



# An empirical study of relationship between IT investment and firm performance: A resource-based perspective

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## Abstract

The resource-based view of the enterprises generally attributes superior financial performance to organizational resources and capabilities. Firm-specific IT resources are classified as IT infrastructure, human-IT resources, and IT-enabled intangibles. This paper empirically examines the association between IT investment and firm performance. Results indicate that firms with high levels of IT infrastructure and human-IT resources have a strong positive relationship with IT-enabled intangibles, but not with firm performance. In addition, IT-enabled intangibles are strongly positively correlated with firm performance. The relationships between IT investment and corporate IT capability are also examined. The results suggest that IT investments have begun to show results, indicating that they can make a positive contribution to firm IT infrastructure. However, the various measures of IT investment do not appear to have a positive relationship with human-IT resources, and IT-enabled intangibles. Although IT investment is likely to improve organizational IT infrastructure, but the IT-enabled intangibles is the key factor to effect the business performance, and the human-IT resource is a driving force for the IT-enabled intangibles.

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## 1. Introduction

Information Technology (IT) has changed the ways of business enterprise operation and

management. Furthermore, the increasing development of Internet applications and the rapid development of new aspect of IT have formed a digital economy. In the digital economy age, knowledge has become key success factors for an enterprise, with the role of intangible assets in an enterprise. With aim of IT, business enterprise knowledge can be accumulated with more

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extensive and flexible manners. IT indeed increases opportunities of an enterprise to create the maximum value by using knowledge.

IT investment and implementation is always an important portion in an enterprise. It is therefore necessary for an enterprise to evaluate its benefit of such investment. A reasonable and objective evaluation method is an important issue to assist managers who manage their information resources, and make right IT investment decisions. On the other hand, there exists myth and arguments for relationships among IT investment and corresponding benefits. Some studies have also focused on an IT capability model as an intermediate-variable-based model between IT investment and firm performance to explain the productivity paradox. It is an important issue for power of explanation of such research frameworks, for IT effects upon firm performance.

The study not only focuses on above issues, but also considers the usage of IT to create a unique and difficult-to-imitate resource for an enterprise. The resource-based theory is applied in the study to discuss the content and value of IT capability. There are three different IT capability within the resource-base theory, i.e. (1) IT infrastructure capability, (2) human-IT capability, and (3) IT-enabled intangible capability [1]. Firstly, the study will discuss the influence of IT investment on IT capability. Measuring influence factors of the IT investment and creation of exclusive IT resource in an enterprise is another purpose of this research. The influence of IT capability on the firm performance is discussed. The result of this study can be used as a blueprint for an enterprise to plan its IT investment and as a guideline for managers when they manage their IT investment.

## 2. Literature review

### 2.1. Resource-based view of IT

Based on literatures on management strategy, unique resources in an enterprise played roles for competition, with valuable, rare, difficult to imitate, and non-substitutable manners by other resources [2,3].

Generally, as for resource within an enterprise, various definitions presented with respect of assets, knowledge, capabilities and organizational processes. Grant [4] provides a classification of resources, including tangible, intangible, and personnel-based resources. Tangible resources include the firm's financial capital and its physical assets such as plant, equipment, and inventories. Intangible resources include assets such as reputation, brand image, and product quality. Personnel-based resources include technical know-how and other knowledge assets including dimensions such as organizational culture, employee training, loyalty, etc. Firms create competitive advantage by assembling resources that work together to create organizational capabilities [5,6,14].

With aim of resource-based perspective, information system researchers have also identified various IT-related resources as potential facilities of competitive advantage. In addition to competent IT skills (human IT assets), Ross et al. [7] point out that a reusable technology foundation (technical assets) and a strong partnering relationship among IT departments and business management departments (relationship assets) might strongly influence capability of an enterprise to deploy IT for strategic objectives.

According to [4], key IT-based resources can be classified as: (1) tangible resources that comprising the physical IT infrastructure components, (2) human-IT resources that comprising the technical and managerial IT skills, and (3) intangible IT-enabled resources, such as knowledge assets, customer orientation, and synergy [1]. Table 1 shows the three resources.

### 2.2. IT investment

The impact of IT investment is indeed an important topic for evolution of an enterprise. However, though an organization invests a great deal of IT resources, it is questionable if expected goal or target can be reached. Many empirical studies have found that cautious IT investment can produce the good enterprise results, as some contrary results are also presented.

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