

Relationship between Human Capital, IT Resources and Organizational Performance: An Operational Capabilities Mediated Model

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Abstract

The objective of the study is to highlight a new perspective under the domain of RBV on relationship between human capital, IT resources and organizational performance. It provides useful insight on human capital, as only possessing knowledgeable workforce is rarely enough for an organization to increase performance. Human capital along with IT resources strengthens the operational capabilities of the organization which in turn affects the organizational performance. A conceptual framework has been used that links human capital, IT resources and organizational performance through mediating role of operational capabilities. It is observed that in order to increase the performance organizations should not concern only on strengthening their resources but also should develop operational capabilities and in order to generalize the study proposed conceptual framework should be empirically tested across different industries and countries.

Keywords: Human capital, IT resources, Operational Capabilities, Organizational Performance.

Introduction

Organizational performance lies at the heart of firms to survive in current competitive business environment.¹ The main aim of 21st century organizations is to perform in a way that not only keeps them alive in the market but also provides sustainable competitive advantage. Goal of every

¹ Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. Measuring Organizational Performance: Towards Methodological Best Practice, *Journal of Management*, 35(3), (2009), pp. 718-804.

organization is to identify their potential significant resources and develop an understanding that how these resources can enhance their performance. For this purpose, human capital is believed to provide sustainable performance improvement² as knowledge embedded in workforce is valuable, rare, inimitable and non substitutable, makes it a strategic resource that explains performance differences among organizations.³ In the similar manner, knowledge based view (KBV) which is emerged from resource based theory (RBT) argues that knowledge of employees is a source of competitive advantage for the firm.⁴ However, opposed to this, many researchers argue that human capital relationship with performance is complex.⁵ A Study has reported that out of 33 tests on human capital relationship with performance only 11 (33%) support the notion that human capital have significant positive relationship with the performance.⁶

To solve this dilemma,⁷ stated that one way to increase the performance through human capital is to bundle it with other organizational resources.⁸ For example, information technological resources as these resources will facilitate the human capital to perform their task proficiently.

Further, several studies suggest that IT itself does not create value for the business and it must be interact with the other organizational resources to influence the performance.^{9, 10} Therefore, human capital and information

² Hitt, M. A., Jackson, S. E., Carmona, S., Bierman, L., Shalley, C. E., & Wright, M. *The Oxford Handbook of Strategy Implementation*, Oxford University Press, 2017.

³ Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., & Ketchen Jr, D. J. *Does Human Capital Matter? A Meta-Analysis of the Relationship between Human Capital and Firm Performance*, 2011.

⁴ Grant, R. M. Toward a Knowledge-Based Theory of the Firm, *Strategic Management Journal*, 17(S2), 1996, pp. 109-122.

⁵ Joshi, M., Cahill, D., Sidhu, J., & Kansal, M. Intellectual Capital and Financial Performance: An Evaluation of the Australian Financial Sector, *Journal of Intellectual Capital*, 14(2), 2013, pp. 264-285.

⁶ Newbert, S. L. Empirical Research on the Resource-Based View of the Firm: An Assessment and Suggestions for Future Research, *Strategic Management Journal*, 28(2), 2007, pp. 121-146.

⁷ Sirmon, D. G., Hitt, M. A., & Ireland, R. D. Managing Firm Resources in Dynamic Environments to Create Value: Looking Inside the Black Box, *Academy of Management Review*, 32(1), 2007, pp. 273-292.

⁸ Woehr, D. J., & Roch, S. *Supervisory Performance Ratings*, the Oxford Handbook of Personnel Assessment and Selection, 2012.

⁹ Nevo, S., & Wade, M. Firm-Level Benefits of IT-Enabled Resources: A Conceptual Extension and an Empirical Assessment. *The Journal of Strategic Information Systems*, 20(4), 2011, pp. 403-418.

¹⁰ Nevo, S., & Wade, M. R. The Formation and Value of IT-Enabled Resources: Antecedents and Consequences of Synergistic Relationships, *MIS Quarterly*, 2010, pp. 163-183.

technological resources both are required while determining the performance. Moreover, bundling of human capital with informational technology will generate sturdy firm capabilities.^{11 2,8,11} Particularly, those capabilities that are related to the operational aspect, as these transform organizational resources into performance outcomes.¹²

Grounded on the RBT principle which posits that an organization competes on the basis of its resources and capabilities,¹³ and only possession of resources is rarely enough to provide significant performance improvement¹⁴ there is a need to study human capital and IT resources with capabilities while determining performance. As resources solely do not provide superior performance,¹⁵ therefore, to exploit human capital and IT resources in most favorable manner organizations required operational capabilities. Traits of operational capabilities are distinct, create barrier to intimation and facilitate the organizations to perform superior. Moreover, these capabilities allow resources to retain their value over longer period of time.¹² Nevertheless, despite their importance in transforming the resources into performance outcomes, their relationship with the human capital and IT resources is completely ignored. Thus, above discussion lead towards the following research objectives:

- To understand the relationship of human capital and IT resources with organizational performance.
- To understand the relationship of human capital and IT resources with operational capabilities.
- To develop an understanding regarding the potential mediating role of operational capabilities between human capital, IT resources and organizational performance.

¹¹ Ployhart, R. E., Nyberg, A. J., Reilly, G., & Maltarich, M. A. Human Capital is Dead; Long Live Human Capital Resources! *Journal of Management*, 40(2), 2014, pp. 371-398

¹² Wu, S. J., Melnyk, S. A., & Flynn, B. B. Operational Capabilities: The Secret Ingredient, *Decision Sciences*, 41(4), 2010, pp. 721-754.

¹³ Barney, J. Firm Resources and Sustained Competitive Advantage, *Journal of Management*, 17(1), 1991, pp. 99-120.

¹⁴ Andersén, J. Strategic Resources and Firm Performance, *Management Decision*, 49(1), 2011, pp. 87-98.

¹⁵ Huang, Y. C., Jim Wu, Y. C., & Rahman, S. The Task Environment, Resource Commitment and Reverse Logistics Performance: Evidence from the Taiwanese High-Tech Sector, *Production Planning & Control*, 23(10-11), 2012, pp. 851-863.

Based on aforementioned objectives, this study intends to bridge the gap in existing body of knowledge by developing a conceptual framework that links human capital, IT resources with organizational performance through the potential intervening role of operational capabilities

Theoretical background

Human capital and organizational performance

The term human capital as the competences, skills and attitudes of the employees working in the organization.¹⁶ The human capital as the skills and competencies of the employees.¹⁷ However, argue that human capital is related to the explicit and tacit knowledge which employees possessed.¹⁸ Further, their study argues that key challenge for the organizations is to understand how to maximize their performance through the human capital. Considering this, novel researchers in the domain of human capital have categorized it into two main aspects.

First, micro level human capital which is an individual level approach includes knowledge, skills, abilities and other attributes of an individual employee. This perspective assumed that organization is a result of actions of individuals. Thus, Individuals tend to be heterogeneous. Individuals make the organization and organization cannot be formed without the individuals.¹⁹ Moreover, it is necessary to understand the individuals before studying it on the organization level.²⁰ Organization level human capital is formed through the individuals aggregated values.

Furthermore, human capital theory argues that people having more human capital like education and job training produce more. Dimensions of individual human capital include individual's education level, degree type, prestige and quality which are positively related to individual's financial

¹⁶ Cortini, M., & Benevene, P. Interaction between Structural Capital and Human Capital in Italian NPOs, *Journal of Intellectual Capital*, 11(2), 2010, p. 123.

¹⁷ Chen, C., Shih, H. & Yang, S. The Role of Intellectual Capital in Knowledge Transfer, *IEEE Transactions on Engineering Management*, 56, 2009, pp. 402- 411.

¹⁸ Martín-de-Castro, G., Delgado-Verde, M., López-Sáez, P., & Navas-López, J. E. Towards an Intellectual Capital-Based View of the Firm: Origins and Nature, *Journal of Business Ethics*, 98(4), 2011, pp. 649-662.

¹⁹ Felin, T., & Hesterly, W. S. The Knowledge-Based View, Nested Heterogeneity, and New Value Creation: Philosophical Considerations on the Locus of Knowledge, *Academy of Management Review*, 32(1), 2007, 195-218.

²⁰ Wright, P. M., & McMahan, G. C. Exploring Human Capital: Putting Human back into Strategic Human Resource Management, *Human Resource Management Journal*, 21(2), 2011, pp. 93-104.

success.²¹ In the similar context, there are several studies that mentioned that individuals having the specific knowledge which is related to the job tend to perform well compared to those who do not possess.^{22,23,24}

Second, macro level human capital, which is an organizational level approach, deals in organizational level knowledge, skills, abilities and other attributes of employees.^{25, 26} Assumption of this perspective is that organization drives the individual's actions²⁷ and behavior of an individual depends on routines, structure and roles in the organization. Therefore, individuals tend to be homogenous. Moreover, RBT offered theoretical explanation that human capital is strategic resource of an organization. Knowledge embedded in employees is unique and inimitable; thus, make them a potential source of competitive advantage for an organization. Macro level or collective human capital contributes in overall performance of the organization rather than individual job performance. Based on the above discussed literature it is concluded that organization level human capital is related to the organization performance.

However, individual level human capital is more likely related to the individual performance. Nevertheless, it has been argued that there is no clear dividing line between the organization level (macro level) and individual level (micro level) human capital. Contrary to this, divided the individual level and organization level human capital by stating that human capital resources at the organization level offer competitive advantage to the organization in comparison to the individual level human capital. Individual level human

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- ²¹ Judge, T. A., Cable, D. M., Boudreau, J. W., & Bretz, R. D. An Empirical Investigation of the Predictors of Executive Career Success, *Personnel Psychology*, 48(3), 1995, pp. 485-519.
- ²² Nyberg, A. J., Moliterno, T. P., Hale Jr, D., & Lepak, D. P. Resource-Based Perspectives On Unit-Level Human Capital: A Review and Integration, *Journal of Management*, 40(1), 2014, pp. 316-346.
- ²³ Pil, F. K., & Leana, C. Applying Organizational Research to Public School Reform: The Effects of Teacher Human and Social Capital on Student Performance, *Academy of Management Journal*, 52(6), 2009, pp. 1101-1124.
- ²⁴ Gathmann, C., & Schönberg, U. How General is Human Capital? A Task-Based Approach, *Journal of Labor Economics*, 28(1), 2010, pp. 1-49.
- ²⁵ Ployhart, R. E., & Moliterno, T. P. Emergence of the Human Capital Resource: A Multilevel Model, *Academy of Management Review*, 36(1), 2011, pp.127-150.
- ²⁶ Coleman, J. S. Social Capital in the Creation of Human Capital, *American Journal of Sociology*, 94, 1988, S95-S120.
- ²⁷ Campbell, B. A., Coff, R., & Kryscynski, D. Rethinking Sustained Competitive Advantage from Human Capital, *Academy of Management Review*, 37(3), 2012, pp. 376-395.

capital does not lead towards the organizational performance rather they build organization level human capital resources which are unique and inimitable.²⁸ Therefore, this claim draws attention towards the organization level human capital as the determinant of organizational performance.

IT resources and organizational performance

In current business environment information technology is playing an active role to increase the performance and create competitive advantage.^{29,30} Numerous, research studies have defined the IT resources in different ways. For instance, it has been argued that IT resources are the specific type of IT related resources that serve the purpose of improving productivity of the other resources of the firm. These resources have the potential to enable the firm to outperform their competitors in term of reduction in cost, increase in profit and other performance measures.³¹ Further, these are the strategic resources of the organization that can enhance the performance of an organization. In the similar manner, argues that technological resources give potential to the organization to effects the organizational performance positively.³²

Further, technological resources are not only valuable but also difficult to replicate. Impact and relationship of IT resources with the different factors of business organization have been studied by the different past researchers. It is found that the impact of IT resources in the operational aspects of the firm to become more effective and efficient.³³ Similarly, IT has been found to be significantly related to towards the enhancement of business process execution.³⁴ IT resources are important resources of the organization that can

²⁸ Ployhart, R. E. The psychology of competitive advantage: An adjacent possibility, *Industrial and Organizational Psychology*, 5(1), 2012, pp. 62-81.

²⁹ Rayport, J. F., Jaworski, B. J., de Parres Cárdenas, C. V., & Martínez, M. A. M. *e-Commerce* Boston, MA: McGraw-Hill/Irwin Markspace U, 2001, p. 110.

³⁰ Koellinger, P. Why are Some Entrepreneurs more Innovative than Others? *Small Business Economics*, 31(1), 21, 2008.

³¹ Jacks, T., Palvia, P., Schilhavy, R., & Wang, L. A Framework for the Impact of IT on Organizational Performance, *Business Process Management Journal*, 17(5), 2011, pp. 846-870.

³² Ndofor, H. A., Sirmon, D. G., & He, X. Firm Resources, Competitive Actions and Performance: Investigating a Mediated Model with Evidence from the In-Vitro Diagnostics Industry, *Strategic Management Journal*, 32(6), 2011, pp. 640-657.

³³ Mukhopadhyay, T., Kekre, S., & Kalathur, S. Business Value of Information Technology: A Study of Electronic Data Interchange, *MIS Quarterly*, 1995, pp. 137-156.

³⁴ Devaraj, S., & Kohli, R. Performance Impacts of Information Technology: Is Actual Usage the Missing Link? *Management science*, 49(3), 2003, pp. 273-289.

provide competitive advantage to the organization.³⁵ IT based resources not only enhance the performance but also they facilitate the other resources of the organization to create competitive advantage for the organization.

Despite the importance of IT resources towards organizational improvement still little is known, as there is a blur line between IT resources and IT capabilities. Both IT resources and IT capabilities are used interchangeably; however, they both are different.³⁶ Capabilities are the ability or capacity of the organization to deploy or utilize its resource to achieve its desired outcomes. Capabilities are often developed in the functional area by combining the human, technological and physical resources at the corporate level IT capability was first defined as the ability to control the IT related cost, deliver system when needed to effect objectives of the business through implementation of IT.³⁷

Further, highly competent IT staff, IT management, useable technological base and strong partnership relationship is the IT resource of the organization that bring IT capabilities.³⁸ In the similar context also differentiated the IT capabilities and IT resources. IT capability is the ability to mobilize the technological resources in combination with the other organizational resources and capabilities. Grounding our study on previous discussed literature, we treated IT resources different from IT capabilities.³⁹

Multidimensionality of IT resources has been discussed in the past studies, however, no widely accepted reconciliation/integration has been found related to this body of work. Still research scholars offers varying perspective related to IT resources. For instance, study of describe the three dimensions of the IT assets including IT human asset, technological asset and IT relationship asset and also identified three dimensions. Majority of scholars have consensus on three most common IT resources which includes the IT

³⁵ Jeffers, P. I., Muhanna, W. A., & Nault, B. R. Information Technology and Process Performance: An Empirical Investigation of the Interaction Between IT and Non-IT Resources, *Decision Sciences*, 39(4), 2008, pp. 703-735.

³⁶ Kraaijenbrink, J., Spender, J. C., & Groen, A. J. The Resource-Based View: A Review and Assessment of its Critiques, *Journal of Management*, 36(1), 2010, pp. 349-372.

³⁷ Amit, R., & Schoemaker, P. J. Strategic Assets and Organizational Rent, *Strategic Management Journal*, 14(1), 1993, pp. 33-46.

³⁸ Ross, J. W., Beath, C. M., & Goodhue, D. L. Develop Long-Term Competitiveness through IT Assets, *Sloan Management Review*, 38(1), 1996, p. 31

³⁹ Bharadwaj, A. S. A Resource-Based Perspective on Information Technology Capability and Firm Performance: an Empirical Investigation, *MIS Quarterly*, 2000, pp. 169-196.

infrastructure, IT human resource and IT relationship/ partnership.⁴⁰ However, as this study treated human capital as separate variable that is why present study focus is on two dimensions of IT resources i.e. IT infrastructure and IT relationship as an antecedent of performance.

Operational capabilities

Operational capabilities are defined as the organizational ability to improve the performance of its business process by making it efficient and effective. Inan, and Bititci stated that these capabilities are the zero or first order organizational capabilities. Routine of these capabilities is continuous improvement in business operations. Moreover, these capabilities utilize the organizational resources at optimum level.^{41, 42} Multi dimensional operational capabilities are divided into three main capabilities. First is technological/technical capability, second is marketing capability and third is managerial capability.^{43,44,45}

Technological/technical capability is related to the operational aspect of an organization which allows the organization to reduce error and enhance the quality of business process. Similarly, marketing capability is the processes through which an organization select intended value propositions for their target customers and deploy organizational resources to deliver these value offerings in pursuit of desired goals.⁴⁶ Likewise, third main operational capability is the managerial capability which enables the manager to actively participate in the business activities of the organization. Moreover, this

⁴⁰ Mao, H., Liu, S., Zhang, J., & Zhang, Y. *Information Technology Competency and Organizational Agility: Roles of Absorptive Capacity and Information Intensity*, Information Technology, 2017.

⁴¹ Krasnikov, A., & Jayachandran, S. The Relative Impact of Marketing, Research-and-Development, and Operations Capabilities on Firm Performance, *Journal of Marketing*, 72(4), 2008, pp.1-11.

⁴² Inan, G. G., & Bititci, U. S. Understanding Organizational Capabilities And Dynamic Capabilities In The Context Of Micro Enterprises: A Research Agenda, *Procedia-Social and Behavioral Sciences*, 210, 2015, pp. 310-319.

⁴³ Nerkar, A., & Roberts, P. W. Technological and Product-Market Experience and the Success of New Product Introductions in the Pharmaceutical Industry, *Strategic Management Journal*, 25(8-9), 2004, pp. 779-799.

⁴⁴ Pavlou, P. A., & El Sawy, O. A. Understanding the Elusive Black Box of Dynamic Capabilities, *Decision Sciences*, 42(1), 2011, pp. 239-273.

⁴⁵ Wilden, R., & Gudergan, S. P. The Impact of Dynamic Capabilities on Operational Marketing and Technological Capabilities: Investigating the Role of Environmental Turbulence, *Journal of the Academy of Marketing Science*, 43(2), 2015, pp. 181-199.

⁴⁶ Day, G. S. Closing the Marketing Capabilities Gap, *Journal of marketing*, 75(4), 2011, pp. 183-195.

capability is the ability of the managers to monitor the activities and performance of the organization.⁴⁷

Mediating role of operational capabilities

Operational capabilities are the subset of organizational capabilities. These capabilities are the first order organizational capabilities which serve a purpose of continuous improvement and incremental innovation in existing business process.

Similar, to the organizational capabilities input to these capabilities are the organizational resources as these capabilities utilize the organization resources at optimum level.⁴⁴ Operational capabilities deploy, allocate and coordinate the organizational resources in superior way and thus create value for the firm.⁴⁸

Moreover, from theoretical perspective resource based view RBV argued that performance of an organizational can be improved through resources and capabilities. Resources and capabilities reinforce each other to increase the marginal productivity of the organization. In addition to this, resources are the input to the capabilities particularly specific skills like unique technical knowledge coupled with human capital and other complementary resources which facilitate the capabilities to grow. Similar, to the human capital, IT resources are the antecedents of operational capabilities.⁴⁹

Thus, based on above discussed literature which argue that operational capabilities increase organizational performance by utilizing the existing resources of the organization, present study propose a conceptual framework that built relationship of human capital and IT resources with the organizational capabilities through the intervening role of operational capabilities. Below mentioned figure describe the conceptual framework of the study.

⁴⁷ Sethi, R., Smith, D. C., & Park, W. Cross-Functional Product Development Teams, Creativity, and the Innovativeness of New Consumer Products, *Journal of Marketing Research*, 38(1), 73–85.

⁴⁸ Chen, J. L. The Synergistic Effects of IT-Enabled Resources on Organizational Capabilities and Firm Performance, *Information & Management*, 49(3), 2012, pp. 142-150.

⁴⁹ Cavusgil, E., Seggie, S. H., & Talay, M. B. (2007). Dynamic Capabilities View: Foundations and Research Agenda, *Journal of Marketing Theory and Practice*, 15(2), 2001, pp. 159–166.

Conceptual Framework

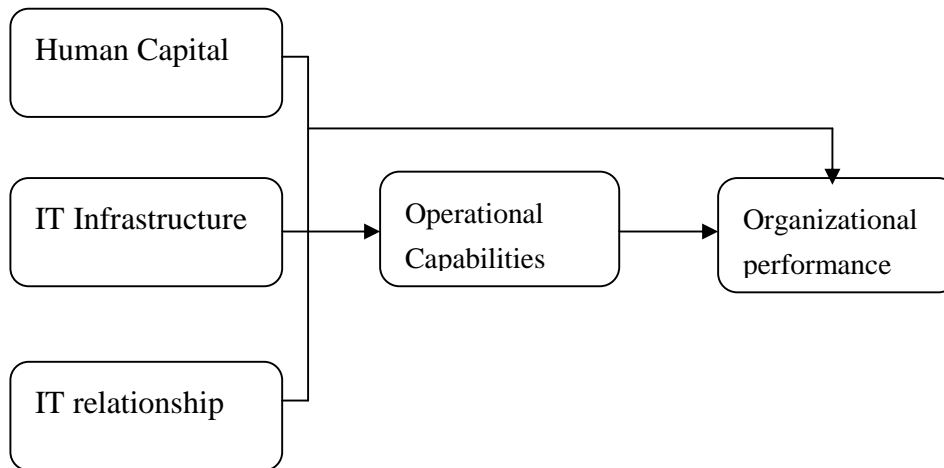


Figure 1. Conceptual Framework

Research Proposition

Based on theoretical discussion following research proposition are proposed.

RP1: There is a relationship between human capital, IT resources and organizational performance.

RP2: There is a relationship between Human capital, IT resources and operational capabilities.

RP3: Operational capabilities mediate the relationship between human capital, IT resources and organizational performance.

Conclusion

This study aims to develop an understanding between the relationship of human capital, IT resources and organizational performance through the mediating role of operational capabilities. Based on past literature this study highlighted that relationship between the resources and performance is complex. Only having resources is not enough for the organization to compete in the marketplace. Moreover, only focus on developing knowledgeable human resource is not enough to increase performance. Rather, human capital along with IT resources leads towards operational capabilities which in turn increase organizational performance. Therefore, organization's main concern should not be only on strengthening resources but also on developing operational capabilities that lead towards sustainable performance.

In order to generalize the study across different industries and countries proposed framework should be empirically tested. Moreover, in

future studies different other resources should also be identified that built new set of organizational capabilities and ultimately increases organizational performance.