

Information Technology Investment and Firm Performance in Developing Economies: A Study of Perceived Impacts of IT on Firms in Namibia

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Abstract. Investing in information technology is widely regarded as having enormous potential for increasing firm performance. In Namibia most businesses recognise the diversified value creating potential of IT investments which explains the increase of IT investments. Despite these assumptions however, no validations have been done in the context of the country due to limited local research on this topic. This study, tries to investigate the perception of the intangible intermediate benefits accrued from IT resources with the view that understanding the interaction between IT resources and the users may provide better insights in to how IT is impacting firm performance. The initial results indicate that firms in Namibia perceives their IT investments as a strategic necessity and that IT contributes to business value by providing a variety of benefits, especially at the process level and boosting of growth potential.

1 Introduction

The essential role of information technology (IT) in strategies and operations of information-age organizations has led to significant increases in IT investments over the last two decades worldwide. An attempt to measure the value creation capabilities and mechanism of IT investments in Namibia is a timely initiative in view of the increasing IT investments and increasing importance of the role of IT in most business processes. This is an ongoing study which seeks to establish whether IT investments are generating any business value in Namibia, if so how and to what extent. Further, the study also seeks to establish the best practices of IT investment suitable to Namibia and how to best harness the potential conferred by IT investments. The study will focus at the impact of IT on the intangible intermediate benefits at operational level of firms which leads to increased performance.

The organisation of this paper is as follows. The next section elaborates the theoretical framework, and discussion on the research methods followed by presentation of preliminary results and a discussion of the results. Finally the conclusion provides suggestions for further research.

2 Theoretical Framework

2.1 IT Business Value Creation

A review of the literature shows that at least four prevailing thoughts on where, how, and why IT creates business value to firms. The **microeconomics-based view** uses principles of Microeconomics to explain how IT generates value by suggesting that IT investments as a capital investment create excess return in production processes of firms [4, 5, 16, 8]. **The Process-Oriented view** believes that IT investments create competitive advantages by improving operational efficiency of intermediary business processes which in turn, under the appropriate condition (e.g. supportive management, good macro-environment, trained manpower, flexible organisational culture etc), lead to better firm-level performance [1, 22, 10]. **The resource-based view** believes that IT investments improve firm performance by creating sustainable competitive advantage via unique, and path strategic resources and capabilities [13, 3, 15]. Finally the **digital option view** argues that IT investments create value by creating options and flexibility for firms in the increasingly competitive and uncertain market environments [2, 15].

2.2 The Structuration Theory

There has been some attempt by various theorists to link structuration theory to systems theory or the complexity theory of organizational structure (which emphasizes the adaptability that simple structures provide). The theory of structuration, proposed by Anthony Giddens, is an attempt to reconcile theoretical dichotomies of social systems such as agency/structure, subjective/objective, and micro/macro perspectives [6].

The theory has been adapted and augmented by researchers interested in the relationship between technology and social structures, such as information technology in organizations. Orlikowski [11] borrows Giddens' structuration theory and applies her critique of the duality of structure to technology. In the context of the use of information technology in organisations to derive business value, from structuration lens, human actions create and change technology, yet humans also use it to accomplish some action. This recursive notion of technology is what Orlikowski [11] calls duality of technology.

Orlikowski sees technology as the product of human action (what they would like to achieve), while it also assumes structural properties. The practice lens permits one to examine how people, as they interact with a technology in their ongoing practices, enact structures which shape their emergent and situated use of that technology. While Orlikowski's work has been focused on multinationals and corporate, it is equally applicable to the technology cultures which have emerged in smaller organizations, and can be further adapted with sensitivity to differences in approaches to the governance of technology in these organisations [18].

2.3 Research Conceptual Model

Due to the complex linkage between IT resources utilisation and the impact on organisational performance, this study will use multiple theoretical perspectives. Firstly since technology is physically constructed by actors working in a given social context, and technology is socially constructed by actors through the different meanings they attach to it and the various features they emphasize and use [11]. Understanding the extent to which this technology creates value for organisations depends upon one's ability to understand the meaning the actors (management and employees) attach to technology and how they use it. Respectively, one may not understand how IT contributes to business value by ignoring this notion of interactivity between technology and actors. The research will thus use perceptions of user (management and employees) of IT to gain insights into how IT creates value.

Secondly since the focus of this study is IT Value creation, the microeconomic and process views provide a more salient theoretical foundation for investigating how IT augments firm's business value creation mechanisms. The fundamental argument of the economic view of IT value is that IT can be treated as an input in the production function of a firm and there is a substituting effect between IT and other production factors [14] Thus, IT creates value for a firm when IT capital or IT labour produces higher return than ordinary capital and labour [4, 7].

The microeconomic view of IT value by itself fails to explain where and why such impact occurs [17, 10]. Nevertheless, the **process view** supplements the microeconomic view, by suggesting that if the right IT is applied within the right business process, improved processes and organizational performance result, conditional upon appropriate complimentary investments in workplace practices and organizational structure and shaped up by the competitive environment [9].

3 Hypothesis and Research Methodology

There are synergies between the resources and the users of the resources therefore understanding the interaction between the technology and the users' of the technology could provide richer insights into how organisations derive business value from IT. Further the intermediate output of IT adoption can easily be observed by the users. Therefore in this research the impacts of IT will be gauged from the perception point of view of users of IT.

I developed the research model based on the microeconomic and process views of IT value creation and structuration theory will guide how the impacts are interpreted. Meanings and values that users and management attach to IT will be used to find out whether IT is impacting any intermediate process as a required in the process view or whether IT investments are having any high returns as the microeconomic view posits.

There have been many scholars who have concluded that IT creates positive business value [4, 5, 1, 17], the first hypothesis will investigate this issue using Namibian data.

Hypothesis 1: There is a positive relation between IT investment and firm performance.

H1: a – There is positive relationship between IT investments and increased

- productivity, effectiveness and enhanced firm's cost efficiency.
- **H1: b** - Investment in IT leads positively impact business process leading to improved process performance and organisational growth by facilitating improved customer satisfaction, increased sales, and other factors that affect firms' growth.
 - **H1: c** IT investments positively impact internal controls and resource management.
 - **H1: d** - Investment in IT is strategically essential and enhances the potential for future growth, survival and competitive advantage of a firm.

Furthermore, I adopt postulations that the concept of information intensity of value chain and products proposed by Porter and Millar [12] can be used to complement the process view of IT value for a better understanding of IT impact on firm performance, which leads to my second hypothesis.

Hypothesis 2: Information-intensive industries (e.g. finance or service companies) derive more positive returns from to IT investment than non information-intensive industries (e.g. manufacturing).

Finally IT capabilities which supports organizational objectives and are well aligned with organizational strategies to achieve objectives tend have the most returns.

Hypothesis 3: Nature of IT investment affects the value creating capabilities of IT.

- **H3: a** - IT investments that positively affect the efficiencies of the business processes of a firm, have more payoffs.
- **H3: b** - IT investments which are well aligned with strategies to attain organizational objectives will have more impact on the growth of a firm.

3.1 Methodology and Data Collection

The approach of the research is to conduct a survey investigating the nature and extent of benefits achieved from IT investments at the operational and Business process level. In the first phase 50 firms that had invested in IT capabilities in the recent past were targeted. Out of these firms only up to five personnel per firm at different levels in hierarchy and from different functional units were asked to participate in the survey. Guided by the process and microeconomic oriented value creation mechanism views, the respondents are being asked to rate how IT in their own perception has positively affected or improved business intermediate processes and also how IT investment may have affected the production factors (e.g. increasing labour output). The impacts being investigated include impact on functional operations and business processes, Strategic importance, effect on relationships (employee to employee, employee to client), impact on quality and efficiency of service delivery, impacts on business image, impact on accounting and other resource controls and other intermediate processes. Similarly actual use of IT capabilities is being investigated to substantiate the impacts.

Furthermore only respondents who witnessed the IT investments in their firms are being considered. The assumption is that, they have a better understanding of how IT has changed things around compared to personnel that might have joined the firm after IT was already adopted. In the survey, respondents are being asked to rate their perception of the extent of these intangible benefits realized by their businesses on the specified issues on a 5-point likert scale, with 1 indicating no benefits, and 5 indicating excellent benefits.

3.2 Preliminary Results

Preliminary findings indicate that most firms in Namibia regard IT as strategically essential for organisational survival and recognise the diversified value creating potential of IT. Firms invest in IT for a number of reasons including immediate functional business processes support and/or improvement requirements (most dominant) and strategic reason like to gain competitive advantage. A few larger firms and government departments are also investing in firm level systems (e.g. ERP systems). Nonetheless, results also reveal that in many organisations there is no payoff analysis performed for IT investments and that political reasons often overshadow the technical and economic considerations. Findings also showed when adopted functional business supporting systems have higher level of usage compared to ERPs.

Respondents also indicated a number of other issues they consider to be directly impacted by IT capabilities which include

- Initial investments in IT have provide insights into capabilities of IT and Most firms indicated that they invested either in further enhancements of initial capabilities or different other systems after realising what IT can do.
- Most respondents acknowledged that IT investment in systems supporting internal operations contributed a lot to improvement of the controls of resources usage e.g. Vehicle Fleet Management systems controls mileage and Fuel usage.
- IT contributes to the improvement in the quality and efficiency of service delivery (e.g. process applications quickly, generate Bills quickly, reduce on errors, etc).
- Most acknowledged the need to invest in IT despite lack of immediate financial returns, and recognise benefits besides tangible financial returns.

4 Discussion and Implications

This study will contribute to IT business value literature in the following ways: firstly it is one of the first studies to assess the impact of IT on firm level performance in Namibia using perceptions of the users of IT in firms. It is interesting to note that there seems to be positive impacts from IT investments being realised in a developing country despite the differing macro-characteristics such as labour costs, IT resources, level of IT adoption and education compared to developed countries. The findings will add to the evidence that IT business value creation is not idiosyncratic of developed countries only but also applicable to developing countries. Secondly this study reveals other issues that are motivating IT investments in developing countries and what meanings personnel attach to IT.

Based on the preliminary results, IT investments in Namibia are viewed as having diverse ways of adding value to firms. However prudent management of IT needs to improve as most firms do not to have a consolidated information technology implementation strategies leading to different functional units implementing functional specific information systems often motivated only by functional operational requirements or strategies and not necessarily unified objectives.

5 Conclusions

The research is ongoing, and hopefully more patterns of how IT is creating business value will be discovered. The Namibian economy like for many other developing countries is going through a lot of transformations and it is the aspirations of government and the people that they realise maximum economic growth potential on a sustainable. Therefore the trend of considerable growth in adoption and usage of IT is expected to continue. Therefore the besides just establishing how IT is creating value studies are expected to extended to how best to harness the potential of IT to improve the performance of organisations in Namibia and other developing countries with similar conditions. This research is limited to how IT creates value in one developing country, future research could consider more developing countries from various geographical locations to provide an all-embracing picture of the nature of benefits of IT investments and also consider how to harness the potential of IT.

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