

Information Systems for Competitive Advantage: Implementation of an Organisational Strategic Management Process

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Abstract

In order to guarantee the degree to which the Information Technology (IT) mission, objectives and plans support and are supported by business mission, objectives and plans; scholars and researchers (e.g. Acur et al. 2012) emphasised the need of organisations to aligning their business strategy with Information Technology strategy if they desire to achieve greater business value from their business and IT investments. However; investigating exact conditions on applying specific type of strategy still uncovered (Tallon and Pinsonneault, 2011). Consequently, for firms to achieve a competitive advantage through continuous support from both IT and business managers and executives, it is essential to explore the underlying conditions and risks associated with implementing IT systems, specifically Enterprise Resource Planning (ERP). Further, since strategy formulation is part of the strategic management process in order to achieve a firm's competitive advantage by creating more economic value than its rivals for the organization's vision; the benefits, drawbacks, and risks accompanying the implementation of ERP systems are presented in this research.

Keywords: Strategy Formulation, IT Strategy, ERP System, Competitive Advantage.

1. Introduction

One of the most quotes, Drucker (1994) defined strategy in business environment as a theory of how to achieve competitive advantage. Further, knowing the degree of competition and forces in the industry can assist formulating the appropriate business strategy in order to gain sustainable competitive advantage (Ahituv and Neumann, 1986; Jay, 2001). Some scholars (i.e. Pearlson and Saunders, 2009; Barney and Hesterly, 2010) argued that strategic Information System (IS) and Information Technology (IT) supports an organization's competitive business strategy for improving relationships with customers and suppliers, providing product design, and improving productivity. Moreover, IS and IT strategy could be driven by an organization's business strategy in order to fill a business orientated demand and offer new products or services to gain a sustainable competitive advantage (Tallon and Pinsonneault, 2011). This is to say that researchers commonly pay close attention to how they use IT to support organisation's business strategy, and focus on the premise of considering IT as an order-taker as technology yields benefits when it has been cautiously chosen to fit the organisation's goals and objectives (Chan and Reich, 2007).

Indeed, because of the strategic role of IT, and the increasingly need for integration of existing and new IT systems, IT strategic management receive attention from researchers and managers (Chan and Reich, 2007; Masa'deh et al. 2010; Mladkova, 2012). For instance, Moody (2003) explored the terms of IT alignment and IT enablement. The first notion is considered in introducing the alignment of an organisation's IT strategy

with the objectives of its business units. Project management methods and use of outsourcing arrangements are typical examples of IT alignment. The second term is used in reference to IT-enabled innovations. This refers to the ability of an organization to create new business processes, services, and products using IT strategy. Further, while the first notion implies that IT and business strategies are interrelated so that budgets are in harmony, IT enablement requires independent budget in order to support new business capabilities such as enterprise resource planning (ERP). Also, Moody (2003) argued that some managers suppose that IT alignment would automatically lead to the benefits of enablement, but that presumes a massive leap of faith. This is because IT alignment could be characterised as being achievable through traditional managerial processes, whereas IT enablement requires significant skills in innovation processes. Moody (2003) classified firms into two types: either traditional or innovation firms. The premise is that firms that promote innovation are more probably to be correlated with IT enablement initiatives than firms that do not foster innovation processes.

This paper commences with the ways in which firms formulate their strategies as part of strategic management process. Then, the adoption process of ERP system is presented. Next, risk factors associated with ERP system changes are addressed. After that, competitive advantage types and measures are discussed. The conclusions of the study are then provided and future researches are also suggested.

2. The Strategy Formulation through Strategic Management Process

Strategy formulation relates to the strategic management process as a way to achieve organizational goals and objectives, and therefore achieving the organizational vision in order to sustain competitive advantage (Mintzberg, 1979). Furthermore, strategic management process is a plan used in organisations to support their competitive advantage by implementing specific paces that lead firms to choose an appropriate business strategy. The strategic management process includes the following steps:

2.1 Mission

The process of strategic management in a company starts from defines its mission, mission of the company's long-term, in which purpose missions aim to define both what the company aspires to be in the long term and what to avoid in the meantime (Barney and Hesterly, 2010). An example of a mission taken from a well-known firm is IBM which strives to lead in the invention; development and manufacture of most of the technology industry; and advances in information; including computer systems, software, storage systems and microelectronics. Advancements translate these technologies into value for customers through their professional solutions, services and consulting businesses worldwide (Collins and Porras, 1994).

2.2 Objectives

Abrahams (1995) suggests that the values of the results of objectives can be expanded to include secondary objectives such as customer satisfaction, and respecting the social and physical environment. If specific and measurable objectives of a company can be used to assess the extent to which it is realizing its mission; high quality is closely linked to the elements of a company's mission and are relatively easy to measure and track over time; whereas low quality objectives either do not exist or not connected to the quantitative elements of a company's mission, or are difficult to measure and track over time; besides knowing that quality objectives cannot be used for the measurements to assess how well a mission is being recognized (Barney and Hesterly, 2010). In fact, an introduction that a company is not serious about carrying out part of its mission statement occurs when there are no targets or only low quality objectives associated with the mission (Barney, 2007). Furthermore, companies will be definitely in critical situations if not taking seriously into consideration the mission of their parts.

2.3 External and Internal Analysis (SWOT Analysis)

The external analysis implies that a company identifies the major opportunities and threats in its competitive environment, and studying the way in which competition in an environment may evolve and what implications of the evolving threats and opportunities. Conversely, a company's internal analysis helps identifying organizational strengths and weaknesses (Barney, 2007). It also helps a company understands its resources and capabilities that are less likely to be sources of competitive advantage. Internal analysis can be used in businesses to identify areas on its organization that need improvements and changes. Moreover, internal and external analysis are known as SWOT analysis model which embodies strengths (S) and weaknesses (W) that are being measured at the internal factors over which they have some control assessment. In addition, opportunities (O) and threats (T) are considered as external factors over which they have no control (Barney and Hesterly, 2010).

2.4 Strategic Choice

Based on SWOT analysis, firms can choose the appropriate strategy. Strategic choice armed with a mission, objectives and completes the external and internal analysis; a company is willing to make strategic choices. This is to say that a company is able to choose its theory of how to obtain a competitive advantage (Barney and Hesterly, 2010). Also, the strategic option available to companies' falls into two broad categories: business level strategies and strategies at the corporate level. Business level strategies are actions that companies take to achieve competitive advantages in the single market or industry (Barney, 2007). The two business level strategies mostly used are cost leadership and product differentiation. Whereas corporate level strategies are actions in which firms take to gain competitive advantages by operating in multiple markets or industries simultaneously. Common corporate strategies comprise vertical integration strategies, diversification strategies, strategic alliance strategies, merger and acquisition strategies, and global strategies (Barney, 1986).

Based on the strategic management process and in order to make a strategic choice, firms are willing to choose a strategy that (1) supports the mission of companies, (2) is consistent with company's goals, (3) exploiting opportunities in an enterprise's environment while preventing a company's weaknesses (Barney and Hesterly, 2010). Assuming that a specific strategy is carried out, the last step in the strategic management process of a strategy that meets the above criteria is likely to be a source of competitive advantage for a company.

2.5 Strategy Implementation

Implementing a strategy happens when a company adopts policies and organizational practices that are consistent with its strategy (Barney, 2007). Three specific organizational policies and practices are particularly important application of a strategy: a firm's formal organisational structure, management system of formal and informal control, and its compensation policies for employees. A company that adopts an organisational structure, management control and the remuneration policy to be consistent and reinforced are more likely to be able to implement the strategies of a company that adopts an organizational structure, management control and policy compensation that are inconsistent with their strategies (Brandenburger and Stuart, 2003). Specific organizational structures, management controls and compensation policies could be implemented in business strategies at the cost leadership and product differentiation ones. However, organisational structure, management control and compensation can be used to implement corporate strategies as well, including vertical integration, strategic alliance, acquisition and management and global strategies (Barney and Hesterly, 2010).

Furthermore, the simplest way to think about the company's strategy is to assume that companies choose and implement their strategies exactly as described in the strategic management process. That starts with a well-defined mission and aims, involvement in the SWOT analysis to make strategic decisions and then implement their strategies (Barney and Hesterly, 2010). However, there is no doubt that this describes the process for choosing and implementing a strategy of many companies. For example, FedEx, the world leader in the business of delivery, came into this industry with a well-developed theory about how to obtain competitive advantages in their business. However, other companies have started operations

with a well-formed and well-defined strategy, but have found it necessary to modify their strategy; so they actually apply to the market that bears little resemblance to the theory with which the company began (Mintzberg, 1979). This is to say that strategies are emerging from theories of how to obtain a competitive advantage in an industry that emerges over time or have been radically altered once they were initially applied.

In addition, one of the major concerns facing business and information technology (IT) is how to make the link between IT strategy and business strategy (Luftman et al. 2006). IT professionals and employers are looking for practical strategies to help aligning business and IT strategies (Masa'deh and Kuk, 2009). This is by identifying what factors could lead to such alignment, and how to achieve competitive advantage. Indeed, the alignment between IT and the business should be achieved to impact a company's objectives. Therefore, IT management should be involved in implementing a company's business strategy. For instance, if a firm implements a cost leadership strategy, then IT professionals could convince a top management to adopt a system like supply chain management in order to squeeze every penny possible out from the supply chain process. However, if a firm adopts a differentiation strategy, then IT strategy could impact such strategy by implementing a system like customer relationship management to increase a firm's revenue by providing delightful experience for the existing and coming customers. Nevertheless, ERP is the software used to increase a company's top line, and decreasing the bottom line.

3. ERP Adoption

ERP is an information system across the enterprise that integrates and manages all business processes across the organization. It is a business software that enables an organization to deal with the effective and efficient use of assets such as finance, human resources and materials through providing a total solution, integrated information processing needs of the organization (Nah and Zuckweiler, 2003). Indeed, many studies have recognized several important opportunities and benefits of ERP systems provided in organizations. In addition, ERP develops the performance of a supply chain in organization (Gardiner et al., 2002). Moreover, the ERP system incorporates most of the business processes and consent to access to database in real time (O'Leary, 2000). Also, several intangible asset benefits that a company can benefit from the implementation of an ERP, including enhancing customer happiness, improving supplier performance, better flexibility, abridged quality costs, increasing the value of resources, and ensuring the correctness of enhanced information and improved decision-making capacity (Siriginidi, 2000).

Moreover, firms can benefit from the adoption of ERP systems which can be classified into five kinds of benefits (Shang and Seddon, 2002), as shown below.

Table 1.ERP Benefits

Operational benefits	Managerial benefits	Strategic benefits	IT infrastructure benefits	Organizational benefits
1. Cost reduction	1. Improved decision making and planning	1. Business growth and partnership	1. Business flexibility for changes	1. Change work patterns
2. Enable to process changes and automate business processes	2. Improved performance in different operating divisions	2. Business development Innovations	2. IT costs reduction	2. Improve working patterns
3. Cycle time reduction	3. Better resource management	3. Cost leadership and external links	3. Improvement the capacity of IT infrastructure	3. Build common vision
4. Productivity improvement		4. Generate product differentiation		4. facilitate organizational learning
5. Quality improvement				5. Empower workers
6. Customer service improvement				

However, ERP system has some drawbacks. For example, the low utilization of the system in some departments in a firm, and vendor's responsibilities of technical problems that come within the terms of the maintenance contracts are considered as major problems. Also, ERP projects have a propensity to be large, complex, and costly (Mabert et al., 2001). In addition, ERP system implementation needs a long time pledge from outside experts or a company's IT department. Moreover, the system involves departments in an organisation which inclined to make changes in a lot of business processes. According to Shang and Seddon (2002), putting ERP systems in place need new procedures, staff training, and support from both technical and managerial levels, so company's senior management team should work to increase the usage in the firm by re-formulating the training methods and modifying business processes to better fit the system.

4. Risk Factors Associated ERP Systems Change

Most IT implementation projects take into consideration several key elements of risk, so its likelihood that progress could deviate from the plan at some points of managing IT projects in the life cycle occur. Enterprise resource planning (ERP) implementation risks are explained as project concerns legal liabilities or weaknesses that could cause ERP project failures as they do not comply with the defined plan. Risk management has the capability to handle unexpected deviation from the project (Slevin and Pinto, 1996). ERP implementation project is described as a difficult task and assumes different risks of unanticipated events. This is to say that, although firms adopt ERP system that is required to achieve competitive advantage (Laudon and Laudon, 2012), risks associated with systems changes occur.

One of the most critical risks that can impact ERP system implementation is the technical failures (Ewusi-Mensah and Przanyski, 1991; Somers and Nelson, 2001; Shang and Seddon, 2002; Al-Fawaz et al. 2008). For instance, some IT departments have difficulties in supporting the ERP system due to problems with the support given from service providers of ERP system. This is to say vendor supports are an important factor with packaged software to manage the risks associated with implementing the required system, besides providing and operating an appropriate IT infrastructure. Also, some consultants do not have a good knowledge and experience to help implementing ERP application (Somers and Nelson, 2001; Nah and Zuckweiler, 2003); whereas some project managers lack the skills in implementing ERP systems which involves key decisions about budgets, deadlines, goals and results (Loh and Koh, 2004; Somers and Nelson, 2004; Al-Fawaz et al. 2008).

In addition, teamwork and management support are key success factors in ERP system implementation (Ewusi-Mensah and Przanyski, 1991; Slevin and Pinto, 1996; Kumar and Hillegersberg, 2000; Somers and Nelson, 2001; AlMashari et al. 2003; Nah and Zuckweiler, 2003; Loh and Koh, 2004; Al-Fawaz et al. 2008). Also, lack of re-engineering business processes and workflow is crucial in implementing ERP especially in the early stages of the implementation process (Davison, 2002; Nah and Zuckweiler, 2003; Somers and Nelson, 2004). For example, the business process maps may not be used for any detailed analysis or to evaluate the current use and work practices of software, such as, MRPII and other home grown applications. Further, it may not assess the adequacy of current processes.

Moreover, training employees on how to deal with business processes from the beginning of the implementation process is an important factor in the implementation of ERP Project (Bingi et al. 1999; AlMashari et al. 2003; Nah and Zuckweiler, 2003; Umble et al. 2003; Somers and Nelson, 2004; Woo, 2007). Thus, the presence of risk occurs if employees do not complete the analysis of the forms of training in order to learn how they could benefit from initial ERP system training; business development employees failed to contact the department directors to ensure that their needs and schedules are incorporated into the plans; the inability to handle reports writing and lacking the necessary documentation for the specific job of how to use the ERP system. Nevertheless, the bellow section describes how firms can declare success or failure regarding implementing ERP system. This is by measuring a company's competitive advantage in terms of accounting and economic measures.

5. Competitive Advantage

Competitive advantage in a company occurs when it is capable of creating more economic value than rival firms (Barney, 1986). The ultimate goal of strategic management process is to allow a company to

choose and implement a strategic plan that creates a competitive advantage (Barney and Hesterly, 2010). Economic value is simply the difference between the perceived benefits gained by a customer who buys a company's products or service and the total economic cost of these products or services. Thus, the size and capabilities of a company could be considered to create a company's economic value (Barney, 2007).

5.1 Types of Competitive Advantage

In firms, one can say that competitive advantage occurs when a company creates economic value more than its rivals. Also, competitive parity takes place when a company creates the same economic value as its rivals; whereas competitive disadvantage happens when a company creates less economic value than its rivals (Barney and Hesterly, 2010).

5.2 Measuring Competitive Advantage

A company has a competitive advantage when creating more economic value than its rivals. Economic value is the difference between the perceived customer benefits associated with the purchase of a company's products or services and the cost of production and sale of these products or services (Barney, 1991). However, these concepts are not always easy to import directly, for example the benefits of a company's products or services are sometimes a matter of customer perceptions which are hard for measurement purposes. Moreover, total costs associated with the production of a particular product or service may not be easy to identify or measure (Brandenburger and Stuart, 2003). Despite the real challenges associated with measuring a company's competitive advantage, there are two approaches identified. The first estimates a company's competitive advantage by reviewing financial results, and the second one examines the economic performance of the company.

5.2.1. Accounting Measures

As a measure of a firm competitive advantage, its performance could be calculated by using information from public profit and loss statement, besides a balance sheet figures. A company's profits and loss and balance statement in turn are usually created with generally accepted accounting standards and principles. The application of these rules and principles make it possible to compare the financial results with other companies, even if these companies are not in the same sector (Brandenburger and Stuart, 2003). But, the extent to which that these rules and principles are being applied in generating a company accounting statement, or the extent to which different companies use different accounting principles in creating their statements, then it could be difficult to compare the performance of corporate accounting among these companies. Also, in the global perspective function, these problems can be particularly much difficult when comparing the performance of companies in different countries around the world (Barney, 1991).

One way to use a company's accounting statements in order to measure their competitive advantage is through calculating and interpreting different accounting ratios. Further, accounting ratios could be taken from different figures in a company's financial statements, and then interpreted appropriately, so that describes various aspects of the company performance (Adner, 2002). However, some of the most common accounting ratios can be used to characterize performance of companies, and can be grouped into four categories: (1) profitability ratios, or relationships with any degree of usefulness in the numerator and some measure of size of the business or assets in the denominator, (2) liquidity ratios, or those that focus on a company's ability to meet its financial obligations in the short term, (3) levels of leverage, or ratios focus on the level of a company's financial flexibility, including its ability to obtain more debt, and (4) ratios of activity or relationship that is focused on the level of a business activity of a company (Barney and Hesterly, 2010). Nevertheless, to determine how a company is doing, its accounting ratios should be compared to some standards. In general, these standards are the average of the accounting records of other firms in that sector. Using a ratio analysis, a company earns a return higher than average when accounting performance is higher than the sector average. These companies usually have a competitive advantage, sustainable or otherwise.

5.2.2. Economic Measures

The great advantage of accounting measures is that they are relatively easy to calculate. All listed companies must make their financial statements available to the public (Brandenburger and Stuart, 1996). Even private companies normally will release some information about their accounting performance. From these statements, it is easy to calculate various accounting ratios, and can learn a lot about the company's competitive position by comparing these rates with its industry averages. However, accounting measures of competitive advantage has at least one important limitation (Adner, 2002). Previously, the economic benefit was defined as the difference between the perceived benefit associated with the purchase of a company's products or services and the cost of production and sale of that product or service. On the other hand, an important component of the cost usually is not included in most accounting measures of competitive advantage, which is the cost of capital of a company that used to produce and sell their products (Brandenburger and Stuart, 2003). Further, the cost of capital considered as the rate of return that a company agrees to pay its capital providers to induce them to invest in the company. Once these investments are made, a company can use this capital to produce and sell products and services (Brandenburger and Stuart, 1996). Also, a company must provide the promised return to their source of capital if one expects more investment capital in the future (Barney and Hesterly, 2010). The economic measure of competitive advantage is achieved by comparing the level of a company's returns of its cost of capital to the average level of performance in the industry.

In general, there are two broad categories of sources of capital: Debt (capital of banks and bondholders) and equity (capital of individuals and institutions that buy shares of a company). The cost of debt is equal to the interest the company must pay its debt holders (adjusted for taxes) in order to induce the bondholders to lend money to a company. The cost of capital is equal to the rate of return a company must promise to its shareholders in order to induce these people and institutions to invest in a company (Barney and Hesterly, 2010).

6. Conclusions

The strategy of a company implies its theory of how to obtain a competitive advantage. This theory is based on assumptions about how competition in a profession is likely to evolve. When this hypothesis is consistent with the actual development of competition in that profession, a business strategy is more likely to be able to generate a competitive advantage. However, many companies use the strategic management process for the formulation of strategies consists in choosing, implementing and evaluating the strategy of the company. Also, not all strategies are chosen in this way. In light of recent strategic changes made by the companies, for example, Avon and Amazon, some strategies emerge over time as firms respond to unexpected changes in the structure of competition in an industry. Nevertheless, the strategic management process requires a company to participate in an analysis of external and internal environment by SWOT analysis before a strategic choice can be made (Barney and Hesterly, 2010). This analysis begins with understanding the general environment of the company, assessing the state of competition and pressures affecting the company and then aligning IT and IS strategies that support the chosen business strategy and processes. Kefi and Kalica (2005) propose three domains of aligning IT and IS (known as linkage) (1) content linkage, concerned with the consistency between business plans and IS/IT plans; (2) timing linkage, concerned with whether IS/IT plans are developed after, simultaneously or before business plans; and (3) personnel linkage, concerned with the degree of involvement of the different participants in the two planning domains, business and IS/IT.

In addition, usually researchers assume a type of association where business strategy determines IT strategy (Kearns and Lederer, 2003). Conversely, few studies theorize on how IT strategy could determine business strategy (Henderson and Venkatraman, 1993). Furthermore, most studies do not explicitly describe how business strategy and IT strategy interact. For instance, Hu and Huang (2005) argued that, in the real world, the way in which business strategy aligns with IT strategy remains to be fully explained. Moreover, some scholars (e.g. Chan and Reich, 2007; Masa'deh et al. 2010) called for further adjustments to the concept of alignment by applying new theoretical approaches which have not been explored in the field of IS.

This study has shown that many factors can impact the system changes when being implemented by companies. Based on the literature, many opportunities could impact ERP system implementation such as re-implementing the existing ERP system appropriately and effectively, re-formulating training processes, and modifying business processes. Nevertheless, these benefits are frequently difficult to achieve depending on whether the ERP system is carried out effectively or not. Therefore, ERP implementation is believed to be complex and must be carefully managed to reap the benefits of it.

7. References

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