

Business Use of Information Systems

Introduction

Globalization is taking over the world and the business environment is becoming more dynamic. In such a scenario, adopting information technology and systems is becoming essential to maintain the capability to be responsive in case of change in market (Luftman, 2004). Various authors such as Sambamurthy et.al. (2003) have shown the impact that information systems have on performance of companies. At the same time, if the information systems of a firm are old and outdated, it can impact the ability of a firm to compete in the dynamic environment. Companies in fast evolving industries such as fashion retail and electronics need to constantly innovate and modify their offerings. These companies are dependent on information systems to obtain the edge and faster turnaround times. For example, Zara has acquired the capability to finish the entire production cycle (designers' board to retail stores) in two weeks McAfee et.al. (2004).

However, there are often problems encountered while developing information systems and then using them in order to gain competitive advantage. Managers often feel that the information system employed are not being effective and are not providing value for money and time spent. This report looks at various factors that are responsible for this. The case of Royal Bank of Scotland BPR is analyzed to provide an example of how various factors can impede an organization's effort to successfully derive value out of new information systems.

Impact of Information Systems on business performance

Before 1990s, most of the studies concluded that there was little impact of Information and Communication Technology on financial performance of various companies (Yosri, 1992; Strassman, 1990). These authors found no evidence of Information systems having an impact of profitability and other performance measures such as market share, productivity and new market penetration.

Studies conducted from 1990s onwards started showing positive relationship between Information Systems capability of companies and their outputs. Gilchrist et.al. (2001) analyzed

the impact of information technology on manufacturing companies and concluded that information technology increases productivity and that this contribution per dollar spent is much higher than overall contribution of the total capital. ICT helps companies in the following ways:

- **Marketing:** Marketing research and analysis capabilities have helped companies identify new opportunities and has allowed companies to tap those opportunities. Company websites act as an interface between the company and the outer world, while taking the company to customers is a cheaper way. This along with online based market techniques have helped companies reach out to customers and promote their products and services.
- **Finance:** Various software packages allow companies to keep track of their finances by accessing the information when required and assess customer and spending patterns.
- **New working avenues:** Work from home and remote conduct of business has helped companies retain employees and conduct business at distant locations. With the help of communication systems, companies can become more flexible and productive.
- **Production:** Manufacturing companies benefit highly from ICT systems as it can help in setting production schedules and improve efficiency of various processes.

Apart from these systems, ICT impacts almost every aspect of business, improving efficiency and productivity. However, it comes at a price that can be substantial. Companies need to identify their requirements and then choose from various information systems according to their budget and requirements. However, many companies fail to derive value out of the investment made in the information systems. Next section discusses various reasons for this.

Reasons of failure to derive value from Information systems

There are various technological, organizational and financial reasons why companies are unable to derive value out of the investments in the information systems. Some of the reasons are:

- **Escalation of costs after planning:** Information systems project are difficult to estimate and in many cases, the final cost of the project overshoots the initial estimation. This is due to delays, new requirements and lack of coordination between management and execution teams. The decision to implement new information systems would have been

taken based on the estimated budget. Any increase in cost after that would reduce the value for money obtained from the project.

- **Limited period for competitive advantage:** Sustaining the advantages obtained from incorporating new information system can be difficult, especially in strategic applications. In such a case, many times competitors quickly copy the innovations adopted in the form of information systems. This leads to dissipation of competitor advantage gained as a result of the information system. Money spent on information system, therefore, would provide advantage only for a short duration.

For example, early e-commerce companies introduced features such as online shopping cart that provided them a competitive advantage due to the ease of shopping. However, this feature was quickly copied by all the players in the field, thereby negating any competitive advantage.

- **Wrong system selection:** Companies may choose systems that are unsuitable or complicated for their requirements. In such a case, companies may need to spend additional money to adapt the acquired system according to their requirements or go for a complete change, thereby doubling the amount spent.

Companies may also choose expensive systems when simpler ones can do the job. This would lead to increased spend to achieve the same functionality.

- **Lack of involvement from all stakeholders:** New systems have a direct impact on many stakeholders including senior management, middle managers and line workers, as well as suppliers and customers. Support from all these stakeholders is necessary to derive value out of a new information system. Often, old processes are tough to change because of human inertia. People comfortable with old processes continue with them even after implementation of new and advanced ones. Getting all the stakeholders on board before implementing the system and making sure that they understand the necessity is essential for success. Similarly, suppliers and customers need to be trained to interface with the new systems. All users of the system should be provided training and a transition plan should be put in place.

- **Addressing the wrong problem:** A new information system is not a magical solution of problems of a company. If a wrong problem is being addressed, the new system is bound

to fail in terms of value generated. Before finalizing the system required, the basic issues causing the problems need to be identified and then the solution should be designed.

- **Old legacy systems:** If companies try to modify the old legacy systems to suit their current needs, they may end up with scenario where lot of investment lead to a system that is not very useful. Lack of understanding of various options and incorrect decision over whether to acquire new system or improve existing ones can see money going down the drain.
- **High level of organizational politics:** Budget for information systems is constrained in companies and often various departments compete with each other to get their information systems upgraded. If this decision is taken based on how influential is bid from a particular department rather than sound financial analysis, the company is going to lose out on deriving maximum out of the investment. There might be specific department or people favored by IT manager or director, and this may lead to clouded judgment regarding implementation of new information systems.
- **Internal resistance:** There might be resistance from people who are not comfortable with new systems or who consider old systems to be more capable. In case of lack of consensus, if different users end up using different processes, it can decrease the efficiency of an organization, rather than improving it. Adopting new system may lead to job losses, inviting further resistance from certain quarters.
- **Lack of proper training:** New systems cannot be useful unless employees know how to use them effectively. Lack of proper training would prevent companies from successfully implementing new systems.

Actions to ensure the success of information system projects

Various actions can be taken to ensure success of a new information system. However, based on the above discussion following actions are necessary and imperative in order to ensure success of information systems in a company:

- Identify the core issues causing a problem and lay out the potential benefits derived from the new system. Total increase in revenue and/or saving in cost should be calculated

based on these benefits. This would give the maximum amount that is available for investment in the new system.

- Discuss the new system with various stakeholders and make sure that they understand the need as well as effort required with the new information system. There should be no surprise for anyone at any stage during and after the implementation of the new system.
- Prepare a proper transition and training plan. Make training and skill development of employees part of the overall contract with the vendor.
- Identify the impact on various users and schedule a session with them to minimize the impact.
- Take feedback from top management, middle level managers and other users regarding the new system and make sure that the system is going to address the requirements.

Conclusion

Impact of information systems on business performance has been studied by various scholars. While initial research did not establish a clear link between the two, research post 1990's establish a strong positive correlation with information systems showing a positive impact on every aspect of business.

However, many companies feel that the investment on information systems failed to provide value of money. Reasons vary from financial factors such as escalation of costs to technical factors such as legacy systems. Organizational factors are often the biggest barriers and include factors such as lack of employee involvement and transition plan. Manager in charge of implementation of these systems need to address these issues before and during the implementation.

Case: Royal Bank of Scotland

Introduction

During late 1980s, increased competition, mounting bad debts, deep economic recession and a drop in profits forced Royal Bank of Scotland to change its processes and make them more robust via Business process reengineering with the help of new information technology. This project was named the Columbus project and was to change the way the bank did its business. This project was to change every aspect of work including:

- Change of structure with introduction of corporate, commercial and retail banking units
- New roles in management
- Introducing a system of centralized information and specialist centers
- Change in human resource practices and policies to become more customer oriented

RBS committed more than 100 m pounds for developing new technology that would support this change. However, the company noticed several barriers while implementing the Columbus project. These barriers are discussed in the following section.

Barriers to successful implementation of change project

Major barriers to the successful implementation of the project Columbus at the Royal Bank of Scotland can be divided into organizational, managerial and technological factors. These factors are discussed below:

Organizational

- **Traditional practices:** The procedures and practices at Royal Bank of Scotland were traditional and conservative. This inhibited any effort towards undertaking large scale re-engineering activities.
- **Change in status quo:** Re-engineering threatened the way things worked and impacted existing working practices and career paths. This turned many employees against the change as their commitment to the project went down.
- **Segregation of business units and technological division:** This hindered re-engineering efforts as business units and technological division of RBS looked to forward their own

interests. Senior managers at business units considered technological division as out of core business and secondary to their own units. There were attitudinal differences and many senior managers believed outsourcing to be a better option than in house development.

- **Complexity:** Size of RBS was large and there were huge complexities involved with the project. According to the author: *“the multi-disciplinary holism at the heart of BPR in the bank context turned out to be little more than a melting pot of conflicting disciplines, coalitions and interests across managerial and technical groups”*. Various departments functioned in different ways and bringing them under common processes was a big challenge.

Managerial

- **Lack of apparent urgency:** RBS was profitable when project Columbus was commissioned. Employees did not have access to the apparent challenges that top management identified. Hence, they did not understand the need for change and as a result were not as committed to it as was the top management. Many people at managerial level were not convinced of the environmental pressures that would merit change of such a huge scale.
- **Loss of jobs:** There were a huge number of job losses taking place as a result of the change project. This caused a lot of unrest and uncertainty about the future. The project also sent contradictory messages, since job losses were happening while the project was touted as empowering.
- **Contract workers:** Hiring of contract workers was not looked at favorably by existing technical staff. These staff members, who were already jittery with cut in number of employees, became wary of contractors who brought new working styles.
- **Lack of training:** The contractors were not willing to impart training to the in house employees. Contractors did not consider training as a part of their work and at the same time they were too stretched to devote any time to training. Moreover, they did not want to transfer their competency to the staff members. Lack of training meant that the staff did not acquire the skills needed to run the new system and were found lacking once the contractors left.

- **Faulty change process:** Senior management at RBS used contractors, project management and lower level managers to drive change, rather than using a top down approach.
- **Lack of skills:** Skills of managers at RBS were outdated in relation with the new technology being adopted. This led to poor quality of work as well as delays in delivery. There was a lack of understanding at senior management level of the technical issues involved and the time it would take to resolve them.

Technological

- **Legacy systems:** There were a lot of legacy technological systems at RBS and integrating them with new technology was a big challenge. An example of such challenges was the legacy mainframes that had to be interfaced with client server technologies.
- **Inappropriate project methodologies:** Few techniques and methodologies existed at RBS which reflected the complex and large scale re-engineering process. Development was heavily dependent on trial and error rather than formal methodology.

Conclusion

Apart from the factors described in the previous section, there were usual factors associated with every major change process. Project Columbus was to bring major changes in strategy, structure, culture, skills, management styles and reward system as well as compensation bands. These caused huge political and cultural issues.

This case is a good example of why major projects driven by information systems tend to fail. These projects can cause major changes and face hurdles due to organizational, managerial and technical issues. Such projects require commitment from senior management as well as managers at other levels. Still, there are various practical challenges that emerge while implementing such projects and technical staff and business units' managers need to solve them on a constant basis.

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