

Managerial Strategies of Information Technology: A Review

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ABSTRACT

Most of the Information technology management programs are designed to educate and develop managers who can effectively manage the planning, design, selection, implementation, use, and administration of emerging and converging information and communications technologies. The IT Manager and the Project Manager are not at odds. The Project Manager's ability to focus knowledge, skills, tools and techniques on the temporary endeavor frees the IT Manager to focus on keeping the wheels of commerce turning. The IT Manager supports the project by providing staff resources and by lending authority to the Project Manager. While researchers have encouraged further examination on the causal links between Information Technology (IT) investments and a firm's performance, results of empirical studies have been varied. This is to a certain extent due to the exclusion of IT-business partnership (also known as IT-business strategic alignment). Indeed, strategic alignment has emerged as one of the most important concern facing business and IT executives all over the world (Raymond and Croteau, 2009, Johnson and Lederer, 2010). Therefore, the purpose of this paper is to provide a detailed literature review that both academics and practitioners can use in order to understand the resources required to realize the potential values of their IT investments. This is achieved by providing a review of the IT and IT-business literature on a firm's business performance. It is hoped that the article will spark helpful discussion on the merits of continuous examination of IT investments.

Keywords: Information Technology; IT-Business Partnership; Firm Performance; Evaluation of IT Investment.

INTRODUCTION

Firms invest heavily in IT such as hardware, software, network, and data components; in order to improve their performance (Oana, 2010). However, based on the mixed findings of the linkage between IT spending and firm performance, some researchers in the MIS field point to IT-business alignment as a construct that can help organizations to improve the positive impact of IT on organizational performance (e.g. Henderson and Venkatraman, 1993; Luftman *et al.*, 1993; Luftman and Brier, 1999; Luftman, 2000; Kearns and Lederer, 2001; Sabherwal and Chan, 2001; Croteau and Bergeron, 2001; Chan *et al.*, 2006; Chan and Reich, 2007; Dong *et al.*, 2008; Masa'deh *et al.* 2008). Furthermore, little empirical evidence has examined the relationship between strategic alignment and IT payoffs. Some researchers have shown that strategic alignment is correlated with firm performance (Chan *et al.*, 1997; Sabherwal and Chan, 2001), IT-business value (Tallon *et al.*, 2000), IS effectiveness (Chan *et al.*, 1997), and competitive advantage (Kearns and Lederer, 2001). For instance, Tallon and Kraemer (2003) stated that "with the exception of Chan *et al.* (1997), the empirical literature has remained silent on the degree to which strategic alignment has impacted IT business value (where IT business value mediates the link between strategic alignment and firm performance)". Therefore, this paper reviews a holistic literature on whether IT investments contribute to a firm's performance, or should be through other organizational factors such as aligning these investments with business strategies. In other words, this paper sheds light on how firms can improve firm performance with IT investments.

The paper commences with a discussion of the literature review regarding IT investments on firm performance; and then presents a comprehensive literature on the association between IT-business partnership as an intermediary performer between IT and a firm's performance. The conclusions of the study are then provided and areas for further research are also addressed.

The definition of Information Technology Management, derived from the definition of Technology Management is as follows: Information Technology Management is concerned with exploring and understanding Information Technology as a corporate resource that determines both the strategic and operational capabilities of the firm in designing and developing products and services for maximum customer satisfaction, corporate productivity, profitability and

competitiveness. IT Management is a different subject from Management Information Systems. Management Information Systems refer to information management methods tied to the automation or support of human decision making. IT Management, as stated in the above definition, refers to the IT related management activities in organizations. MIS as it is referred to is focused mainly on the business aspect with a strong input into the technology phase of the business/organization. The concept of Information Technology Management includes considering the value creation that is created through technology. It is heavily dependent upon the alignment of technology and business strategies. While the value creation for an organization is a network of relationships between internal and external environments, technology plays an important role in improving the overall value chain of an organization. However, this increase requires business and technology management to work as a creative, synergistic, and collaborative team instead of a purely mechanistic span of control according to Bird.

Those practicing Information Technology Management are commonly referred to as IT Managers. IT Managers have a lot in common with Project Managers but their main difference is one of focus: IT Managers are responsible and accountable for an ongoing program of IT services while the Project Managers' responsibility and accountability are both limited to a project with a clear start and end date.

IT MANAGER'S ROLE

Most of the Information technology management programs are designed to educate and develop managers who can effectively manage the planning, design, selection, implementation, use, and administration of emerging and converging information and communications technologies. The program curriculum provides students with the technical knowledge and management knowledge and skills needed to effectively integrate people, information and communication technologies, and business processes in support of organizational strategic goals.

1. Graduates will explain the important terminology, facts, concepts, principles, analytic techniques, and theories used in the field of information technology management.
2. Graduates will be able to effectively apply important terminology, facts, concepts, principles, analytic techniques, and theories in the field of information technology management when analyzing complex factual situations.
3. Graduates will be able to effectively integrate (or synthesize) important facts, concepts, principles, and theories in the field of information technology management when developing solutions to information technology management multifaceted problems in complex factual situations.

IT MANAGERS AND PROJECT MANAGEMENT

The IT Manager, or any functional manager, and the Project Manager have a lot in common. Both work to achieve organizational goals by directing the activities of people. They employ many of the same knowledge sets, skills, abilities and personal traits to plan, organize, staff, direct and control their teams, including:

- Strong leadership and interpersonal skills
- Ability to manage people, time and resources
- Ability to develop people
- Excellent communication and presentation skills
- Good organizational and problem solving abilities
- Good negotiation, conflict resolution and decision making skills
- Talent to handle clients
- Knowledge/awareness of the requirements of the relevant legislation and regulations
- Honesty and integrity

Although most managers have similar skills sets, there are some differences between the roles of IT Managers and Project Managers. The main difference is one of focus. The IT Manager is responsible for an ongoing program of IT services, while the Project Manager's accountability

and authority last only for the life of the project. In fact, it is the time-limited nature of projects that makes the role of Project Manager so important.

Despite such similarities and differences, it is important for the IT Manager to know the basics of formalized project management. Why? Because every organization needs to be able to implement change, and almost all important changes are defined or implemented through project teams. Does everyone in the organization (or in IT) need to know project management, or is it safe to leave it in the hands of a highly trained few? Spread the knowledge around!

Project teams are frequently cross-functional with members from many parts of the organization. Project teams must be able to interact successfully with people throughout the organization in order to plan and complete the project. Everyone in the organization will be affected by what the project teams do, so the more members of the organization understand about project management, the better they will be able to support, guide, and interact with the project team.

While many organizations have trained Project Managers or a Project Management Offices, IT Managers without these resources can still benefit from project management frameworks that describe best practices such as the Project Management Institute's PMBOK® (Project Management Book of Knowledge) and the United Kingdom government's PRINCE2 (PProjects IN Controlled Environments). It is not necessary or possible for everyone in an organization to be project management professionals. But that doesn't mean that they should be ignorant of the essentials of project management. The important thing for the entire organization is to select an approach to managing projects and socialize it in the organization.

Let's talk a little more about projects themselves. We've said that change is reason for projects. Changes in the business are naturally reflected, or anticipated, in the technology supporting the business. We agree on where they come from, but what is a project? A project is a one-time, multitask job with clearly defined starting and ending dates, a specific scope of work to be performed, a budget, and a specified goal or outcome to be achieved. You can easily understand that the amount of time, energy and focus required to get a project done would place an unacceptable burden on any IT manager if added to current responsibilities. Enter the project team.

When the need for a change is identified, the search is on for a Project Manager. Someone is needed to focus on the initiation, planning, executing, monitoring and controlling, and closing the work of the project. However, the Project Manger does not perform the activities that make up the project; this is the purpose of the project team. The IT Manager supports the project by providing staff resources and by lending authority to the Project Manager. Unlike IT Managers who have positional authority, Project Managers derive their authority from the project charter. This can lead to confusion among team members when normal workload and project activities conflict. The IT Manager can facilitate project success by adjusting workloads and priorities to free up project team members.

The PMBOK defines Project Management as "the application of knowledge, skills, tools and techniques to project activities to meet project requirements." Simply stated, it is a process-oriented approach to defining, doing and measuring the work required to get the desired outcome. It is in the familiarity and facility with the tools and techniques of formal project management that the Project Manager diverges from other managers in the organization. The professional Project Manager has devoted significant time and effort to learning and applying the best practices appropriately, and the ability to match the framework to the organizational style and culture is the result of both training and experience.

What every IT Manager needs to know about Project Management is that there are best practices which when socialized into an organization can greatly enhance the success of projects. Project Management is a serious, professional field of interest with its own practices and attainments. Adopting Project Management will make the work of effectively managing change in the IT environment easier and more consistent. It is important to remember that any framework or tool is only as good as the people who use it. Picking a framework and tools that suit your organizational culture, familiarizing the entire organization with the chosen framework, and training staff in the use of and reasons for the tools can make the handling of

changes more consistent, efficient and successful. The IT Manager and the Project Manager are not at odds. The Project Manager's ability to focus knowledge, skills, tools and techniques on the temporary endeavor frees the IT Manager to focus on keeping the wheels of commerce turning.

LITERATURE REVIEW ON IT-BUSINESS PARTNERSHIP AND FIRM PERFORMANCE

A number of scholars test the association between strategic alignment and firm performance. Indeed, in the IT management field, several studies showed a positive relationship between strategic alignment and perceived firm performance (e.g. Sabherwal and Kirs, 1994; Chan *et al.*, 1997; Kearns and Lederer, 2000; Cragg *et al.*, 2002; Kefi and Kalika, 2005; Byrd *et al.*, 2006; Dong *et al.*, 2008). For example, Sabherwal and Kirs (1994) used survey data from 244 large academic institutions in the USA to test whether the alignment between organisational strategy and IT capability could enhance firm performance. Performance was assessed as the mean of four measures, namely; the student demand for the courses in the institutions, the quality of students, Gourman ratings of undergraduate and graduate programmes in the institutions, and Barron's rating of the university. They found a positive relationship between alignment and perceived performance. In addition, evidence has been found by Chan *et al.* (1997), in one of Chan's first and most important studies that a positive association exists between higher levels of strategic alignment and business performance. Also, business strategy and IS strategy have a positive impact on business performance. Chan *et al.* developed the STROEPIS (strategic orientation of IS) instrument based on Venkatraman's (1989) earlier STROBE (strategic orientation of business enterprises) instrument.

Chan *et al.* (1997), who used a mail survey of 170 US and Canadian small- and medium-sized manufacturing and financial services firms, found that business strategic orientation, IS strategic alignment, and IS effectiveness, were positively associated with business performance. They found that strategic alignment was a better predictor of business performance when measured by market growth, product service innovation, company reputation, and financial performance items. Furthermore, they showed that alignment and innovation had a strong association, that both financial performance and market growth had weak relations, and that a negative impact was reported on the company's reputation. However, it is worthwhile to mention that they justified their usage of subjective business performance data as the firms' annual reports did not indicate their profit and loss statements clearly, otherwise they would use it. Like Chan *et al.* (1997), Dong *et al.* (2008) tested the relationships among business strategy, IS strategy, IS strategic alignment, IS performance and business performance. They measured performance by using a five-point Likert scale based on two dimensions: market growth gains related to competition in the last three years, and profitability. However, although they found negative associations between business strategy and business performance, a positive linkage was shown between strategic alignment and perceived business performance.

Moreover, Kearns and Lederer (2000) used 107 matched pairs of IT executives and other senior executives to test two issues. Firstly, whether aligning IS plan with business plan (ISP-BP) in a firm is correlated with the use of IT for competitive advantage by IT executives, and also by other senior executives; and secondly, whether aligning business plan with IS plan (BP-ISP) is linked with the use of IT for competitive advantage by IT executives, and also by other senior executives. Competitive advantage was evaluated by using several perceived measures, such as the extent to which IS has been used to lower costs or create product differentiation, to leverage unique firm capabilities, to enable existing business strategies, and to create new business strategies. The results showed that for IT executives both ISP-BP and BP-ISP connections influenced a firm's ability to use IT resources for competitive advantage, whereas from the business executive perspective BP-ISP alignment could not produce competitive advantage.

Cragg *et al.* (2002) tested the link between strategic alignment and performance by investigating a proposition that a small firm that aligns its IT strategy with business strategy will be more successful than those that do not. Firm performance was measured based on the managers' assessment of the firm's performance in relation to its competitors. This includes long-term profitability, availability of financial resources, sales growth, and image and client loyalty. By using mail questionnaire data from 250 firms, the authors supported the proposition

and indicated that small firms with a high level of alignment achieved better firm performance than firms with low alignment.

Kefi and Kalika (2005) considered alignment as a co-variation method between business strategy and IT strategy. They obtained a total of 505 questionnaires from IT and business managers in various sectors such as manufacturing, telecommunication, and IT services. Their aim was to test the effect of strategic alignment on perceived business performance. Performance was assessed by asking informants, on a five-point Likert scale, the degree to which their firms perform in terms of productivity, cost reduction, innovation capabilities, reactivity capabilities toward business opportunities, responsiveness to customer requirements, and collaborative relationship with business partners. In their study, the authors applied structural equation modelling technique and supported the path from strategic fit to firm performance. In other words, the higher level of alignment leads to higher level of performance. In addition, by asking 84 pairs of IT managers and plant managers, Byrd *et al.* (2006) empirically examined the moderating effect of strategic alignment on the association between IT investment and firm performance. Performance was assessed subjectively by asking the IT manager's estimate of IT expenditures for the past three years in terms of annual expenses for personnel, hardware and software. They also asked plant managers to estimate both revenues and profits before taxes per employee for the past year. The researchers found that strategic alignment directly influenced firm performance as a moderator between IT investment and performance.

Furthermore, several studies that tested the relationship between IT-business strategic alignment and perceived firm performance were found to confirm mixed results (e.g. Tan, 1997; Bergeron *et al.*, 2001; Sabherwal and Chan, 2001; Croteau and Bergeron, 2001; Bergeron *et al.*, 2004; Chan *et al.*, 2006). Tan (1997) distributed a survey questionnaire to 65 firms, and used Miles and Snow's (1978) typology of defenders, prospectors, and analysers. The author found that aligning a firm's strategy with the use of IT is linked to a higher degree of perceived performance. Furthermore, the author's findings support the idea that prospectors are more likely to use IT to expand product innovations and market chances, while defenders use IT to develop operational efficiency to achieve profits. In Bergeron *et al.* (2001) study, subjective measures of organisational performance were used by asking the informants to what extent their firms' performance related to the industry average or to other firms in the same market during the last five years, in terms of profitability, sales growth, liquidity, and investment capability. They found that strategic alignment affected performance when they used mediation, covariation, gestalt, and profile deviation approaches; whereas no influence on performance occurred when matching and moderation methods were used.

Sabherwal and Chan (2001) tested the effects of alignment between business and IS strategies on business performance by employing the well-known categorization of defender, analyser, and prospector business strategies, as proposed by Miles and Snow (1978). They measured perceived business performance by using five-point scales for eight items, including reputation among major customer segments, frequency of new products service introduction, return on investment, net profits, technological developments and/or other innovations in business operations, product quality, market share gains, and revenue growth. They found a significant correlation between alignment and performance for prospectors (known for both innovation and pursuing new product/market opportunities) and analysers, but not for defenders (known for producing low-cost products). Also, organisational performance was measured in Chan *et al.*'s (2006) study, also by using the above eight items. They found that strategic alignment influenced perceived organizational performance for defenders, prospectors, and analysers in business firms, but not with defenders in academic institutions.

In addition, Croteau and Bergeron (2001) examined the correlations among four strategic activities (defenders, prospectors, analysers, and reactors) with firm performance. They measured perceived performance in terms of sales growth and profitability. Furthermore, they confirmed a positive association between strategic alignment and firm performance for firms that follow prospector or analyser strategies with IT, whereas defenders and reactors could not make effective use of IT. They emphasised that technology is helpful for analyser firms, which

the latter could sustain the enhancement of IT by encouraging their employees to participate in professional workshops and learning more about new IT applications and new technologies. Moreover, Bergeron *et al.* (2004) empirically tested the relationship between strategic alignment and business performance in 110 small firms. The researchers used a gestalt method of fit, conducted by aligning business strategy, IT strategy, business structure, and IT structure. The informants were asked to indicate on a seven-point Likert scale their firms' performance during the last five years on sales' growth rate, net profit, ROI, market share gains, ROS, and financial liquidity. They justify their usage of the above subjective measures to the size of the sampled firms. In other words, using subjective business performance is appropriate in small business firms, since financial data is either unavailable or unreliable. Bergeron *et al.* (2004) found that low-performance firms reveal a conflictual coalignment pattern of business strategy, business structure, IT strategy, and IT structure that differentiates them from other firms. In addition, in order to get high performance from the coalignment elements (i.e. business strategy, business structure, IT strategy, and IT structure), then a firm should have minimum thresholds on all four alignment domains.

However, although few studies investigate the relationship between strategic alignment and objective accounting/market firm performance, the results showed negative linkages (e.g. Parthasarathy and Sethi, 1993; Li and Ye, 1999; Palmer and Markus, 2000). Parthasarathy and Sethi (1993) examined the impact of flexible automation on performance, which was assessed by using growth in sales and return on investment (ROI) measures. According to the authors, flexible automation appeared to engage the use of technology in product design (e.g. computer-aided design) and manufacturing (e.g. computer-aided manufacturing) activities. Further, the term found to influence a firm's strategy formulation by using complementary choices of strategy and structure. By obtaining data from 87 flexible automation users in the USA and foreign (Japanese and West German) firms, they found that strategic alignment positively influenced sales growth, but was not associated with return on investment.

Li and Ye (1999) investigated, among other hypotheses, whether the more the IT integrates into a firm's strategic management and dynamic environment, the better its performance is. They used both return on assets (ROA) and returns on sales (ROS) as a measure of firm performance. Their results showed that strategic alignment was correlated with return on assets and returns on sales only when a firm operates in a dynamic environment, and focuses on externally-orientated strategies. By applying a survey to 80 professional retailers, Palmer and Markus (2000) tested the effect of strategic alignment, as moderation fit of the association between a firm's business and IT strategies, on firm performance. Performance was assessed using operation ratios that are used specifically in the retail industry, such as profitability (standard measure of net income divided by sales), comparable store sales growth (measures the sales growth for store that operates for more than a year), sales per employee (measure the effectiveness of sales staff), sales per square foot (measures the sales intensity of the specific stores) and stock returns (measured the number of times that inventory is sold over a year). Palmer and Markus (2000) did not locate a positive connection between alignment and performance. The authors explained the negative relationship by saying that firms in the retailing industry did not require strategic alignment, but a low level of alignment could be required since firms strongly pursue an internal business focus, and need IT merely to enhance the firm's transactional efficiency.

However, few studies examined the link between alignment and firm performance by using perceptual and objective measures of performance. Bergeron and Raymond (1995) conducted a key empirical study of 126 business firms, to test if the fit between strategic IT management and business strategic orientation affects performance. In other words, a moderation perspective of fit was used to link business and IT strategies. Business performance was assessed by using subjective measures (i.e. growth and profitability) and an objective measure of performance (i.e. return on assets). Business strategic orientation was measured by using Venkatraman's (1989) typology of aggressiveness, analysis, defensiveness, futurity, proactiveness, and riskness. Also, they developed an instrument of twenty items on a seven-point scale, ranging from 1 (denotes major weakness) to 7 (denotes major strength), to measure strategic information technology

management (SITM), which consists of five factors: information systems positioning (the role and contribution of IS to organizational objectives); strategic use of IS (applications to gain competitive advantage); new IT applications (adoption of new technologies like EDI); architecture planning (the existence of data, technology and systems architectures); and data security (data security, integrity and recovery). Bergeron and Raymond (1995) confirmed that the moderating effect between business strategic orientation and strategic IT management has negative and positive impacts on performance. Strategic IT management had a negative effect on perceived growth and profitability, but showed a positive influence on ROA in firms that have strong business strategies. They referred the mixed results to the short- and long-term effects. This is to say that while IT management demonstrates its influence faster in terms of better ROA, business strategic orientation pays off in the long run by increasing the firm's sales and profitability.

CONCLUSION

In summary, it is hoped that this study will provide a better understanding of how managers experience IT investments, strategic alignment, and in turn how they affects firm performance. Therefore, based on the literature review findings, the current paper should be considered as a starting point for future research in identifying the best ways of realising strategic alignment, so that firms can maximise the benefit from it. In addition, it is hoped that the literature obtained from this paper will improve the relationship between firms' IT and business managers, and in turn realise better performance.

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