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ORGANIZATIONAL ASPECTS OF TRANSFORMATION TO E-BUSINESS: A CASE STUDY

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ABSTRACT

The topic of e-business is increasingly attracting the attention of software engineers, system researchers and, most interestingly, business practitioners. However, the organizational aspects of e-business transformation (e-transformation) have received little attention. Success is strongly related to the effective strategies for planning and managing various key success factors. This paper investigates three of the major organizational aspects of the e-transformation process, related to the core assets of any business: people, technology and business processes. Here, we focus on the effective change management strategies including resistance to change; the successful adoption and diffusion of new technologies; and the successful reengineering of business processes for the new e-business environment. We report empirical results from an industrial case study conducted in a large multinational professional information solution provider in Sydney over a period of two years using the Action Research methodology.

KEYWORDS

Organizational Aspects, E-business, E-commerce, Technology Adoption

1. INTRODUCTION

With the rapidly increasing usage of the Internet and Web technologies, different organizations make use of the Internet in many different ways such as solely advertising, providing services with limited electronic transactions and conducting full collaborative electronic businesses with both customers and partners. In general, the business utilization of the Internet can be classified into four different levels, E-information, E-commerce, E-business and C-commerce.

E-information, *a.k.a. brochureware*, is nothing more than just presenting the business's catalogue of products and/or services online. For example, an airline company could have a web site just to display a timetable with all their flight details without any facilities for making electronic transactions. The next level of utilization is E-commerce, which is typically a two-way transaction, the sell-buy process on electronic networks. For example, the airline company can offer tickets for sale that can be purchased by customers using electronic payment facilities. It is worth noting here that the E-commerce level is restrictive and does not fully encompass the true nature of electronic business. This introduces the next usage of the Internet, E-business, that can be defined as that using electronic mechanisms to conduct business transactions between an organization, their customers and their partners. Rutkowski *et al.* (2002) define this level of usage as the transformation of key business processes through the use of Internet technologies for conducting electronic business with both customers and trading partners. For the above airline company, moving to the level of E-business will enable both customers and trading partners, to do more than just buying a ticket. Consequently, E-business represents a rich set of activities that are much more diverse and technically complicated than E-commerce, having two major foci: Business-to-Business (B2B) and Business-to-Customer (B2C) (Fairchild and Peterson, 2003). The final layer of utilization is the collaborative commerce or 'C-commerce'. Here, many businesses come together via a portal or similar mechanism to create an E-market, thus creating a collaborative network of trade partners who operate more closely and seamlessly as one value chain, connecting their business processes with other companies as a catalyst to strong business growth. C-commerce is still in its infancy stage and is seen by many researchers and practitioners as the second generation of E-business and the next phase of the Internet's impact on business (Kownslar, 2004).

2. KEY BUSINESS DRIVERS OF E-BUSINESS

The numbers of individuals and organizations that are using the Internet and web technologies is not only massive but also rapidly increasing. Sultan and Chan (2000) assert that, over the last 20 years, many of the changes in organizations have been predominantly driven by two factors: globalisation and technology. Burn and Loch (2001) confirm that, in the 21st century, business transformation to globalisation and e-business is one of the major reasons for organizational change. Other key business drivers that have emerged for e-business are trade barriers, collaboration among supply chain partners and environmental changes. Unhelkar (2003) emphasizes the importance of moving to an e-business environment by stating that few businesses will be able to avoid becoming an e-business in the light of such moves by their competitors. Those that do accept the challenge will benefit from implementation of the new business approach.

3. EFFECTIVE CHANGE MANAGEMENT STRATEGIES

A change management strategy covers a variety of disciplines that include planning, managing, scheduling, assigning, monitoring and analyzing the changes (Hammer and Champy, 1993). Often, the creation of a change management strategy is overlooked and the crucial issues related to assisting people in the transition and associated cultural issues that influence the change are not addressed (Serour and Unhelkar, 2003).

An effective change management strategy must include a specific plan for managing the transition period to e-business. The transition period in any change process is probably the most difficult time for most of the people involved. During this period, people have to work harder to keep both the old and new systems running. Management's desire to keep the old system running during the transformation process is a technique for managing the potential risk factors. At the same time, they desire to keep the new system evolving and keep the momentum for the change going.

Human and organizational cultures play an imperative role during any organizational change due to their direct and strong involvement and impact on every business process. Since the e-transformation process includes elements related to human and organizational cultures, then the organizational change management strategies for e-business must include a management plan for effective organizational and human culture change. Here, we examine a number of the human and organizational factors that may strongly impact on the organizational change management strategies of transformation to e-business.

3.1 Human Culture and Resistance to Change

In general, changes are always accompanied by natural resistance, as people are driven out of their comfort zone (Bridges, 1995). Some people perceive the organizational change as a direct threat to their jobs or as a challenge to their competence of carrying out the new jobs. Changing human values and beliefs is proving to be one of the most difficult aspects of any serious attempt to transform business performance (Bridges, 1995). Since e-business is seen as a totally new way of conducting business, people need to change their work culture to be able to move effectively to their new e-business environment. Hence, the human culture and associated resistance to change is considered as one of the foremost human factors that needs to be addressed properly and early during the transition process since resistance to change can negatively influence other aspects of the transformation to e-business. Consequently, an effective and well-planned e-business change management strategy must address the human issues that are considered as a vital business component required in the transition to become a successful e-business (Ginige *et al.*, 2001). In most cases, the organizational willingness and competence to manage their human issues well during an organizational change can be the difference between success and failure.

3.2 Organizational Culture and Management Commitment

Whenever a new way of 'doing things' is adopted, it will have its impact on the organizational structures within the project and also within the organization, thus effecting a culture change. The reporting structures, the communication channels, the chain of responsibilities and authorities and the way in which people relate

to each other are some of the things that will change. Consequently, organizational culture is set to play a crucial role during the transformation to e-business environment (Serour and Henderson-Sellers, 2002).

Transformation to e-business is a long-term investment issue and, like all business investment issues, the chance of success is very slim unless senior management is committed to the project as a critical success factor in any organizational change (Meredith, 1987). An e-business change management strategy will not happen without the commitment and effective and strong leadership of both senior and middle management (Rifkin, 2001). For a successful transition, management must be dynamically involved in each and every phase of the process. In addition, they must explicitly demonstrate their support and allocate sufficient resources to the project. Organizational commitment and support cover a large number of issues vital for a successful transformation including providing people with adequate education and training, providing satisfactory resources including human and demonstrating strong leadership.

4. SUCCESSFUL ADOPTION AND DIFFUSION OF NEW TECHNOLOGIES

Information Technology, in general, is seen by management as an essential means to advance and compete in today's new e-world. Technology is only a tool; what makes the difference in practice is the individual who makes use of the technology and the culture that motivates people to realize and understand the advantages of adopting such a technology (Serour *et al.*, 2002). Technology by itself has no value unless it is coupled with people's acceptance and their willingness and readiness to utilize it in the most effective manner. Therefore, the successful introduction of new technology and/or business approach to organizations requires an effective blend of good human and technological resources and abilities. People with high morale, willingness and readiness to adopt and diffuse an appropriate technology can make an organizational change successful.

There is no doubt that moving to e-business is rapidly becoming well accepted as the best approach for organizations to survive and compete in today's global market (Flurry and Vicknair, 2001). For a successful e-transformation, organizations need to adopt and diffuse more than just the Internet and web technologies. E-business practices build on a set of software applications that make e-business possible and practical such as Customer Relationship Management (CRM), Enterprise Resources Planning (ERP) and Supply Chain Management (SCM). Whether organizations decide to purchase these applications as off-the-shelf or develop them in-house, they ought to implement a formal software development process/method in practice. A method can be utilized to customize and maintain the pre-developed applications or to completely develop new systems to support the new e-business processes (Kangas, 2003; Koh *et al.*, 2004). Also the successful adoption of a new technology requires that IT people fully understand their organization's strategic goals and objectives. Team members should be educated about the new technology and be convinced of its strategic significance (Ushakov, 2000; Serour and Henderson-Sellers, 2002).

One of the most important issues that must be considered when adopting new technologies is that people must trust these technologies and also feel comfortable and confident to use them in practice. These objectives can be achieved by introducing the new technologies in a professional and effective manner, providing people with proper and adequate education and training and allowing them to participate in the process of assessing and acquiring new technologies.

5. SUCCESSFUL REENGINEERING OF BUSINESS PROCESSES

A substantial e-transformation, as achieved by shifting all business processes to electronic ones requires a complete reengineering of business processes as well as handling of crucial new processes that emerge due to e-transformation (Gates, 1999). Organizations that are moving their practices to e-business are undergoing massive restructuring efforts to cope with a changing competitive environment. Fundamental to these efforts is the redesign and change of business processes (Paper *et al.*, 2002).

Moving to e-business and, consequently, adopting Internet and web technologies not only needs a radical reengineering of existing core business processes but also the generation of new ones to support the new business environment. For example, CRM is a vital process for e-business due to the fact that business power is shifting from producers to customers. Therefore, organizations must recognize this power shift and create a

customer-focused strategy (Motiwalla and Khan, 2002). As another example, ERP is vital for linking together all core activities of an extended enterprise including manufacturing, stock control and purchasing. In addition, it offers the potential to grow into an important underpinning of the real infrastructure for any organization thinking of building an e-business platform for the future (Jackson and Harris, 2003).

6. CASE STUDY - BACKGROUND

The organization under study is a well-established, multi-national legal publishing company. It is a leading publisher of legal and tax information to the professional services industries. In the past, the organization's focus has been on the production and distribution of printed material and compact discs; about three years ago, a decision was taken to transform the organization into a provider of on-line information in its domain, requiring a transformation to e-business. This e-transformation has meant that the strategies of the organization's different business processes are aligned; the organization as a whole is dependent on its capability of delivering effective products for ultimate customer services. The three major organizational aspects of the entire e-transformation process were identified by senior management as follow:

- Effective change management strategies.
- A successful adoption and diffusion of a formal Object-Oriented (OO) software development process along with the required elements of Internet and web services technologies.
- A successful reengineering of existing business processes to support e-business.

The e-transformation project was driven by a strong business case to enable the organization to compete effectively in their market place. A business case was approved by senior management to place approximately 60 databases online.

6.1 Case Study and Action Research

The Senior IT manager approached the Centre for Object Technology Application and Research (COTAR) at the university to assist them in planning and managing their transformation process to e-business. Action Research (AR) was chosen by the COTAR team as its research methodology since AR offers the ability of the researcher(s) to contribute both to the practical concerns of people in their immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework (Rapoport, 1970; Lewin, 1974; Susman and Evered, 1978; Hult and Lennung, 1980; Argyris *et al.*, 1985; Reason, 1993; Lau, 1999). The action research method focuses on the collaboration between researchers who are aiming to test and prove their theory and practitioners who are aiming to solve their immediate problem(s) (Avison *et al.*, 1999). In other words, AR has the dual aims of providing a mechanism for practical problem solving (Action) and for generating and testing theory (Research). Elden and Chisholm (1993) argue that the dual interest of AR provides a win-win scenario for both researcher and participants and plays an effective role in solving practical problems by increasing the understanding of a given social situation through the direct involvement of the researcher in an organisational change that can also positively affect future decisions and actions based on better understanding of the problem(s) in hand (Hult and Lennung, 1980; Avison *et al.*, 1999). As a result, action research, as an effective qualitative research method, has been widely adopted and utilized for studies in different disciplines including Information Technology (Klein and Myers, 1999; Lee, 1999). Moreover, AR is regarded by many as an ideal post-positivist social scientific research method for Information System research (Baskerville and Wood-Harper, 2000).

6.2 Case Study and Change Management

In the organization under study and during the introduction of a plan for change management, most of the middle management group exhibited a strong resistance to the proposed change due to the fact that they were fully committed to other projects and could not spare any time to participate in the change. One of the strong signs of resistance to the change, as noted by the researchers, was the last minute apology for not attending the change management meetings. It was clear that these individuals were not convinced with the reason(s) for undertaking change, due to poor understanding on their part.

During the introduction of a formal OO process to the IT department, some members of the development teams showed resistance to changing the ways in which they followed an ad-hoc software development process. The project leader for the on-line team opposed the change, arguing that following a process is purely an academic concept not suitable for practice. Furthermore, he claimed that following a process would definitely slow their production down. Again, it was quite clear that the developer's resistance to adopt a new OO process was an obvious result of their lack of understanding of the rationale behind the proposed change. IT personnel were not involved in the initial stage of the transition planning and were asked to change their work culture without a full explanation as to why this was necessary.

As a result of analyzing the above incidents and many others, it was apparent that senior management invested a great deal of time in selling the solution to its people with minimal effort to sell the problem itself. It was also observable that people were not offered the chance to play a part in the planning for the change that negatively related to their behaviour regarding their unwillingness to participate in it.

After nearly three months, senior management decided to revise the change management plan to address the problems related to resistance that had been observed as occurring. As a result, senior management appointed a full time team headed by a senior manager with appropriate and diverse skills to drive the change management process. The now-empowered change management team made a few decisions to support and speed up the change process. Firstly, they commissioned an outside professional firm to conduct a formal assessment of the current organizational and human culture. Understanding the current state of an organization is always an obligatory starting point towards a successful change (LaMarsh, 1995). Secondly, they conducted a number of special sessions to formally introduce the proposed changes. During these sessions, everyone was encouraged to participate not only to plan the change but also in making decisions, giving them ownership of the process. Friday (1994) claims that people are not naturally resistant to change; "we seldom get resistance when we get the people who do the work to come up with solutions that will achieve enormous improvements in performance". Thirdly, they decided to change the role and responsibilities of middle management during the transformation to e-business. This had shifted from monitoring and controlling to collaborative, support functions, helping teams solve problems and creating environment for personnel to work more flexibly.

While it is recognized that culture change is a lengthy process, the change management team emphasized the fact that they cannot ignore the importance of the pace of cultural change. It must be well-managed to be fast enough for business benefit but also slow enough to stay under control. In addition and as a very wise business decision, the change management team established a new web site as part of their Intranet as an open communication channel between management and everybody within the organization. This new communication channel was used very effectively by almost everyone for exchanging ideas, brainstorming concepts regarding changes, reporting problems to management and, most importantly, it was used by management to keep people updated on the progress of the transition process.

All these new enhancements to the organizations change management strategy were very effective techniques to eliminate people's resistance to change and make them feel confident comfortable and motivated to participate. In addition, they created an environment that provides each staff member with clear understanding, expectations, responsibilities and resources to accomplish their goals and foster a climate that allows the expression of all points of view.

6.3 Case Study and Technology Adoption

The IT department within the case study organization has two offices in Sydney and Canberra with a fairly small development team in each location. Each team is made up of a mixture of experienced and inexperienced permanent staff and a number of contractors. The IT department was assessed by a professional firm at level 1 of the SPICE scale (ISO/IEC, 1998). Prior to this study, all software development was done in a fairly ad hoc way depending on the experience of the developers, thus causing major problems especially with contractors. These problems manifested themselves in a number of different ways: mismatches in communications when discussing different aspects of the system, time wasted due to ad hoc/informal on-the-job training and inconsistencies in the final design.

With the organizational move to e-business, the IT department was commissioned to develop a new set of web-based software applications urgently needed for the organization to offer their products on-line – a direct response to their competitors move to e-business. This imperative for product enhancement was to be

realized through the adoption and diffusion of Object Technology (OT). Senior management, therefore, decided that an OO software process along with a recognized modeling language and CASE tool must be officially introduced to develop software applications for e-business. In addition, they appointed a part time team (IT champion team) with appropriate and diverse skills to drive the IT transition process.

The first attempt was initiated and enforced by one member of senior management team to introduce the Rational Unified Process (RUP) (Kruchten, 1999), with which he had some previous experience. However, this attempt was strongly resisted by most of the IT personnel for many reasons. Some claimed that RUP was too large to learn and comprehend without proper training over a long period of time. Others complained that this process was much too "heavyweight" for their type of software development. From a research point of view, this was an obvious result due to several factors that negatively related to the adoption process:

- The lack of a formal assessment of the contemporary software processes in order to select the most appropriate one for the organization's needs.
- The lack of people's participation in the whole process of selecting technology elements that had a negative impact on their feeling of ownership and sharing values with their organization.
- The lack of resources including people and time.
- The lack of top management commitments and support.
- The poor introduction of the new software engineering process that was to be adopted.
- The lack of adequate professional education and training.

Not surprisingly, these factors contributed significantly towards people's negative attitude to the changes and hence led to the termination of the first attempt. Soon after that, champion team with the full authority of senior management decided to launch a new project with significantly increased support:

- Appoint the organization's IT director to lead the champion team for the transition process.
- Commission an outside consulting firm in conjunction with IT personnel to conduct a formal assessment for various technology products for recommendation.
- Allocate enough resources to run adequate and undertake professional education and training.
- Allocate sufficient and dedicated funds and to acquire the technology products when needed.

An OO process, OPEN (Graham *et al.*, 1997), was selected for adoption along with the UML notation for software modeling. All planned education and training sessions were fully funded and a CASE tool plus training was commissioned. On completion, an official launch took place in both Sydney and Canberra in April, 2002 to announce the success of the OO transition. The IT transition process to an object-oriented software development environment to support the new organization's e-business processes was declared a complete success by both senior management and the development teams.

6.4 Case Study and Business Process Reengineering

During the transformation process at the organization under study, the existing business and technology processes relating to their customer support were assessed for major changes to support their new e-business environment. Examples of these processes include customer information maintenance, customer status review and customer support facilities. In addition, a number of new supportive processes were identified and a decision was made to implement them. These new processes include on-line customer communication, customer notification and customer comments and feedback.

Following the organizational strategic plan to change their status from a service-focused to a customer-focused organization, management first recognized the Customer Relationship Management (CRM) core processes likely to be impacted by the e-transformation. They then identified what new business processes would be required. A new secure website was carefully designed and implemented with simple navigation and communication tools. Customers were offered a periodical newsletter to keep them up to date and in continuous contact with the organization. A feedback channel was established for customers to send their comments and concerns straight to the appropriate personnel within the organization. As a result, customers were able to login to a secure web site to view and maintain their own information. Senior management declared the early signs of success by saying "our customers become part of our organization; this is a great achievement of keeping them in continuous active communication with us".

Supply Chain Management (SCM) was the second core process to be engineered due to its significance impact on the e-business trade. As a result of the successful reengineering of the existing SCM, existing customers were offered a number of new efficient facilities to conduct B2C. They are able to browse through

the organization's product catalogues with adequate brief and/or detailed information. With new secured credit cards facilities, customers can place their orders online and make immediate payments. For people who still in a doubt of the Internet security, a special form was designed and uploaded to the web site that can be downloaded by customers to fill in their payment details and then return for processing by fax or ordinary mail services. In addition, customers may revisit the organization's web site to follow up on their orders, check current order status and change any particular details prior to shipment.

Using the capabilities of the Internet and web services, the organization was able to establish a new selling chain through customer request and acquisition. With this, customers may request local and/or international products not in the product catalogues. This new service led to the organization's customer network growing by 18% by the end of the first year. Also, the procurement process has gone through a major update and been reengineered from its traditional nature to an e-procurement process. A new organizational Intranet has been implemented with a secure portal access to all suppliers. These private and government suppliers are able to upload their products directly to the organization's repository using new secure and safe technologies. They are then transformed to an XML format that can be sent to the appropriate reviewers and editors. Reviewers check the received documents for any transmitting errors and editors add value with the title, authors, a brief description and source of supply before they become available for sale. Without doubt, the new e-procurement business process has speeded up the entire process of acquiring products from suppliers all over the world. It has also significantly decreased the time for reviewing and adding value to the raw products to distinguish them from their competitors. The new e-procurement process not only decreased the cost of acquiring and processing their raw products but also, very effectively, enhanced their ability to meet their customer demands.

7. CONCLUSION

More organizations are now realizing that transforming their traditional business processes to e-business is not an option any more; rather, it is mandatory in order to survive and compete in today's global e-market. While, the transformation process to e-business is inevitable, it is considered to be risky and unpredictable. Therefore, substantial attention and precise planning must be well thought-out in advance to ensure a fruitful result. This paper has highlighted the importance of moving organizations to e-business and emphasized the imperative role of the organizational aspects of transformation to e-business. Based on an industrial case study, the three major aspects discussed in this paper were: change management; technology adoption and business process reengineering. We find that by considering these organizational aspects in great detail, the chances of successful transformation to e-business are significantly enhanced.

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