

The Intellectual Capital, Firm Performance and the Moderating Role of Manager Skills

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Abstract

The purpose of this article was to explore the moderating role of the manager skills on the relationship between the intangible capitals and firm performance. Specific aims included (a) to synthesize the prior literatures and definitions related to human, organizational and social capital, firm performance and manager skills, (b) to refine conceptual definitions of the human and social capital with associated conceptual antecedent, organizational capital, and consequences, firm performances, (c) to propose a synthesized conceptual framework guiding the mediated moderation of the manager skills on the relationship between intangible capitals and firm performance. The analysis include data collected from a survey with the total of 370 information communication technology (ICT) firm's managers. The mediating and moderating techniques are used to analyze the indirect effects of organizational capital on firm performance via human and social capital and the moderating role of manager skills on the relationship between intangible capitals and firm performance. The results show that all intangible capital dimensions have direct impacts on firm performance. In addition, there is the existences of the mediating role of the human and social capital on the relationship between firm performance and organizational capital and moderating role of the manager skills on the relationship between intellectual capital dimensions and firm performance. This is the first paper to examine comprehensively the conceptual framework of the moderating role of manager skills on relationships between intangible capitals and firm performance in ICT sector in a developing country like Vietnam.

Keywords: human capital, social capital, organizational capital, manager skills, firm performances

1. Introduction

Vietnam information and communication technology (ICT) industry has the bright future as Vietnam has been emerging as production center for both IT hardware and software services. The expected growth rate of Vietnam's ICT market is eight percent in period of 2016-2020 (*Development Index country rankings*) (Vietnamnet, 2020). The Vietnamese government has identified ICT as one of key industries that may help Vietnam transforming manufacturing economy to knowledge-based economy. Hence, the government has devised a master plan for ICT sector which specifies targets for 2020 turning Vietnam into an advanced ICT country (*Development Index country rankings*) (Vietnamnet, 2020). However, to achieve those targets, there is one issue that policy maker should address is how to develop skillful human resource being able to fit to ICT job, especially, in which human resource in management level that have the important impact on the success or failure of a project or team. The high demand of workforce in the middle and high management level caused by the booming Vietnamese ICT sector has revealed the crisis in leadership style and management skill in the ICT managers (Vietnamnet, 2020). The managers have significant impact on team member's job satisfaction and commitment, so, they play key role to the success or failure of ICT project or team (Thuy et. al, 2015). In manufacturing organization, the work was primarily physical, it was easy to divide it up into separate jobs, each with its different job description (Gilbert et al, 2017). The jobs, in turn, were classified into separate departments, each with its clear and different mission (Gilbert et al, 2017). Therefore, it is said that the hierarchical-based management is appropriate for such firms in which the manager was viewed as powerful expert only focusing on command and control of team members (Gilbert et al, 2017). Meanwhile, ICT job is knowledge-based work that makes job dysfunctional and harder to manage in traditional manner. In knowledge-based organizations, knowledge and innovation are the most valuable asset and they must be acquired, synthesized and applied in the production of the organizational goals (Napier et al, 2009). Hence, management style in ICT firms have shift from hierarchical command to new one based on positive communication among manager and team members (Napier et al, 2009). Furthermore, ICT team members, by nature, come from many countries with different cultures and they come and go with each new need, so, managers have to make effort in interaction with team members effectively. Traditional researches of managerial effectiveness only focused on the role of human and organizational capital which are accumulation of knowledge, skills and experiences of employees that enable them to act in ways which are valuable to both them and their workplace (Napier et al, 2009). Moreover, there are little attentions paid in the literature to the importance of the influential relationships in the leadership and management of firm, researchers rarely incorporate or describe the importance of the formation of the influential relationships or social capital that managers must develop with intra-professional team in order to improve effectiveness of teamwork or indirectly achieve superior firm performance. Social capital is an emerging concept in leadership and management studies applied to explain the influential relationship-based aspect of leadership style and may be defined as "the groups, networks, norms, and trust that people are available to them for productive purpose" (Tong et al, 2015).

The ability of the ICT manager to establish and maintain productive relationships and influence resource deployment in an organization becomes an important complementary factor to their human capital.

The concepts of social, organizational and human capital have been researched largely as separate rather than complementary factors. ICT managers must access, synthesize and utilize their own human capital and human capital of team members through social capital. There is a few studies known about how we may combine them to produce outstanding outcome for organization through leadership and management skills of the manager. In this study, we would like to explore the concepts of human, organizational and social capital as they influence on firm out moderated by the Vietnamese ICT manager's skills. In sum, our specific purposes in this article include (a) summarizing the concepts of social, organizational and human capital in ICT management, (b) refining their relationship with associated antecedents as well as with consequences, (c) constructing integrative conceptual model for empirical study of social and human capital in ICT management, (d) conducting the empirical test of conceptual model and (e) discussing the theoretical and practical contributions of test outcomes.

2. Theoretical Backgrounds and Hypotheses Developments

2.1 Resource-Based View

Knowledge on how to effectively manage intangible capitals are vital, especially, in sectors that are innovation oriented and non-manufacturing (Peteraf, 1993). The ICT sector is a service sector possessing intangible 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 (Peteraf, 1993). For this reason, we use resource-based view (RBV) as theoretical

framework for this study. RBV is an economic tool used to determine the strategic resources available to a firm. 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 (Peteraf, 1993). Therefore, it is argued that the management and development of intangible capitals are vital means of ICT firm's strategic management and outcome (Peteraf, 1993).

2.2 Firm Performance

One of the consequences of intangible capitals was defined as firm performance. Firm performance has been examined by academia for considerable time in measuring the health of firm. Initially, relying on a purely financial perspective, the firm performance measurements have been gradually extended to multiple dimensions. Financial outcome is measured by indicators such as sales growth, earning per share and profitability which is

reflected by return on investment, return on sales and return on equity (Youndt et al., 2004, Galli et al, 2012, Leitch et al, 2013 & Asiaei et al, 2004). Meanwhile, operational or non-financial outcome emphasizes on reputation, human and organizational learning domains (Galli et al, 2012, Leitch et al, 2013, Asiaei et al & Felício et al, 2014). The human outcome is measured by indicators of the rate of the employee commitment, engagement and turnover (Felício et al, 2013 & Ellinger et al, 2011). Reputation includes reputational power, goodwill and competitive advantage (Leitch et al, Felício et al, 2014 & Asiaei et al, 2014). Organizational learning occurs from the results of research and development activities, innovation and the ability to exploit new information (Felício et al, 2014, Ellinger et al, 2011 & Nahapiet et al, 1998). To ensure that firm performance is measured accurately, Dess and Robinson recommend firms employ both financial and operational outcome measurements. Rather than relying on a single indicator, utilizing multiple indicators enables firm to measure outcome via more complex and informative measures as well as assess the contribution of each indicator to the latent variable (Leitch et al, 2013).

2.3 Intellectual Capital

The first definition of intellectual capital was suggested by an economist, John Kenneth Galbraith in 1969, he believes that intellectual capital is not only an intangible capital but also an ideological process (Bontis, 2010, Edvinsson et. al, 1996 & Huang et. al, 2010). Other scholars proposed that intellectual capital is the accumulation of all knowledge, information, intellectual property, experiences, social networks, capabilities and competencies that enhance organizational outcome not only held by individuals, but also embed in its business process (Felício, 2014, Nahapiet et al, 1998 & Bontis, 2000). Rastogi offers a comprehensive definition of the intellectual capital “as the holistic or meta-level capability of an company to coordinate, orchestrate and deploy its knowledge resources toward creating value in pursuit of its future vision” (Bontis, 2000, Bontis et.al, 2010 & Subramaniam et. al, 2004). Over past years, the concept of intellectual capital has been defined in multiple ways, resulting in a lack of consensus regarding its components (Choo et al, 2010). However, synthesizing the existing academic discussions, we find that the widely accepted definition for intellectual capital should have three components: human, organizational and social capital (Hsu, 2009, Sharabati et.al, 2010 & Aramburu et.al, 2011).

2.3.1 Human Capital

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 (Shih. 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 (Nonaka et.al, 2009). Firm does not have its own human capital but rather lease the acquired knowledge, skills and experience of employee. Quality of human capital of firm is influenced by hiring practices and training activities (Gilbert et. al, 2017). The economic value of human capital is dependent on how employer uses and develops.

Therefore, scholars confirmed that it is deemed as the most important intangible resource of firm's development, especially in innovative sectors like ICT (Cao et. al, 2015). Hence, the first hypothesis is proposed as the follow:

H1: Human capital has significant influence on firm performance

2.3.2 Social Capital

It is acknowledged in literature that the influence of social capital on firm performance has been increasing (Hsu et. al, 2011). However, the concept of social capital has been much debated in terms of definition, measurement and operationalization (Gilbert et. al, 2017). So far, there are three distinct theoretical perspectives of social capital proposed by scholars are the functional, network and multidimensional perspective (Coleman, 2009). The functional perspective developed by Coleman (1993) and Putnam (2011) defines social capital as a functional resource that enhances collaboration among individuals in an organization. The network perspective of social capital theory suggested by Bourdieu defines social capital as a resource embedded in social networks in which individuals or organizations are members. When 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 (Gilbert et. al, 2017). 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 productive purposes (Zack et al, 2009). 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 (Grootaert, 2004). Hence, how social capital enabling accessing, processing, synthesizing and exchanging knowledge within and across organizations will influence on outcome of knowledge-based organization like ICT firm. The hypothesis is the following:

H2: Social capital may positively relate to firm performance

2.3.3 Organizational Capital

When examining the antecedents to human and social capital in the literature, many of antecedents to human and social capital can be conceptualized as inherent structures or processes in organization (Gilbert et. al, 2017). When the antecedents were interpreted, the organizational capital emerged as a major influence on development of human and social capital. Defined as the institutionalized knowledge and codified experiences preserved in organizational image, culture, routines, procedures, information systems and patents (Gilbert et. al, 2017 & Nahapiet, 1998). organizational capital is a strategic intangible asset. The purpose of organizational capital is to coordinate communication and action among individuals in an team or organization (Gilbert et. al, 2017). In literature reviews, scholars suggested three distinct dimensions of organizational capital as the following: the structural, cultural and knowledge dimension (Nahapiet, 1998). 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 (Youndt et. al, 2004, Ellinger et. al, 2011). The cultural dimension accounts for processes serving for the long-term strategy of firm. This includes formal objectives, strategic plan, mission, values, vision (Djuric et. al, 2015), the organizational culture, tradition (Ferreira-Lopes, 2016) and corporate social responsibility (Ferreira-Lopes, 2016). The knowledge dimension accounts for processes through which knowledge and information is created, utilized, exchanged and preserved. This includes investment in research and development (Galli et. al, 2012), copyrights and patents (Ellinger, et al, 2011).

Investment in research and development (R&D), a type of investment in organizational capital, is fundamental to create new knowledges, products and services. R&D investment activities increase the opportunities and avenues for organizational members to identify and apply technology in product and service (Ferreira-Lopes, et al, 2012). This also improves the members' own understanding and learning about new knowledges and technologies (Youndt et al, 2004). Accordingly, the more firm invests in R&D, the more it supports its individuals to enhance their expertise, knowledge, thus, builds up human capital. The other investment in organizational capital is regular training provision to employee. It is typically argued that firms can increase their human capital by providing comprehensive training activities to their current employees. The training activities focusing on developing personal knowledge and skills may not only increase employee's human capital, but also help employees increase social capital by building relationships with their colleagues and share knowledge among them (Zack et al, 2007). Likewise, as individuals learn and increase their human capital, they may create knowledge that potentially forms the foundation for organizational learning and knowledge accumulation (Zack et al, 2009). The investment in information system (IS) is also important for human and social capital. There is the consensus that information system is the infrastructure of many organizations (Youndt et. al, 2004). At primary level, information system creates repositories where knowledge can be codified and institutionalized. In addition, investment in IS also enables the creation and diffusion of knowledge from and across dispersed and globalized sources (Youndt et. al, 2004). Nowadays, computer network, a type of information system, removes physical and temporal limitations to communication and connection among people to create online social networks (Youndt et. al, 2004). These online connections enhance cooperation, sharing of knowledge not only among employees within firm, but also across firms (Zack et al, 2007). The last investment in organizational capital is the investment in organizational culture. Numerous literature regards organizational culture as an important impact on the development of intellectual capital's components, especially on human and social capital (Zack et al, 2007 & Galli et. al, 2012). Mouritsen argued that organizational culture is pivotal to the value of intellectual capital (Mouritsen et al, 2011). Petty and Guthrie (2004) advocates that corporate culture is crucial toward firm's successfulness, and is capable of increasing intellectual capital within that firm. Different kinds of organizational culture would have different influences on intellectual capital.

However, developing types of culture that refer to flexibility, openness, quick adaptability and responsiveness is appropriate for knowledge-based organization like ICT firm and is important driver to support the development of the intellectual capital's components, especially human and social capital (Gilbert et al, 2017). Synthesizing above arguments, we propose the following hypothesizes:

H3: The increase in organizational capital positively increase in human capital

H4: The increase in organizational capital positively increase in social capital

H5: The organizational capital indirectly influences on firm performance through human capital

H6: The organizational capital indirectly influences on the firm performance through social capital

Comparing with human and social capital, it is least flexible (Gilbert et al., 2017). Major Vietnamese ICT firms are small and medium size, thus, developing organizational capital that are less hierarchical in nature and allows for autonomy and independence in decision making allowing in increased innovation and absorption of new knowledge (Cao et al., 2015). As the result, the firm performance is improved. Based on these arguments, we hypothesize the following:

H7: Organizational capital may positively relate to firm performance

2.4 The Moderating Role of the Manager Skills

The managers may be defined as key agent of firm who is responsible for firm performance through work of other individuals. Due to frequent interactions with employees, the manager has the closest relationship to them and has most moderating impacts on their relationship with firm (Gilbert et al., 2017). According to Keil, Lee and Deng (2013), there are top five skills critical to an ICT manager including leadership, verbal communication, scope management, listening and project management skill. Firstly, manager must have leadership skill to translate firm's vision to his/her team members as well as to motivate them to work together effectively toward common goal (Keil et al, 2013). Next, verbal communication, the second most important skill are proposed by researchers (Keil et al, 2013). Keil, Lee and Deng (2013) argued:” We ranked verbal communication skill at the top because other skills can be rendered ineffective if the project or team manager is unable to accurately and clearly communicate with team's internal and external stakeholders. Most issue resolution, scope management and risk management activities require this skill to address them successfully” (Keil et al, 2013). The third most important skill identified is scope management. The major reason that this skill chosen is its significant impact on the success or failure of the ICT project (Keil et al, 2013). Some scholars proposed that scope management is one of the most important skills for the project manager working on complex projects and it is also critical for project management to control stakeholder expectations and project deliverables throughout the entire project lifecycle (Keil et al, 2013). The fourth skill mentioned is listening skill, some experienced managers argued that this skill is important because it is related to

identifying and understanding the status, problems, risks of the project or task, team member's and customer's need. Keil, Lee and Deng suggested: "Listening to some of my really good technical people and taking the time to listen to the issues they are experiencing is very critical. By not listening, you might have just missed one of the fatal flaws in the architecture of the project. Unfortunately, it might cause the project to fail" (Keil et al, 2013). The last important skill suggested in this article is the planning skill. Both academic researchers and experienced managers acknowledged that project managers are skillful at planning if they need to know where they are at in terms of the project schedule and when they are going to deliver project (Keil et al, 2013).

Much supports can be found in the literature mentioning to the contribution of the role of manager skills on human capital development through staff selection, training, accountability and project planning (Keil et al, 2013). Although not much attention in literature have been paid to the influences of the manager skills on social capital, this is arguably the primary source of value for the manager in a knowledge-based organization like ICT firm (Keil et al, 2013). The manager has strong leadership and verbal communication skills may facilitate positively influential relationships with team members leading to better firm performance. These relationships may be less effective when they are based on command and control or coercive managerial practices than based on relational managerial styles that focus on mutual trust and respect between manager and team members (Gilbert et. al, 2013). In sum, characteristics of human and social capital are associated with strong manager skills. Therefore, we argued that the skills of ICT managers are important to the success of ICT projects and highly correlated with firm performances. We propose the following hypothesizes:

H9: The manager skills moderate the relationship between human capital and firm performance

H10: The manager skills moderate the relationship between social capital and firm performance

In addition, we assume that the manager skills may conditionally have impacts on the strength of indirect relationships between the organizational capital and firm performance. In other words, the mediating effects of the organizational capital on firm performance may be moderated by the manager skills, thereby demonstrating a moderated mediation effect. We propose that a strong indirect influence of the organizational capital on firm performance when the moderating degree of the manager skills are high. Therefore, the hypotheses are proposed as the followings:

H11: The manager skills moderate positively the mediating effects of the organizational capital on firm performance via human capital.

H12: The manager skills moderate positively the mediating effects of the organizational capital on firm performance via social capital.

3. Conceptual Frameworks

Based on the above theoretical backgrounds and hypotheses, we propose an integrated model as the following:

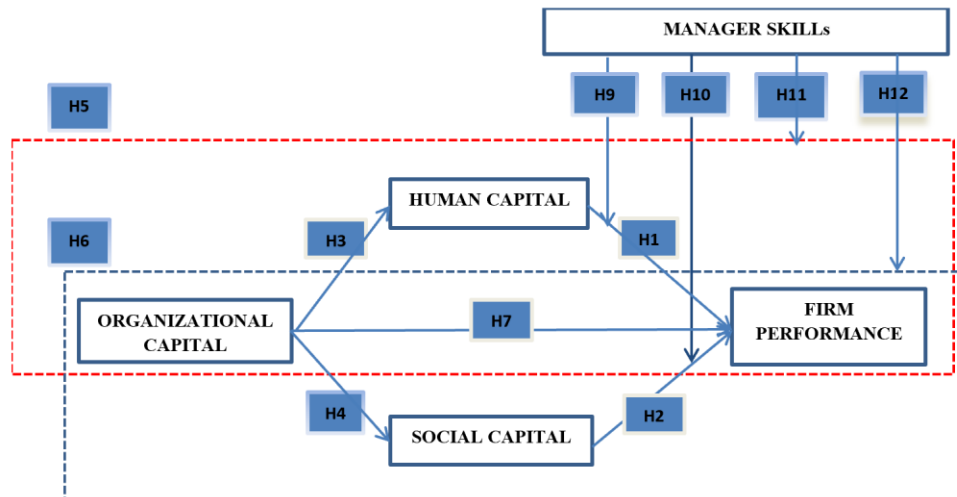


Figure 1. Research Model

4. Methodologies

4.1 Data Collection and Respondent Characteristics

We conduct a survey of the Vietnamese ICT firms and entrepreneurs, the majority of them are five-year old or smaller. The targeted respondents are directors, project managers and senior managers who represent the best source of information for our study. Eventually, 370 responses were directly collected from 450 questionnaires were distributed. After excluding missing data and outliers based on boxplot analyses 351 responses were analyzed. The table 1 presents the demographic information of the research sample.

Table 1. The demographic information of the research sample

Variable	Category	N	Percentage (%)
Age	20s	10	3
	30s	255	73
	40s	81	23
	≥ 50	5	1
Education	Vocational school	13	4
	Bachelor's degree	267	76
	Master's degree	71	20
ICT category	Software Services	200	57
	Hardware Services	31	9
	Hardware manufacturing	10	3
	Digital Media	80	23
	Telecommunication	30	9

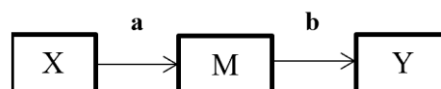
4.2 Measurements

The questionnaire was developed from validated scales. This has been seen as a step to ensure content validity of measurements. However, the survey was conducted in Vietnamese due to the pre-dominantly Vietnamese setting. Two academic domain experts with fluent Vietnamese and English proficiency were invited for translation process. The questionnaire was pretested in meetings with 10 academic domain experts and 10 senior managers from Vietnamese ICT firms. The purpose of the pretest is to evaluate the content validity of the measures, and whether the respondent understood the instructions, items and scales.

Five-point Likert-scale items ranging from “1” (strongly disagree or strongly dissatisfaction) to “5” (strongly agree or strongly satisfaction) were used to measure the intellectual capital dimensions, firm performance and manager skills. All items in detail are reported in Appendix A. 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 [48]. Firm performance measurement was adapted from using scales developed and validated by Wkiland and Shepherd (2003), Call et al (2015), Ellinger et al (2011), and Hofmeyer (2013). The measurement scales of the project manager skills are developed based on the basis of studies developed by Keil, Lee and Deng (2013).

4.3 Mediation or Indirect Influence Analysis

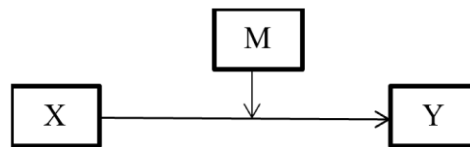
In prior researches, when researchers test the structural model, they often focus only on direct relationship measurement among constructs, thus, to strengthen the causal effect relationship measurement among constructs, we performed indirect effect test. Indirect effect measurement involves in testing how an independent variable (X) affects a dependent variable (Y) through one or more potential intervening variables or mediators (M(s)) (Hayes, 2013). Hayes defined a method to test indirect effect, called Bootstrapping method, as the followings:” *Bootstrapping is computation-ally intensive method that involves repeatedly sampling from data set and estimating the indirect effect in each resampled data set. By repeating this process thousands of times, an empirical approximation of the sampling distribution of **product of a and b** (a and b values are standardized coefficient value of X -> M, M-> Y, respectively) is built and used to construct confident intervals for indirect effect. If zero is contained in the interval, there is no indirect effect of X to Y through M.*” (Hayes,2013).



4.4 Moderation Analysis

In our article, we use moderation analysis to analyze the moderating relationships. The impacts of variable(s) X on dependent variable Y is moderated by moderator(s) M, if its

size, sign or strength depends on or can be predicted by M. In that case, M is said to be moderator of X's effect on Y or that M and X interact in their influence on Y (Hayes,2013).



5. Results

5.1 The Result of the Construct Reliability and Validity Evaluation

At first, we use Cronbach alpha (α) for reliability analysis to measure the internal consistency of the measurement scales (Hair, 1998). The proposed value of α should be above 0.6 (Hair et. al, 2013). The α of human, social and organizational capital are 0.8,0.82 and 0.65 representing reasonable scale reliability. Firm performance and manager skills with α of 0.621 and 0.7 also represent good scale reliability. Next, Exploratory factor analysis (EFA) technique used to conduct dimensionality analysis, and the result of this analysis is indicated by factor loading score. The general purpose of factor analytic technique is to condense the information contained in original construct into smaller set of new composite dimensions or factors (Hair et. al, 2013). All factor loading scores with suggested level of 0.5 (Hair et. al, 2013). result in the satisfaction of the condition of uni-dimensionality confirmation (Hair et. al, 2013). In our study, with original set of 40 measurement items, there were only 23 items which qualified the factor loading score threshold of 0.5 with minimum score of 0.675.

5.2 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 (Hair et. al, 2013), Goodness-of-fit index (GFI), and Comparative fit index (CFI) should satisfy thresholds of 0.91 (Hair et. al, 2013). Our test resulted acceptable fit for data set (GFI =0.91, CFI = 0.93 and RMSEA = 0.08). Furtherly, we use CFA technique to test convergent and discriminant validity. We checked all average variance extracted (AVEs) and composite reliabilities (CRs). All AVEs are higher the suggested level of 0.5 (Hair et. al, 2013) and CRs are also above the proposed level of 0.7 (Hair et. al, 2013). Therefore, convergent validity is satisfied. For the test of the discriminant validity, Cheung, Chiu and Lee suggested that if the AVE of each construct is larger than the squared correlation coefficient of that construct compared with any other construct in the model, constructs indeed are different from one another (Cheung et al, 2010). The test result in table 2 demonstrates that all constructs carry sufficient discriminant validity.

Table 2. The test result of all constructs carry sufficient discriminant validity

	Human capital	Organizational capital	Social capital	Firm outcome	Manager skills
Human capital	0.593*	0.207	0.263	0.504	0.352
Organizational capital	0.207	0.664*	0.263	0.405	0.137
Social capital	0.260	0.301	0.598*	0.396	0.319
Firm performance	0.504	0.392	0.397	0.646*	0.362
Manager skills	0.352	0.137	0.319	0.362	0.657*

*: Diagonal entries are AVE values

5.3 Hypotheses Verification

In hypothesis verification step, we test all hypotheses using process software. Collectively, H1, H2, H3, H4 and H7 represent direct individual effects, H5 and H6 represent indirect effects whereby the association between organizational capital and firm performance is mediated by human and social capital, respectively. Such mediated effects was tested using bootstrapping analysis, a powerful method in determining the statistical significance of mediation, to confirm a significant indirect effect proposed by Preacher and Hayes (2013). In H9 and H10, we assumed the moderating effect of the manager skills on the relationship between human, social and firm performance. In H11 and H12, we assumed as the moderating effect of the manager skills on indirect effect of organizational capital on firm performance via human and social capital. Such moderated and moderated mediation effects are tested by hierarchical regression analysis.

5.3.1 The Tests of the Direct and Indirect Effects

We adopted Hayes's suggestion to test direct and indirect effects (H1,H2,H3,H4 and H7) (Preacher, 2008). Firstly, human, organizational and social capital should be regressed directly on firm performance. The test result of model 1 in table 3 showed that human ($\beta=0.6809$, $p<0.001$), organizational ($\beta=0.3006$, $p<0.001$), and social capital ($\beta=0.1683$, $p<0.05$) are positively related to firm performance, thus, H1, H2 and H7 are statistically supported. In the test outcome of the model 2 and 3 proved that the organizational capital is positively related to human capital ($\beta=0.2630$, $p<0.01$) and social capital ($\beta=0.404$, $p<0.001$), respectively, so, H3 and H4 are supported. Based on test outcomes in above, we confirm that there are no full mediation effects in this model. The full mediation effects occur, if organizational capital has no direct influence on firm performance (Hayes, 1999). Therefore, there may be only partial mediation effects of human and social capital on the relationship between organizational capital and firm performance. The test results of model 4 showed that the partial mediation effects of human and social capital are confirmed ($\beta=0.0755$, $p<0.001$) and ($\beta=0.0680$, $p<0.001$), so, H5 and H6 are supported.

Table 3. The test results of different models

Model 1					
	β	se	p	LLCI	ULCI
Constant	.3985	.1931	.0015	3.562	1.1159
Human capital => Firm performance (H1)	.6809	.0369	.0000	.2219	.3672
Organizational capital => Firm performance (H7)	.3006	.0519	.0000	.2064	.4106
Social capital => Firm performance (H2)	.1683	.0335	.0000	.1024	.2341
Model 2					
	β	se	p	LLCI	ULCI
Constant	2.7772	.2293	.0000	2.3263	3.2281
Organizational capital => Human capital (H3)	.2630	.00735	.0004	.1185	.4075
Model 3					
	β	se	p	LLCI	ULCI
Constant	3.3659	.2531	.0000	1.7802	2.7756
Organizational capital => Social capital (H4)	.4040	.0811	.0000	.2445	.5636
Model 4					
	β	Boot-se	p	BootLLCI	BootULCI
Organizational capital => Human capital => Firm performance (H5)	.0775	.0226	.0000	.0340	.1238
Organizational capital => Social capital => Firm outcome (H6)	.0680	.0193	.0000	.0340	.1070

5.3.2 Moderation and Moderated Mediation Effect of the Manager Skills

In model 5, H9 and H10 postulates that the influence of human and social capital would be positive for firm performance with high moderating degree of the manager skills. To test H9 and H10, we include the interactions of (human capital x manager skills) and (social capital x manager skills) in regression analysis. The results in table 4 indicate that manager skills only moderate the influence of social capital on firm performance, (H10 ($\beta = -.1788$, $p > 0.01$) is supported, H9 ($\beta = -.0371$, $p > 0.05$) are not supported). However, the outcome of slope test indicates that the social capital has strong impact on firm performance when the degree of manager skills is low. Therefore, H10 is not fully supported.

Table 4. Regression analysis of moderating effects

Model 5					
	β	se	P	LLCI	ULCI
Constant	-2.0761	.7161	.0004	-3.2960	-.6676
Human capital => Firm performance	.3985	.1645	.0000	.0749	.7220
Social capital => Firm performance	.6809	.1318	.0044	.4216	.9401
Organizational capital => Firm performance	.3006	.0501	.0000	.2021	.3990
Manager skills => Firm performance	.9791	.2231	.0000	.5402	1.4180
Interaction-1=> Firm performance (H9)	-.0371	.0507	.6216	-.1368	.0625
Interaction-2=> Firm performance (H10)	-.1788	.0430	.0000	-.2635	-.0942

Interaction-1 : Human capital x Manager skills , Interaction-2 : Social capital x Manager skills

After having confirmed that H10 is partially significant, we furtherly analyze the moderated mediation impacts (H11 and H12). The output of moderated mediation analysis provides detailed results of the indirect effects by presenting their statistical significant at the degree of the manager skills. This allows us to verify the values of the manager skills for which conditional indirect effects of the organizational capital on firm performance via human and social capital are significant at $\alpha = 0.05$. The results in table 5 demonstrates that both moderated mediation effects are significant when the level of is low but not when is high. Therefore, H11 and H12 are not fully supported.

Table 5. The results of both moderated mediation effects

<u>INDEX OF MODERATED MEDIATION OF THE MANAGER SKILLS</u>				
Mediator	Index	SE(Boot)	BootLLCI	BootULCI
Human capital	-.0098	.0137	-.0421	.0107
Social capital	-.0723	.0219	-.1272	-.0365

6. Discussion

The main contributions of this study is to interpret the mediating effect of human and social capital between organizational capital and Vietnamese ICT firm performance and moderating effect of the manager skills. Firstly, this article reveals that intangible capitals, human, organizational and social capital, have significant influences on firm performance in which findings confirm that human capital has the most important contributions in forming these influences. Therefore, any innovative or creative activities must focus on human resource development. Secondly, this article has drawn the conceptual framework based on resource based view and intellectual capital theory to complement the limitations of both. Prior researches are based on the resource based view (RBV) and intellectual capital for explaining better business performance in well-developed countries and traditional industries. By developing the intellectual capital dimensions deployment as an aspect of RBV, the current study provides an answer to why with similar amount of the intellectual capital, the ICT western firms use them more successfully while Vietnamese ICT companies do not. The key

point of this answer is the moderating role of the manager skills in Vietnam on the relationship between human and social capitals and firm performance. Based on the test outcomes, it is concluded that the management skills of local ICT firms not strong enough to moderate positively impacts of human and social capital on firm performance. For this reason, we propose some following explanations. There were general acknowledgements among managers that we interviewed that major technical managers are weak at interpersonal skills, leadership and communication skill, in which flexibility is a factor allowing them to adapt their behavior to different situations to elicit the desired responses from team members or other stakeholders of project or team. The lack of smooth communication between main project participants is seen as one of the key causes of conflicts or task and project delays. However, major local ICT companies are micro, small and medium sized firms, their budget are not strong enough to fund for training opportunities that target to areas where soft-skill developments are needed to their managers. Therefore, they do not have much contributions in the development of the human and social capital in firm. In addition to interpersonal skills, visioning is another factor that affects team or project performance. A project manager having vision may see a project from a big picture perspective. It encourage managers not to lose track and remain focused on meeting the required quality in all project aspects. If team performs poorly in one aspect, it may have significant consequences towards overall project performance. Hence, a manager who lacks vision may not know how to organize available resources and coordinate team members to take corrective actions, consequently, these lead to the failure of project. Lastly, the mediating role of human and social capital could be considered a key sensor to explain how organizational capital positively improve firm performance. ICT staffs are high-education and creative experts who prefer working as non-managerial staffs to as employees under time management pressure, so, firm's organizational culture, environment and structure will influence on their performance as well as firm performance. Because of this special feature of ICT job, staffs must actively build their own social network to support them work independently. Unlike traditional industry, their major communication, and information exchanges are online and carried out in multi-culture environments, when mutual trusts in social network are established, they are willing to share intellectual resources, in turn, motivating innovation activities and consequently building positive corporate culture as well as firm performance improvement. In addition, ICT advance applied in organizational changes are considered to play a central role in enhancing working environment and staff's productivity. The discussion on the impact of ICT advance on growth and productivity was stimulated by the famous sentence of Robert Solow: "You can see the computer age everywhere but in the productivity statistics" [65]. Therefore, effective accumulation of the organizational capital can help employee creating and acquiring knowledge derived from a range of intangible assets that comprise an firm's competitive advantages. Concretely, organizational capital should not be the sole factor influencing on firm performance, the integration of the interrelationships among social, organization and human capital in explaining firm performance in specific context will provide us clear picture of how these intangible capitals are crucial to the existence and development of ICT firm.

7. Implications

The findings of this paper provide meaningful theoretical and practical contributions to the intellectual capital literature by extending prior findings. The first theoretical contribution is pertaining to the dimensions of the intellectual capital at theoretical approach in the Vietnamese-like emerging economies. Because of inadequate market and legal support, dysfunctional competitor behavior of firms is widespread, the evaluation of intellectual capital should not be the same as Western countries. Second, despite extensive discussions regarding the influence of organizational capital on firm performance, there are very few researches on its impacts on firm performance via the mediating role of human and social capital within the contexts of ICT sector. The findings also show that to create values of corporate cultures forming the foundation of the valuable, rare, inimitable, and non-substitutable (VRIN) assets, there are needs for building mutual trusts in social network extensions or social capital. In addition, the findings also provide practical implications for ICT management. Firstly, by improving all manager skills, especially interpersonal skills, managers are able to be flexible and to adapt themselves according to situations in persuading others to complete project activities within the mutually agreed timeframe and, as such, reduce conflicts among project participants. Secondly, similar as time performance, cost performance may also be affected by many factors, such as geographical locations, types of contract, design changes, completeness of design documents, cost control mechanisms, project management and external factors. The influences of these factors may cause project budget to be revised over time, thus regular and effective listening and communication and are required to meet the expectations of all stakeholders affected. This demonstrates the important of emotional intelligence and interpersonal skills for manager to improve team or project's cost performance. Lastly, the managers should improve leadership skills, because to meet customer's demand, they must provide strong aura of vision and contagious enthusiasm that substantially raises the confidence, aspirations, commitments of people to meet high quality performance demand. In sum, facing global trends and unpredictable environment, ICT managers must continuously improve their skills to develop human and social capital not only for themselves but also for their firm in order to meet customer's demand as well as build up strong network ties with employees, customers, suppliers and competitors to adapt environmental changes effectively and flexibly.

8. Conclusion and Limitations

Vietnam is on the road to a knowledge-based economy in which ICT is considered as one of the key sectors. This study gives brief insights into Vietnamese ICT sector in term of the interrelationship among social, human, organizational capital, manager skills and firm performance. By refining objectives in business operation, ICT firms must understand their own capabilities, especially their human resources to face to unpredictable changes of the environment. Social, organizational and human capital are recognized as the key intangible resources for firm's long-term performance. Accordingly, this study extends previous studies by empirical investigations on the moderating role of the manager skills as the one of the key

factors for the sustainable development of the ICT firms in future when firms become larger and more structured. Hence, we hope that the findings will be helpful managers and policy makers in Vietnam to find a good solution to enhance the performance of ICT firms in long-term.

This article also contains some limitations. First, the data, static data, collected through questionnaire survey was self-assessed, thus, it has inevitable drawbacks in reflecting the long-term impacts of intellectual capital's dimensions on firm performance. Second, the results are based on the perceptions of managers who are in charge of projects in software development and Therefore, the results may not represent other type projects such as system integration, information technology procurement, maintenance, infrastructure, network and securities. In spite of aforementioned limitations, we believe that the study not only contributes to both research and practice but also provide good foundation for further studies. One avenue for future research would be to examine how current environment in which ICT teams are conducted is changing manager skill requirements of managers. Another interesting extension of this article should be to consider cross-cultural differences. It may also be that the relative importance of ICT manager skills may vary between different cultures. Finally, this paper only addresses the moderating role of manager skills on the influences of intellectual capital dimensions on firm performance. However, there are other stakeholders such as team members, customers, environmental changes involved in the relationship between intangible capital and performance. Further studies should take into account the perspectives of different stakeholders.

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