, and H1c are statistically supported.

Secondly, the test results in table 4 also demonstrated that Learning and Integration capability have significant effect on firm performance, respectively ((β= 0.2422, $p<0.0001$) and (β= 0.0971, $p<0.001$)), respectively, so, H5 and H7 are statistically

confirmed. However, *Reconfiguration capability does not have significant influence on firm performance*, so, H9 is not statically confirmed.

Table 5: Regression Analysis 2

	β	SE	*p*	LLCI	ULCI
Constant	4.1838	.1992	.0000	3.7919	4.5757
Human capital → learning capability (H2a)	.1768	.0423	.0000	.0937	.2599
Social capital → learning capability (H3a)	.1177	.0341	.0006	.0507	.1847
Organizational capital → learning capability (H4a)	.1262	.0398	.0017	.0478	.2046

Thirdly, human, social, and organizational capital were regressed on learning capability. According to the test results in Table 5 H2a (β= 0.1768, p<0.0001), H3a (β= 0.1177, p<0.001), and H4a (β= 0.1262, p<0.05) are supported. Among human, social, and organizational capital, human capital had the strongest influence on learning capability.

Table 6: Regression Analysis 3

	β	SE	*p*	LLCI	ULCI
Constant	4.1432	.2285	.0000	3.6939	4.5926
Human capital → integration capability (H2b)	.1245	.0485	.0010	.0291	.2198
Social capital → integration capability (H3b)	.1375	.0390	.0005	.0407	.2143
Organizational capital → integration capability (H4b)	.0770	.0457	.0159	.0188	.1986

Fourthly, human, social, and organizational capital were regressed on integrating capability. According to the test results in Table 6 H2b (β= 0.1245, p<0.0005), H3b (β= 0.1375, p<0.005), and H4b (β= 0.0770, p<0.05) are supported. Among human, social, and organizational capital, social capital had the strongest influence on learning capability.

Table 7: Regression Analysis 4

	β	SE	*p*	LLCI	ULCI
Constant	2.7605	.2452	.0000	2.2782	3.2428
Human capital → reconfiguration capability (H2c)	.3554	.0520	.0000	.2531	.4578
Social capital → reconfiguration capability (H3c)	.1438	.0419	.0007	.0614	.2262
Organizational capital → reconfiguration capability (H4c)	.1215	.0490	.0137	.0251	.2180

Fifthly, human, social, and organizational capital were regressed on reconfiguration capability. According to the test results in Table 7 H2c (β= 0.3554, p<0.0001), H3c (β= 0.1438, p<0.001), and H4c (β= 0.1215, p<0.05) are supported. Among human, social, and organizational capital, human capital had the strongest influence on learning capability.

Table 8: Mediation Analysis

	β	Boot-SE	Boot-LLCI	Boot-ULCI
Human capital → learning capability → firm performance (H6a)	.0345	.0180	.0026	.0733
Human capital → integration capability → firm performance (H8a)	.0301	.0185	.0013	.0724
	β	Boot-SE	Boot-LLCI	Boot-ULCI
Social capital → learning capability → firm performance (H6b)	.0140	.0084	.0009	.0333
Social capital → integration capability → firm performance (H8b)	.0333	.0151	.0092	.0687
	β	Boot-SE	Boot-LLCI	Boot-ULCI
Organizational capital → learning capability → firm performance (H6c)	.0118	.0084	.0174	.0812
Organizational capital → integration capability → firm performance (H8c)	.0263	.0136	.0039	.0566

Finally, we tested the indirect effects of human, social, and organizational capital on firm performance through learning, integration, and reconfiguration capability. The test outcome revealed that H9 was not supported, so, human, social, and organizational capital do not have an indirect effect on firm performance through reconfiguration capability. Consequently, H10a, H10b, and H10c are not supported. Meanwhile, the path analyses (Table 20) confirmed H6a, H6b, H6c, H8a, H8b, and H8c are supported. Therefore, human, social and organizational capital have indirect effect on firm performance through learning and integration capability. Among the three dynamic capabilities, learning capability had the most significant mediating effect. In addition, based on the test outcomes, we confirmed that there were no full mediation effects in this study. Full mediation effects would occur if constructs had no direct influence on firm performance (Hayes, 2009). Learning and integration capability thus have only partial mediation effects on the relationship between human, social, and organizational capital and firm performance.

CHAPTER 5
DISCUSSIONS

Overall, this study reduces ambiguity regarding the mediating mechanism of dynamic capabilities through which improves firm performance. Specifically, these findings provide evidence that learning and integration capability serve as important mediating mechanisms between IC dimensions and firm performance. By accumulating human, social, and organizational capital and developing dynamic capabilities to mediate Intellectual capital, firms can improve their competitive advantage and performance. In addition, among the three dynamic capabilities, learning capability had the most significant mediating effect. Therefore, it is crucial to develop learning capability by creating mechanisms to absorb information and knowledge through iterative business practice. Moreover, developing learning capability internally via human resources development programs and externally via strategic cooperative alliances is also critical for improving firm competence.

5.1 The Impact of Intellectual capital on dynamic capabilities

Two measures of intellectual capital that facilitate the enhancement of dynamic capabilities are value and uniqueness. Value refer to the potential of firm to improve their efficiency and effectiveness, utilize market opportunities and act to reduce threats (Lepak & Snell, 2002). Uniqueness pertains to the degree to which intellectual capitals are irreplaceable, rare and having knowledge, skills and abilities that are difficult to be duplicated by other firms. The strong influence of human capital in Vietnamese ICT firms reflects that ICT employees are perceived to be creative and bright, diverse in skills and expertise in their roles and functions. They are quickly adaptable in acquiring new skills and ready to explore or apply new procedures. They also actively contribute to make new market opportunities that lead to enhancing firm dynamic capabilities including learning, integration and reconfiguration capability. Furthermore, the high level of uniqueness of human capital leads to enhance competitive differentiation whereby the human capital provides firms with specific knowledge that could advance ideas and products which are inimitable by other firms (Lepak & Snell, 1999).

Human capital is expected to facilitate learning capability in ICT firm through online and offline training (β= 0.1768, p<0.0001). The study of Hsu and Sabherwal (2011) reveal that human capital as the most important intellectual capital component directly impacting learning capability. Firms with a high level of human capital have been show to perform better in self-learning, research and innovation. Therefore, employees have strong learning capability would absorb new knowledge and apply it in tasks.

Social capital is another dimension underpinning intellectual capital of Vietnamese ICT firms which in turn contribute to the positive direct relationship between intellectual capital and dynamic capabilities, especially integration capability (β= 0.1375, p<0.005). The findings show that innovation in organization dependent on the interaction among actors in network of the organization (Dewick & Miozzo, 2004). The firm with strong social relationship will easily integrate and transfer new knowledge. Prior researches have established strong evidence that diverse forms of social capital such as business networks including customers, suppliers and competitors are important determinant of integration capability. The findings also support the role of social capital in facilitating learning capability. The employees with strong social capital could motivate smoothly discussion and meetings among internal departments or with external parties that are able to drive greater knowledge transfer in formal and informal ways. In addition, strong social capital would enhance integration capability in problem-solving.

Regarding to organizational capital, it has smallest significance on learning capability (β= 0.1262, p<0.05), integration capability (β= 0.0770, p<0.05) and reconfiguration capility (β= 0.1215, p<0.05) as compared with human and social capital. There are several possible reasons as the followings. First, it has been found that organizational capital is less important in service-oriented firms compared with manufacturing-oriented firms. Kianto and Ritala (2010) in their empirical analysis of the main characteristics of intellectual capital in service-oriented versus product-oriented firm demonstrate that organizational capital is more significant in product-oriented firms. Organizational capital which include the outcomes of knowledge transformation such as documents, databases and intellectual property such as patents and copyright as well as infrastructural assets. There are possible reasons that explain why organizational

capital is less significant on dynamic capabilities and firm performance than others. At first, service is difficult to store or accumulate compared with physical products. This is due to the fact that services are provided in real time or are one-off, intangible and perishable in nature. Second, majority of Vietnamese ICT firms are small and medium size (SME) firms, thus, they have limited financial resources to invest into knowledge repositories. Hence, knowledge is created, shared, transferred and applied via individuals in the firm. In contrast, big firm are well-funded to invest and develop strong information system to serve such purpose. Moreover, SMEs utilize more informal means to facilitate knowledge management activities (Eaglestone & Wakefiled, 2006).

5.2 The impact of intellectual capital on firm performance

According to data analysis, human and social capital play a dominant role in forming intellectual capital in Vietnamese ICT firms which in turn directly impacts firm performance. In this dissertation, human was found to have the strongest relationship with firm performance ($\beta = 0.0888$, $p<0.05$). This finding is in line with Daud and Yousoff (2011). Mention and Bontis (2013) posit that human capital is key factor in activities that depend heavily on individuals in service sectors. The inference of these findings is that having the best and brightest human capital facilitates firms to achieve high performance. As human capital acts as a source of new ideas and provide the greatest repertories and diversity in skills (Subramaniam & Youndt, 2005), more knowledgeable employees hired in firms would increase performance via enhancing customer benefits and reducing delivery cost. Therefore, firms should acquire, invest and develop employees as well as retain experienced employees. Accordingly, high levels of human resource investment is typical in firms having high levels of human capital. Strategic human resource practices may improve performance through influencing on employee development and motivation.

Social capital, a significant dimension of intellectual capital, contribute to explaining the variance in firm performance ($\beta = 0.0663$, $p<0.05$). This finding aligns with Berardo's (2009) study. It asserts that firm can enhance their performance by make relationship networks. Those networks will support collaboration within as well as outside firm.

Although the direct effect of organizational capital on performance is consistent with discussion about main source of performance using organizational capital in context of this study, it has smaller impact, compared with human and social capital, on firm performance in this dissertation (β= 0.00690, $p<0.05$). Similarly, a study by Mention and Bontis (2013) found a weak significant relationship between organizational capital and firm performance in the banking sector in Luxembourg and Belgium. Services rely on human activities, they rarely adhere to predefined, systematic and standardized process making organizational capital less important in the firms. In addition, Vietnamese ICT firms are SME firm with very limited budget for research and development (R&D) activities, there are not much investment on organizational capital in Vietnamese ICT firms. In sum, organizational capital might represent an insufficient condition for improving performance if the knowledge contained in organizational capital is not leveraged.

5.3 Complementary mediation for the relationship between Intellectual capital and firm performance.

This section explains the results of hypotheses testing related to the mediating effect of learning and integration capability on the relationship between intellectual capital dimensions and firm performance.

The research found that the relationship between human, social and organizational capital and firm performance are mediated by learning and integration capability in a complementary pattern. Complementary mediation indicates that besides influencing performance indirectly via learning and integration capability, intellectual capital also impacts performance directly. Hence, both indirect and direct effects are important for intellectual capital to enhance firm performance. This finding is similar to that reported by Mahsud, Yukl and Prussia (2011).

Interestingly, it was revealed in this study that the direct effect of human capital (β= 0.0888, $p<0.05$), social (β= 0.0663, $p<0.05$) and organizational capital (β= 0.0490, $p<0.05$) is more dominant compared to the indirect effect of human capital (β=0.0345, $p<0.05$ and β= 0.0301, $p<0.05$), social (β= 0.140, $p<0.05$ and β=0.0333, $p<0.05$) and organizational capital (β= 0.0118, $p<0.05$ and β=0.263 , $p<0.05$) through learning and integration capability in influencing on firm performance. Nevertheless, total effect of

direct and indirect paths of human capital (β=0.1501), social capital (β=0.2393) and organizational capital (β =0.2608) was yielded indicating that with the investment and development of learning and integration capability in combination with strong intellectual capital, Vietnamese ICT firms may achieve greater performance.

5.4 Dynamic capabilities and Firm Performance

This section explains the results of hypothesis testing concerning the relationship between dynamic capabilities (learning, integration and reconfiguration capability) and firm performance.

The systematic analyses conducted reveal that among dynamic capabilities, learning capability has strongest impact on firm performance (β= 0.2422, p <0.0001). In environments of rapid technologies change and high velocity market, it is hard to predict and discern the trajectories of future development, Vietnamese ICT firm recognized the importance of upgrading learning capability in the existing and development of firm. New information and new knowledge create opportunities for innovation. As the result, they will improve firm performance. Therefore, it is important for firms to constantly keep learning activities such as searching and exploring opportunities across technologies and markets.

The second important capability having effect on firm performance is integration capability (β= 0.2422, p <0.0001). In ICT sector, the coordination of the research and development (R&D) activities are important. If R&D coordination across departments are not smooth and flexible, it would lead to the increase the transaction cost across units within the firm. Recognizing the importance of integration capability in the existence and development of firm, Vietnamese ICT have focused more on the efficient and effective transfer of technology and information among units of firm. Moreover, integration also open pathways to support learning capability in sharing of know how and expertise through information and technology within firm.

However, unlike learning and integration capability, Vietnamese ICT firms don't recognize the importance of the Reconfiguration capability. Therefore, reconfiguration capability does not have significant impact on firm performance. It is explained as the followings. The cost of activities regarding to reconfiguration such as restructuring or reorganizing is expensive. They are appropriate for firm with medium or large size.

When firm is growing up too fast, the restructuring activities is appropriate. For major Vietnamese ICT firm are small firms, they do not have demand for investing reconfiguration capability.

CHAPTER 6
CONCLUSIONS

Vietnam is on the road to a knowledge-based economy in which ICT is considered as one of the key sectors. By refining objectives in business operation, ICT firms must understand their dynamic capabilities, especially their internal strengths to face unpredictable changes in the environment. Therefore, this dissertation gives brief insights into the Vietnamese ICT sector in terms of the direct relationship between social, human, organizational capital and firm performance, the direct relationship between learning, integration and reconfiguration capability and firm performance and the mediating role of the learning, integration and reconfiguration capability on the relationship between intellectual capital dimensions and firm performance. Therefore, this chapter presents the contributions and conclusions from the research findings.

6.1 Theoretical contributions

This study makes several theoretical contributions to the literature on dynamic capabilities and intellectual capitals.

Firstly, in prior researches, the researchers only test the independent variables, intellectual capitals, and dependent variable, ICT firm performance in the environment at which is stable and the changes are predictable. They have not ever considered, measured and interpreted the environment's unpredictable changes like Vietnam. Resource-based view (RBV) only mention to the value of the intellectual capitals in stable environments, thus, in this dissertation, by applying dynamic capabilities-based view (DCV), the study provides an answer to why with a similar amount of the intellectual capitals, the Vietnamese ICT firms running in an unstable environment must be more dynamic than Western ICT firms are. The key point of this answer is the mediating role of dynamic capabilities on the influences of the human, social and organizational capital on ICT firm performance.

Secondly, rather than treating dynamic capabilities as a whole, the dissertation deconstructed dynamic capabilities into three dimensions and separately examined the effects of each dimension on firm performance. The finding suggests that, unlike learning and integration capability, reconfiguration capability does not have a

significant effect on firm performance. The dissertation provides a more nuanced understanding about the effects of dynamic capabilities and thus is more appropriate than that of Protogeou et al. (2012) which limited dynamic capabilities to only cases where high level of all dimensions is evident. The distinct effect of the learning, integration and reconfiguration capabilities on firm performance in this study can also address the tautology problem of the concept of dynamic capabilities in that different dimensions of dynamic capabilities are linked to firm performance in different way.

Thirdly, this dissertation proposes and empirically validates learning, integration and reconfiguration capabilities as indirect mechanisms through which intellectual capital dimensions including human, social and organizational capital influence firm performance. The question of whether and how intellectual capital dimensions affect performance in unstable environment like Vietnam are still opened and remained as the source of debates (Schilke, 2014). To reconcile these debates, we need a thorough understanding of the associated mediating mechanisms which help us better understanding how and why intellectual capitals improve firm performance.

Fourthly, in combination of the resource-based view and dynamic capabilities-based view, the analytical results of this study also demonstrate a consideration of intellectual capitals in unstable environment like Vietnam. Competitive advantage results not only from the accumulation of intellectual capital dimensions but also from the development of dynamic capabilities, particularly learning capability and integration capability. It is a new point in my study.

Fifthly, consistent with theory, human capital has most significant impact on learning capability and firm performance. Talented employees with certain human capital characteristics that are regarded as highly skilled, creative and expertise in their jobs and functions and able to develop ideas and knowledge are seen as crucial to improve learning capability. These employees facilitate firms to improve learning capability by presenting innovative solutions to clients and seek out novel ways to tackle problem. Having such employees allow firms to foster learning capability by developing new software, introducing new information system and adopt the latest technology in the industry. Such human capital characteristics are also important in enhancing firm performance. They can assist firms to find ways to reduce costs by

improving processes and eliminating waste. They facilitate growth in sales, for example by improving the quality of existing products or services. The knowledge embedded in human capital is likely the most valuable and imperfectly imitable resource (Grant, 1991). Therefore, Vietnamese ICT firms should outperform others in learning capability and firm performance when they invest in superior human capital.

Finally, social capital is another important resource impacting integration capability and firm performance. Possessing strong social capital indicates that Vietnamese ICT firms encourage indicates that Vietnamese ICT firms encourage collaboration within and across firms. Hence, employees of the firm would be skillful at collaborating with other to diagnose and solve problems and at sharing information with customers and supplier.

6.2 Managerial implications

Firstly, because of the special feature of ICT job at which staffs must work in a multi-culture environment, so, they actively build their own online and offline social network to support them work independently. Therefore, to develop ICT human resources, human capital, are the high-education, skillful and creative experts who prefer working in flexible time rather than time management and communicating in virtual networks, ICT firms need to build open organizational culture and working environment, organizational capital, to motivate them feel free to learn, exchange information, ideas and knowledge. When the online and offline mutual trusts among them are established, they are more willing to share intellectual resources, in turn, motivating innovation activities and consequently building a positive corporate culture as well as firm performance improvement.

Secondly, ICT advance applied in organizational changes or operation are also considered to play a central role in enhancing the working environment and corporate cultures as well as determining staff's productivity. Therefore, effective accumulation of the organizational capital can help employee creating and acquiring knowledge derived from a range of intangible assets that comprise a firm's competitive advantages.

Thirdly, major Vietnamese ICT firms are micro or small and medium firms, they are working in the business environment in which they are facing a number of

challenges in terms of regulatory framework and intellectual property protection, quality and availability of skillful persons, financial supporters which are barriers to the development of Vietnamese ICT sector. Therefore, they expect that they could gain long-term development if such environmental factors are improved. It is explained that Vietnamese ICT firms are not strong to survive and develop in the business environment with uncertain conditions.

Fourthly, In Vietnam, ICT employees are young, active and eager to learn the new things, unlike other industries, they are capable of equipping knowledge and skills themselves by taking online courses, so, the greater level of staff's online self-trainings leads to better performance of ICT firm in short and long term. Furthermore, the major ICT firms are micro and small-size firms, so, they tend to outsource some parts of ICT projects to reduce the salary budget and shorter project time. Therefore, ICT firms are flexible in controlling the firm size.

Fifthly, unlike prior studies of traditional industries in which time management is important for managing employees, in this study, the role of the environmental uncertainties on the relationship between the organizational capital and ICT firm performance is not significant. Nowadays, with the modernization of the communication infrastructure, many ICT persons work as freelancers, they flexibly work in any place because major communication in the ICT industry is online. Therefore, the environmental uncertainties are not the main causes of the impacts on the relationship between corporate culture, one type of organizational capital, and firm performance. However, like prior researches, according to findings, the social capital is defined as the trusts in social networks. The trusts between customer, a supplier with the firm would motivate the relationships among them sustainably. However, in uncertain environments, the reputation of them partly is reduced; as a consequence, the trust is not so sustainable. In short, the bias would be alleviated if external parties such as customers, supplier, allied partners, and competitors, who are classified under the organization's relational networks will assess the firm's performance. System, transparent process and collaborated culture will motivate better communication among staff, better sharing firm's value as well as team works.

Sixthly, well-trained human resources will employ the information system securely, follow the organizational procedure and process strictly; as a result, reduce the riskiness of valuable information or data leakage. In addition, the organizational capital also makes the value of the social capital and vice versa. Due to each ICT staffs often work independently, so, they need strong online and offline social networking, if a firm has a strong corporate culture and good communication facilities, it will boost the positive construction of the social networking among staff as well as the positive relationship with customers. It makes transparent communication channels, as a result, improve the staff's performance.

Lastly, the success of any firm is measured in terms of continuous innovation, which relies on retaining employees with skills and knowledge and avoiding high employee turnover. Our findings regarding the importance of learning capability support this. Learning capabilities involve the combination of problem-solving and coordinated search strategies and may require the skills and knowledge of individuals. Learning capability is also accumulated and path dependent; what is learned and practiced is stored and exposed in a firm's economic performance. The direct and indirect effects of social capital on firm performance found here are consistent with previous discussions on the main source of firm performance. This is a significant finding due to its strategy implications, namely that social capital must be involved in growing learning and integration capability for research and development and marketing activities. Therefore, the outcome of this study offers a relational view of competitive advantage that focuses on network routines and processes. Previous literature has stressed the positive link between organizational capital and performance. Interestingly, our findings also show that learning and integration capability play a mediating role in this relationship. This finding supports the idea that DCs should be used as a significant means of renewing resources and restoring capability diversity, as well as avoiding the inertia and simplicity that result from a scarcity of long-term efficient resource deployment within an organizational structure.

In sum, our findings provide guidance in answering the question: What are the dimensions of IC, and what types of DCs effectively mediate them in competitive

environments? Strategic management should consider RBV and DCV together rather than separately.

6.3 Limitations and further researches

There are eight limitations in the study, and from these limitations, I would like to propose further researches.

Firstly, this study just explores the definition of the dimensions of intellectual capital and its impact on firm performance. This study employs static data, which has inevitable drawbacks in reflecting the long-term impacts of IC's dimensions and performance. The use of panel data may be the future direction of following-up studies.

Secondly, there are other stakeholders such as employees and managers involved in the relationship between intellectual capitals and firm performance. Further studies should consider the perspectives of these stakeholders.

Thirdly, the study has not researched the effects of the sizes of firms on the relationships between intellectual capitals and firm performance. Further studies should consider the perspectives of firm sizes.

Fourthly, the current surveyed questions did not focus on the effects of intellectual capitals on customer's need and satisfaction. Therefore, the further researches should expand the set of the surveyed questionnaires of the human, social and organizational capital constructs that are oriented to the customer. To develop the further surveyed questionnaires relating the relationship between the social capital and customer, researchers should develop the surveyed questions related to specific values of social networking supporting customer's needs, to develop the further surveyed questions related to information system, a type of the organizational capital, we should make the set of questions about how advanced technologies improve a firm's process, support customer's demand effectively and how corporate environment encourage the staff's innovation and to develop the further surveyed questions related to the quality of human resources, human capital, the researchers should develop surveyed questions that evaluate the quality of the online and offline training for staffs.

Fifthly, the surveyed questions for the environmental uncertainties have not considered the customer's behavior and demand. It is a new point that researchers should develop questions.

Sixthly, the literature reviews of the intellectual capitals are limited to a tripartite model including human, organizational and social capital. However, the tripartite categorization of the intellectual capitals has stated to receive slight criticism for its suspected inability to grasp the whole variety of the key intangible value drivers of a modern firm. It can be argued that examination of the social capital through separating internal and external dimensions is worthwhile, as they refer to value embedded in relationships with different stakeholders, internal and external stakeholders, which have been demonstrated to contribute to firm performance in a different fashion. In addition to internal and external dimensions of the social capital, trustfulness is very important to the firm's internal and external relationships. Therefore, trust is required especially in knowledge sharing and creation. It can increase the likeness to achieve a competitive advantage as it is characterized by its rarity, inimitability, and non-substitutability. Therefore, in further researches, we need to research more about internal, external relationships and trusts in social relationships separately.

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