http://ansinet.com/itj

ITJ

ISSN 1812-5638

INFORMATION TECHNOLOGY JOURNAL

ANSInet
Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Information Technology Journal 9 (4): 632-642, 2010
ISSN 1812-5638

Forms of Organizational Change and Accountant Participation in the SAP Implementation Process: A Case Study from Saudi Arabia

Abdul-Rahman A. Al-Muharfi
College of Management Sciences and Planning,
King Faisal University, P.O. Box 1760, Hofuf 31982, Saudi Arabia

Abstract: The main objective of this study was to describe and explain how accountants react during forms of organizational change as a result of their participation in the SAP implementation process. This study drew conclusions from a detailed analysis of an in-depth interpretive longitudinal case study of one of the first Saudi industrial companies to implement SAP. The organizational change followed a pattern of long periods of gradual change punctuated by short periods of radical events that forced the project to transform rapidly. The study identified the sources of radical change resulted from the content of the SAP project, the internal context of the organization in which SAP was implemented and the external context of the environment in which it functioned or combinations of these sources. This was a thorough investigation of accountants' reactions as a measure of organizational change through the development of a theoretical framework which is able to describe and explain the change.

Key words: Forms, organizational, accountants, SAP implementation, change, reactions

INTRODUCTION

SAP (Systems, Applications and Products in Data Processing) is a complete enterprise-wide software system. While in the past separate applications were used for different business functions such as accounting, marketing, human resources and supply chain. Today, the SAP system integrates all necessary business functions into a single database that enables organizations to streamline their business processes and share information more effectively and efficiently across the organization. SAP AG, the company which developed the system, claims that it can be used to manage change in organizations, restructure corporations and improve businesses (Quattrone and Hopper, 2002). However, SAP's ability to transform organizations should not be taken for granted but should be subject to careful investigation. Indeed, there is a growing body of academic studies into SAP-related fundamental change in organizations (Caglio *et al*., 2000; Cailaway, 1999; Fahy, 2001; Langenwalter, 2000; O'Leary, 2000).

Forms of organizational change refer mainly to the frequency of change taking place throughout the lengthy process of SAP implementation, which sometimes lasts years. This ongoing change of varying magnitude can occur in diverse forms at different paces. It has been claimed that the intention of any organizational change is to move the organization from its present situation to a more desirable one (Beugelsdijk *et al*., 2002). The organizational change theories view change in three basic forms: radical, gradual and punctuated equilibrium (Boudreau and Robey, 1999; Romanelli and Tushman, 1994). This study considers the last of these, which combines gradual and radical change, seeking to build a comprehensive model to describe and explain the SAP implementation process.

The success or failure of SAP implementation rests not only on the technical factors but also on social ones such as stress (Wastell and Newman, 1996), commitment (Newman and Sabherwal, 1996), change and resistance (Hirschheim and Newman, 1988), learning (Pentland, 1995), user participation (McKenn and Guimaraes, 1997) and user interaction with others such as system specialists (Al-Muharfi, 2003; Newman and Noble, 1990). The SAP and accountants are often considered together, since accountants are increasingly called upon to participate in the integration of SAP technology with accounting and other organizational processes (Dillard, 2000). Recent studies have investigated how social factors such as accountant participation and reaction to the system could affect the process of SAP implementation and organizational success or failure (Newman and Noble, 1990). Therefore, this research aims to answer the following question:

- How do accountants' reactions to diverse forms of organizational change differ over time as a result of their participation in the SAP implementation process?

The main objective of this research was to investigate in depth the forms of organizational change triggered by the adoption of a SAP system. After identifying these forms, it also investigated how

accountants react to change and whether their reactions differ in relation to the forms of organizational change. Success or failure of the process is assessed by measuring accountants' reactions to change. A case study from the Saudi industrial sector illustrated these ideas and formed the basis of a conclusion.

MATERIALS AND METHODS

This research used an exploratory case study to understand how accountants react to change during their participation in the lengthy SAP implementation process. An exploratory approach was useful in this study because there was little information on SAP implementation in Saudi Arabia. The single case study is of a Saudi industrial company referred to as XYZ because its owners did not wish its identity to be revealed. The selection of the case study is justified by three factors: (1) The company granted the researcher almost open access to its data. (2) To some extent, it could be considered as fairly representative of other Saudi industrial companies, almost all of which have certain fundamental similarities. (3) The XYZ company has implemented almost all SAP modules, which makes it a good case of SAP implementation to be considered.

The study also adopted the process approach which focused on investigating sequences of dynamic events occurring alongside the SAP implementation process. It explores the temporal dimensions of change, i.e., how it unfolds over time (Burns, 2000; Kimberly and Bouckikhi, 1995), placing importance on studying how antecedent situations affect later events. This approach also considers it important to study the change process in its context, to gain a reasonable understanding of broader phenomena - in this case, the overall reaction of accountants to change (Walsham and Waema, 1994). Outcomes like successful implementation can then be explained with reference to the sequence of events in the implementation process and XYZ accountants reactions. This choice is driven by the desire to study SAP implementation in its natural setting, to comprehend the complexity and the temporal nature of the process and to do so by exploring an aspect on which relatively few researchers have worked, especially in Saudi Arabia.

Data collection: Data was collected in forty unstructured formal interviews lasting between 60 and 90 min in addition to many informal conversations about SAP implementation and related changes. The interviews were audio recorded, transcribed and followed by the interchange of telephone calls and emails. Data was also collected from official documents, selected archival records and direct observations, in order to allow triangulation. As a final check of the accuracy and validity of the analysis of that data which covered a historical period of time, a draft of the transcriptions was handed over to the interviewees for their verification.

Data analysis: Data was analyzed using the interpretative method (Orlikowski and Baroudi, 1991). The expected changes triggered by SAP implementation are not uniform or consistent (Newman and Westrup, 1999). So, there is no claim to be able to generalize the research findings based on personal interpretations of such complex circumstances, beyond seeking a deeper understanding of the case under study which could provide the basis for more accurate explanations and further studies. The overall steps of case analysis are:

- Data collected was gathered, organized and prepared for general understanding
- The research analysis looked for themes and categories that related to accountant reactions to change and motives for such change
- Long periods of accountant reaction such as wait and see were interpreted as gradual change while motives caused account statues to change were interpreted as radical change
- Sources of change were identified as from content, context, or both
- Present the research interpretation of the case in narrative description and explanation of the overall analysis

SAP system: Many researchers have noticed that SAP implementation is a lengthy and complex process (Taylor, 1998). To minimize the complexity of the implementation process, SAP provides business processes templates in the form of best practice that suggests how the organization should perform its activities and functions. SAP AG claims that these are suitable for adoption by organizations in many different industries (Scapens and Jazayeri, 1998; Taylor, 1998). However, studies showed that SAP best practice guidelines are not helpful in many cases and may add substantial complexity and cost to an already complex and costly system (Hirt and Swanson, 1998; Scapens and Jazayeri, 1998; Solimon and Youssef, 1998). In many cases this approach introduces rigidity to the implementation process, requiring the expenditure of effort and money on customization which may delay the project or even cause it to fail (Poston and Grabski, 2001).

SAP's latest product (SAP R/3) is designed for the client/server environment in which a part of the processing is done on the user's PC (the client) and a part is done on a shared database (the server) (Scapens and Jazayeri, 1998). The SAP R/3 thus distributes the workload of computer applications across several cooperating computer programs (Hernandez, 1997). In other words, client/server is essentially a software concept which describes a set of service providers and

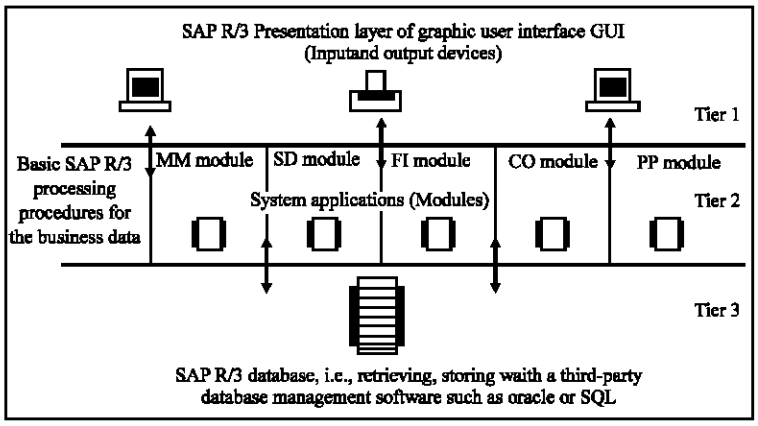

Fig. 1: SAP description (Adapted from Al-Muharfi, 2005)

service requesters that communicate with each other via predefined interfaces (Hernandez, 1997; Scapens and Jazayeri, 1998). One client/server configuration widely used with SAP R/3 comprises the three main layers of software architecture as shown in Fig. 1, which communicate using standards protocol services, such as TCP/IP or CPIC, to provide real-time data processing (Parkinson *et al*., 1999). The three tiers of the SAP R/3 system servers are as follows (Al-Mashari and Zairi, 2000; Hernandez, 1997).

Tier 1 is the presentation layer or the Graphic User Interface (GUI), where SAP users submit inputs to the system for the processing of business transactions and in return get outputs from these transactions in the form of fields, reports, tables and/or spreadsheets. The SAP GUI has the ability to work on different platforms, allowing the system to look and act the same on UNIX, MAC and all Microsoft products, with the goal of providing a user-friendly interface.

The application tier carries the processing logic of SAP R/3, including services such as dispatching user requests and formatting data. System applications are executed after a user initiates a request or enquiry via the input devices, generating a return output through the use of the presentation tier.

The database tier is the level at which SAP uses an exclusive relational master database to store and retrieve configurations and transactional data. This has the ability to work on a variety of database platforms, such as Oracle, DB2, or SQL-server (Al-Muharfi, 2005).

Parkinson *et al.* (1999) provided an example of how the SAP system deals with a request to see a particular customer account balance or transaction. The system user inputs the information for such an enquiry at the presentation PC (acting as a client); the application server then interprets the request (acting as a server). The application (acting as a client) then sends the request to the database server (acting as the server). The database next queries the system database and passes the data back to the application, which in turn forwards it to the presentation server, the user PC, or any other output device.

Punctuated Equilibrium Model (PEM): The punctuated equilibrium model (PEM) combines two types of organizational change: gradual and radical. Gradual change (Boudreau and Robey, 1999), otherwise called first-order (Bartunek and Moch, 1987), minor (Choi, 1995), operation and adaptation (Nadler and Tushman, 1989) or evolutionary (Greenwood and Hinings, 1996) refers to relatively small and continuous adjustments of activities occurring slowly and progressively (Fig. 2). This contrasts with radical (Boudreau and Robey, 1999), second-order (Bartunek and Moch, 1987), major (Choi, 1995), strategic (Nadler and Tushman, 1989) or revolutionary (Greenwood and Hinings, 1996) change referring to fundamental and discontinuous changes that happen swiftly and affect virtually all parts of an organization. Here, the SAP implementation process is viewed as periods of gradual change or equilibrium, punctuated by radical events. The researcher believes that this model of change provides logical support to the analysis below and an excellent theoretical basis on which to describe and explain the data gathered in the case study (Newman and Robey, 1992; Robey and Newman, 1996).

The model predicts the continuation of established gradual periods unless radical events force the situation to change. The SAP implementation process will therefore be for a long period of time in a stable condition marked by small, gradual changes until certain events take place to change the status quo. The model then defines that change as an alternation between two long stable periods of gradual change separated by short periods of radical events forcing the stable conditions to change. Such changes will be interpreted as success or failure depending on accountants' reactions to the change as a

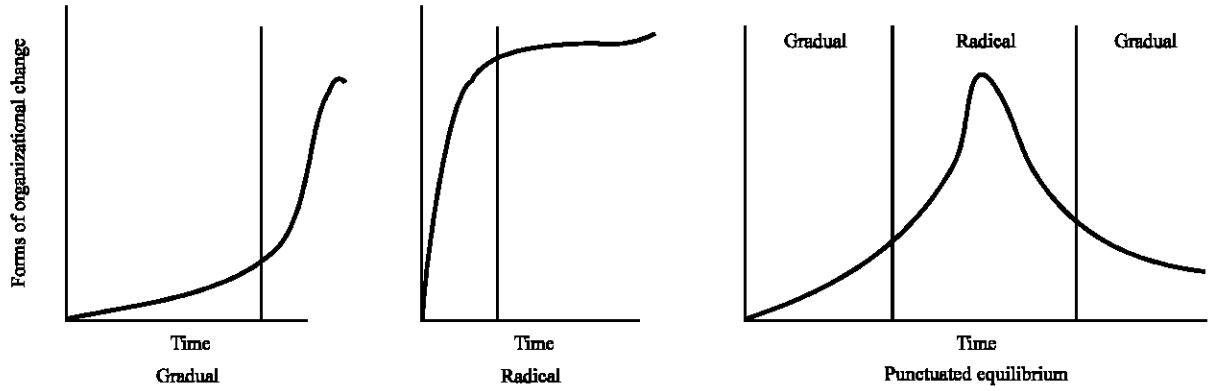

Fig. 2: Forms of organizational change and the Punctuated Equilibrium Model (PEM)

result of SAP implementation (Robey and Newman, 1996). This model encourages the researcher to use his personal judgment to decide which events are interpreted as gradual and which should be seen as radical. Consequentially, positive and negative participation in the SAP implementation process by accountants will be used to assess the success or failure of the system (Caglio *et al*., 2000; Dillard, 2000; McKeen *et al*., 1994).

It has been claimed that this model is essentially descriptive and provides little explanation of why the change alternates between gradual and radical patterns (Gersick, 1991; Lant and Mezias, 1992; Romanelli and Tushman, 1994; Sabherwal *et al*., 2001). It has also been claimed that little research has explored the empirical validity of the model in investigating SAP implementation, especially in Saudi Arabia, despite the growing number of studies using the punctuated equilibrium model worldwide (Boudreau and Robey, 1999). Therefore, to address this shortcoming, the present study adapts Pettigrew's work (1985a-c, 1987, 1990, 1992) to provide more explanation by identifying reasons for change which might affect its form (gradual or radical) in conjunction with SAP implementation, using a case study from the Saudi industrial sector.

Pettigrew (1987, 1990) indicated that much of the explanation for forms of change activities can be derived from an analysis of the interactions of the organizational (internal) and environmental (external) contexts with the content of the implementation project over time. The present study defines SAP project activities as the content of change, while the organizational (internal) context is represented as the structure, corporate culture and political contexts within the organization in which SAP is implemented and the environmental (external) context is identified as the social, economic, political and competitive environments in which the organization operates. Therefore, radical events in the punctuated equilibrium model result from the content, the internal or external context, or combinations of such sources over the period of SAP implementation and organizational change.

Accountant's participation in change: Researchers are paying increasing attention to user participation in system implementation and how this might contribute to a successful process (Newman and Noble, 1990). Accountants' participation in SAP implementation may be physical or psychological, direct or indirect, formal or informal, as a team member or an individual (Robey and Farrow, 1982). Accountants will, to some extent ride, on the back of other users' entries whether they are buying goods, paying bills, or distributing profits. They will then record these other users' actions in accounting language in order to report the organization's performance in financial terms. In fact, many non-accountants regard the SAP system as accounting software (Scapens and Jazayeri, 1998).

Accountants participation is considered to begin when they take part in the initial proposal for change, which challenges a long period of antecedent stability. This situation represents historical events in regard to the legacy system that might affect the implementation process. Following Newman and Robey (1992), Robey and Newman (1996), the interpretation of accountants' reactions during the SAP implementation process can be identified as acceptance, resistance or wait and see. Accountants will react positively with acceptance when a change is acknowledged and approved. By contrast, they will display resistance when they reject the change. The third type, wait and see, occurs when accountants neither accept nor reject the change proposal (Newman and Robey, 1992; Robey and Newman, 1996).

It is tempting to specify success or failure outcomes as results of SAP implementation and organizational change. Expected benefits from accountants participation

in the SAP implementation process include: more accurate assessment of accountancy information requirements, greater support, commitment, understanding and acceptance of the system and more realistic expectations (Lin and Shao, 2000; McKeen *et al*., 1994; Robey and Farrow, 1982). However, anticipated difficulties include not implementing the system in time, exceeding the implementation budget and not achieving the intended results which will not encourage accountants to accept the system. It is most likely that they will do so when the system has a positive impact which leads to system success and vice versa. This study argues that by calling upon accountants to participate in the implementation process, the chances of success will increase as acceptance by accountants is enhanced.

CASE STUDY

XYZ was the first company in the Middle East to implement a SAP system starting at the end of 1993. Since, 1983, XYZ has produced long steel products for the Saudi construction industry. Its output now includes flat, hot and cold rolled steel for the expanding Saudi and regional engineering and manufacturing industries. The metals group also manages two large offshore aluminum manufacturing shareholdings in Bahrain, as well as the sales and marketing of ferrous alloys produced in Saudi Arabia. Organizational change at XYZ is illustrated in Fig. 3. The letters and numbers (R1, G3 etc.) correspond to the descriptive paragraphs below.

Legacy system situation: The situation at XYZ before SAP implementation was that of a classic legacy system. The work in the company was conducted using separate computers and databases which were not linked in any way. This situation created redundancy in performing accounting activities and prolonged the time spent in closing accounting reports. The following extracts from interviews with participants gives an idea of how the work was performed at XYZ:

- The accounting department used to be crowded with bookkeepers. We used to receive plenty of documents three or four days late, which made us late in closing and issuing the financial reports as well - and we mostly got the blame Senior Financial Planner, Accountancy Dept
- I remember when I joined the company my manager told me that I would need 2 years just to understand and remember the processes in the GL Section alone. Senior cost analyst, Accountancy Dept
- In accounts payable alone, we used to have 95,000 photocopies taking up space, time, cost and effort from the accountants that could be used for something else. A/P senior, Accountancy Dept

Radical 1: Initial Proposal for Change: At the beginning of the 1990s the company started considering the need for change, prompted by two main factors. The first was that

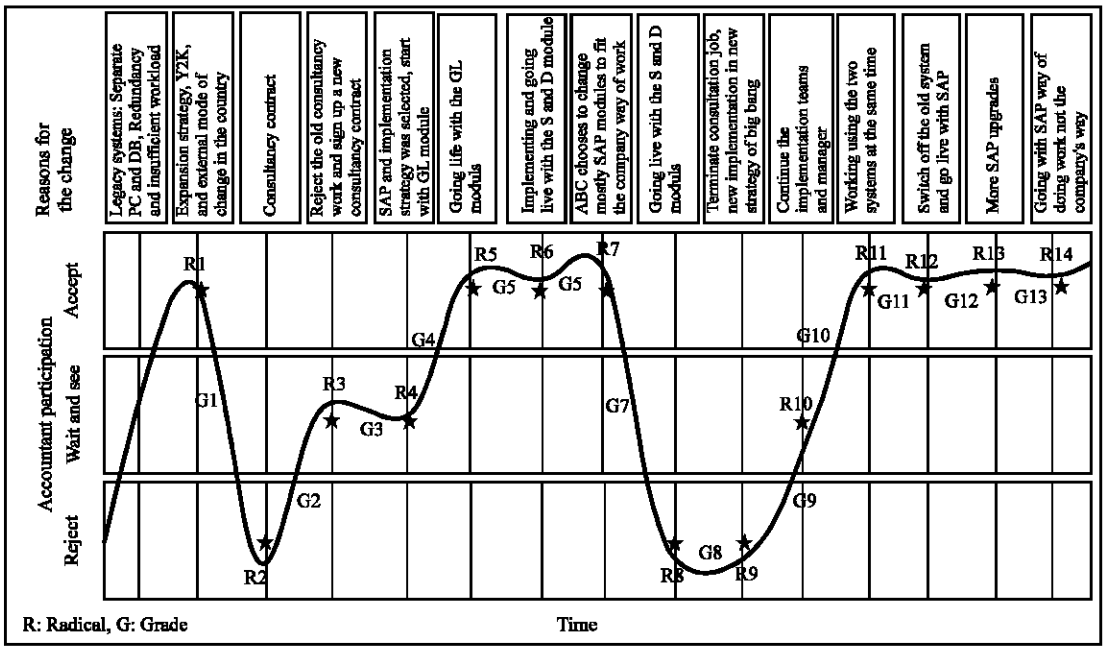

Fig. 3: Forms of organizational change and accountant participation in the SAP implementation process

the internal environment of XYZ was affected by its strategy for expansion and the inability of the old system to survive such expansion. The other reason was external: the predicted Y2K problems threatened XYZ's legacy system and coincided with a popular mood in favor of change at the time:

- The company was investing millions in expansion and there was no way to depend on an old system that was not supported, so the change was a necessity. Head of Application Services, IT Dept
- The decision for change was not a person decision, it was a need decision. We used to sell to one customer, now we sell to hundreds of them. There was no way to rely on a system that could break down any time Senior Cost Analyst, Accounts Dept

Gradual 1: Acceptance: The need for change was obvious and the company accepted it. It then took a relatively long period of time analyzing the local and international market for a suitable system. The accounting manager was a member of the team charged with finding a new system.

Radical 2: Signing a consultancy contract and forming teams: XYZ thought that there was a need for external help. Therefore, an expensive consultancy contract was signed with Arthur Anderson in a project to analyze XYZ's current situation and suggest the form of change. At the same time, the company formed teams to be sent to USA, Japan and Europe to look for a new system.

Gradual 2: Resistance: After spending 4 months studying the current and future situation at XYZ, Arthur Anderson produced a report consisting of 6 recommendations, which was rejected by XYZ.

Radical 3: Signing another consultancy contract: The company did not like Arthur Anderson's approach to investigate its current situation so it terminated the consultancy contract. However, XYZ was still convinced that it needed help in drawing up a road map for change. Therefore, it signed another costly consultancy contract with Price waterhouse Coopers (PwC).

Gradual 3: Wait and See: After spending some time in analyzing XYZ's situation, PwC recommended a software package. At the same time, the XYZ teams which had been sent to explore the international market identified the SAP system as a good candidate for the new system. XYZ's top management then asked PwC to consider SAP as potential software. With regard to its user requirements and other system providers in the market, XYZ selected 5 major companies, including SAP, to present their systems to XYZ.

Radical 4: SAP Selection: The vendor companies made presentations to XYZ. Although, Price water house Coopers advised against SAP, due to their lack of knowledge of the system, XYZ liked what SAP AG presented and the decision was made to select its system. The main reason for the selection was the close match between what XYZ needed and what SAP offered at the time and promised for the future. The XYZ decided to implement the following modules: General Leger (GL), Finance (FI), Costing (CO), Sales and Distribution (SD module), Project Management (PM), Material Maintenance (MM) and Human Resources (HR). It also automatically extended the contract with the consultant. The plan was to implement those modules gradually with the GL module to be the first.

Gradual 4: Wait and see: The GL module was implemented by analyzing the gap between what existed in the company and what was offered by the SAP system. Gap analysis aims to find the middle ground through preparing reports on the current situation (AS-IS) and the intended situation (TO-BE) as guided by SAP. In the GL module, most of AS-IS and TO-BE reports were almost identical, due to similarities between the current and SAP accounting systems. This approach had to be documented and signed by all responsible employees and their departments. Accountants, like other employees, speculated widely as to whether the system would work or not.

Radical 5: Going live with GL: After the necessary tests, the decision was made to go live with the SAP-GL module. The decision was critical, because it was the first real test of the new system's performance.

Gradual 5: Acceptance: The results for the SAP-GL module were positive, which made XYZ top management and accountants happy with the new SAP layout. Consequently, the accountants' reactions were spread across the company. In fact, the transfer from old to new GL systems was easy and fast, which made other XYZ employees careless of the changes that would be introduced to the company by SAP.

Radical 6: SD module implementation: The success of SAP-GL encouraged the company to move to the next planned module, which was SD module. The decision was

made to select the SD module teams and to implement it in the same way as for the GL module, so the company assigned some employees to be Sales Department representatives on the project.

Gradual 6: Acceptance: Acceptance was the general reaction throughout the company, including the SD module team, the consultants and top management. Accountants believed that the SD module was not an accounting matter and so of no great concern to them:

- We were happy and felt that we could rival the accounting department employees and achieve better results than they reached after GL implementation. Everybody was happy and SAP was a system like any other system, we thought marketing manager

Radical 7: Changing the company or the system: After developing the AS-IS and TO-BE reports, the team faced a dilemma that had not arisen with the GL module, as there were large differences between them. The XYZ had to decide which report to follow. Due to the lack of SAP system experience and knowledge, the company chose to change the SAP system to fit XYZ users' requirements, mostly following the AS-IS report.

Gradual 7: Acceptance: Changing the system to fit XYZ's business processes was accepted by most employees. Accountants, too, encouraged this approach. However, the SD module proved much more complicated than the GL module, as links had to be made between it and many processes and functions in the company, such as the GL module, inventory, purchasing and production.

Radical 8: Going live with SD module: Having taken a long time to complete the previous steps, XYZ was now impatient and too little time was spent in testing the SD module appropriately. Following pressure from the company's top management, the consultant agreed to go live with the module.

Gradual 8: Resistance: XYZ now experienced a huge system failure, which caused widespread disruption. What happened was that the marketing department made many sales but the company was unable to collect any revenue. Top management had to stop the project and go back to the old system, because the company would have become bankrupt if the situation had continued whereby production costs accrued without revenue being recorded to offset them. The management blamed the accounting department for not being able to collect sales money while the marketing people were doing their job of making sales:

- The implementation was a disaster, a catastrophe. We were not able to collect our money. The company sold to unknown customers and paid the wrong vendors for the wrong materials. We received a lot of blame because we were accused of not being able to control XYZ's cash. It was a horrible thing for the whole company and for us in the accounting department it was a nightmare. We basically had to pay for other people's mistakes. Accounting and finance manager

Radical 9: New project management and teams: XYZ blamed the project consultancy and terminated its contract. At the same time, the company appointed a new project manager, who disbanded the implementation team and sought new members. A small team was assembled to investigate what had happened and to seek ways to ensure the success of the following implementation steps.

Gradual 9: Resistance: People in the accounting department felt that they had been wrongly blamed for the failure, as a result of which many questions were asked about the SD module. The team concluded that the module was not properly linked with other parts of the company; therefore, the benefits of integration which SAP should have given the organization were not realized. The SD module was linked with the production, purchasing and inventory functions, enabling raw materials to be sourced for production, but was not linked with the accounting department. As a result, costs were recorded on manual invoices sent to the accounting department, but notification of sales revenue generated electronically by the SD module was not passed to the GL module to be collected.

Other reasons for the failure were as follows: (1) The SAP consultants provided little help, as they lacked technical knowledge and skilled personnel. (2) They were accused of generating high expectations of SAP that could not be possibly met. (3) They also failed to suggest what should be done, merely reflecting instead what top management would like to do. (4) Implementation team members were not selected carefully. Many departments appointed their least qualified representatives to participate in the implementation because they considered that completing routine work was more important:

- We were not introduced to the system, nor did we get any training. In fact, they transferred us straight from the stone age to the space age. The consultants had no idea how SAP works. They actually trained themselves on us. Reporting analyst, Acct. Dept

A long period of silence and disappointment followed, during which very little happened for months.

Most XYZ employees, including accountants, lost faith in SAP. Comments and jokes about the system like the following were frequently heard:

- SAP stands for Systems Always Problems. Budget Specialist, Accounting and Finance Dept

Radical 10: Continuing SAP Implementation: A critical decision was taken to use SAP as the company's system with no return in order to end all speculation. The team decided to implement SAP in a big bang rather than gradually, because of the time, effort and cost that had already been spent on implementation.

Gradual 10: Wait and see: After ridding the teams of unqualified representatives, the project team decided to conduct a strategic gap analysis between the AS-IS and TO-BE forms. Working for more than a year, the teams repaired all the damage resulting from the previous failure. Accountants reacted exactly like most other XYZ employees, preferring to wait and see what would happen.

Radical 11: Parallel run: The teams took a long time to implement all the SAP modules and to link all parts of the system together. They then decided to test the new system by running it in parallel with the legacy system:

- Parallel running was exacting, but we tolerated such things because basically no one wanted to fail again. Cost Accountant, Acct. Dept

Gradual 11: Acceptance: XYZ then spent a long period running the two system in parallel, the result of which was mostly positive, despite the heavy load of activities. Accountants, like other employees, complained of overload because much administrative work had to be done twice, using the old and new systems. However, this was recognized as preferable to repeating the SD module nightmare. The teams were finally ready after two years to switch off the old system for good.

Radical 12: Switching off the old system: The brave decision to switch off the old system and go live with SAP was taken once the results of parallel running were satisfactory enough to encourage the company to do so. The exact time of going live was then communicated in a memo to every employee.

Gradual 12: Acceptance: The result of switching off the old system was an overwhelming success. The majority of the company's employees, including the accountants, accepted the new system. The range of acceptance increased with time, as the benefits of SAP became clear. Advantages for XYZ's accountants included: (1) more integration between the accounting department and other departments, (2) a reduced closing period for the issue of financial accounting statements, (3) reductions in accountancy manpower and thus in operating costs, (4) increased ability to issue a variety of financial and non-financial reports due to system integration, (5) reduced time and effort needed to complete tedious accounting activities, (6) greater accessibility and availability of information:

- What SAP is really doing is just moving most of the paperwork, data entry and processing to lower levels, allowing employees to input their transactions into the accounting system themselves. This allows the accountants to take their time in analyzing these transactions. It makes for more efficient work. Accounting and Finance Manager
- SAP improves the reporting cycle dramatically. Financial statements are ready by the second day of the nest month, compared to the 15th under the previous system. It's also more accurate. Cost system analyst, Acct. Dept
- Everything is in front of you on the screen. You can monitor all transactions and if you have some questions just drill down using the mouse and most of the time you get all the answers. We are delighted to say goodbye to the old bookkeeping methods. GL Supervisor, Acct. Dept

Radical 13: System upgrade: The new system was now running as planned and all employees including the accountants enjoyed its benefits. One reason for selecting SAP, as noted above, was the ability to upgrade it. Therefore, XYZ decided to upgrade its system after SAP AG issued a new version with new features which the company could take advantage of.

Gradual 13: Acceptance: Accountants were willing to upgrade the system because of the benefits of doing so. Some members of the accounting department were selected to work on the new project. The upgrade did not require any new hardware, as it was a simple software upgrade.

Radical 14: Going with SAP best practice: During the implementation of the upgrade, a gap analysis revealed the advantages of following SAP best practice. The original system had been customized, but it was decided that this approach was not the correct one, as the company would have had to change the upgraded system

a second time to fit the customized one. If it had done that, XYZ would have needed to customize every upgrade, which would have meant more cost, time and effort. Therefore, the company decided to change its strategy and to adopt SAP best practice as much as possible.

Gradual 14: Acceptance: SAP now became the company's system. Users, including accountants, became expert in SAP as their knowledge of the system increased. SAP best practice was implemented and brought the company the benefits of the system's new features.

DISCUSSION

This research investigated how accountants reacted to change during their participation in SAP implementation in Saudi Arabia. The SAP is a complete enterprise solution in which different organizational functions such as accounting, human resources, marketing and production, are combined into a single database that enables the organization to streamline its activities and operate more effectively and efficiently. The punctuated equilibrium model, which has been used in describing the change, shows it as a combination of long periods of gradual modification, during which the project does not present any obvious change and short periods of radical transformation. The research has followed Pettigrew's model in explaining the reasons for the gradual and radical changes as they resulted from internal or external factors, or a combination of the two, over a period of time.

The success or failure of this investigation was interpreted in relation to accountants' reactions to change. Three kinds of reaction were identified i.e., (1) The SAP implementation and organizational change were interpreted as successful when the accountants reacted positively, (2) having failed when they reacted negatively and (3) when the results of change were not obvious and labeled as 'wait and see'. The gradual change was expected to last for long periods of time until something happened to trigger a change resulting in a period with new characteristics that differed from what had gone before. The trigger could be in the form of the internal content of the SAP project itself, or arise from the company's internal circumstances, its external environment, or both contexts. On one hand, radical change mostly resulted from decisions and processes such as signing a new contract, going live with the system, or terminating the project. On the other hand, gradual change mostly represented stable periods during which changes could build up from the content or the internal or external context of the project, eventually becoming strong enough to cause the process to change.

The research model provided a theoretical basis for describing and explaining change that could be used by researchers and practitioners. The researchers could use it to analyze technology implementation projects and organizational change, while the practitioners could use it to identify periods of change that could be triggered by different sources and affect the reactions of their employees. The success or failure can be influenced by controlling the sources of change triggers to increase positive reactions to change and to reduce negative reactions. Further research could be done by using the model to analyze other users' reactions and to investigate whether the model can be used to predict the results of project implementation.

REFERENCES

Al-Mashari, M. and M. Zairi, 2000. Revising BPR: A holistic review of practice and development. Bus. Process Manage. J., 6: 10-42.

Al-Muharfi, A., 2003. A model of learning process of SAP user-specialist interaction: A case study from Saudi Arabia. Proceedings of the 2nd Conference on Administrative Sciences, Meeting the Challenges of the Globalisation Age, King Fahad University of Petroleum and Minerals, April 13-21, Dhahran, Saudi Arabia, pp: 1-11.

Al-Muharfi, A., 2005. Analysing SAP project activities using a contextual model of punctuated socio-technical change: Two case studies from Saudi Arabia. Manchester Business School, The Division of Accounting and Finance, The University of Manchester, Manchester.

Bartunek, J.M. and M.K. Moch, 1987. First-order, second-order and third-order change and organization development interventions: A cognitive approach. J. Applied Behav. Sci., 23: 483-500.

Beugelsdijk, S., A. Slangen and M. Herpen, 2002. Shapes of organizational change: The case of Heineken Inc. J. Org. Change Manage., 15: 311-326.

Boudreau, M.C. and D. Robey, 1999. Organizational transition to enterprise resource planning systems: Theoretical choices for process research. Proceedings of the 20th International Conference on Information Systems, Dec. 12-15, Charlotte, North Carolina, USA., pp: 291-299.

Burns, J., 2000. The dynamics of accounting change: Interplay between new practices, routines, institutions, power and politics. Account. Audit. Accountability J., 13: 566-596.

Caglio, A., M. Jazayeri, M. Newman and C. Westrup, 2000. The implications of enterprise resource planning systems for management accountants. Final Report to CIMA.

Cailaway, E., 1999. Enterprise Resource Planning: Integrated Applications and Business Processes Across the Enterprise. 1st Edn., Computer Technology Research Corporation, Charleston, SC.

Choi, T., 1995. Conceptualizing continuous improvement: Implications for organizational change. Omega, 23: 607-624.

Dillard, J.F., 2000. Integrating the accountant and the information systems development process. Account. Forum, 24: 407-421.

Fahy, M., 2001. Enterprise Resource Planning Systems: Leveraging the Benefits for Business. CIMA., London, UK.

Gersick, C.J.G., 1991. Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. Acad. Manage. Rev., 16: 10-36.

Greenwood, R. and C.R. Hinings, 1996. Understanding radical organizational change: Bringing together the old and the new institutionalisim. Acad. Manage. Rev., 21: 1022-1054.

Hernandez, J.A., 1997. The SAP R/3 Handbook. McGraw-Hill, USA.

Hirschheim, R. and M. Newman, 1988. Information systems and user resistance: Theory and practice. Comput. J., 31: 398-408.

Hirt, S.G. and E.B. Swanson, 1998. Adopting SAP at siemens power corporation. Proceedings of the International Conference on Information Systems, (ICIS'98), Helsinki, Finland, pp: 396-398.

Kimberly, J.R. and H. Bouckikhi, 1995. The dynamics of organizational development and change: How the past shapes the present and constrains the future. Org. Sci., 6: 9-18.

Langenwalter, G.A., 2000. Enterprise Resource Planning and Beyond: Integrating Your Entire Organization. St. Lucia Press, Boca Raton, FL.

Lant, T.K. and S.J. Mezias, 1992. An organizational learning model of convergence and reorientation. Org. Sci., 3: 47-71.

Lin, W.T. and B.B.M. Shao, 2000. The relationship between user participation and system success: A simultaneous contingency approach. Inform. Manage., 37: 283-295.

McKeen, D.J., T. Guimaraes and J.C. Wetherbe, 1994. The relationship between user participation and user satisfaction: An investigation of four contingency factors. MIS Q., 18: 427-451.

McKenn, J.D. and T. Guimaraes, 1997. Successful strategies for user participation in systems development. J. Manage. Inform. Syst., 14: 133-150.

Nadler, D.A. and M.L. Tushman, 1989. Organizational frame bending: Principles for managing reorientation. Acad. Manage. Executive, 3: 194-204.

Newman, M. and F. Noble, 1990. User involvement as an interaction process: A case study. Inform. Syst. Res., 1: 89-113.

Newman, M. and D. Robey, 1992. A social process model of user-analyst relationships. MIS Q., 16: 249-266.

Newman, M. and R. Sabherwal, 1996. Determinants of commitment to information systems development: A longitudinal investigation. MIS Q., 20: 23-54.

Newman, M. and C. Westrup, 1999. Implementing enterprise resource planning systems: Implication for finance specialists. Proceedings of the 2nd Baan Brothers Conference, Utrecht, NL.

O'Leary, D.E., 2000. Enterprise Resource Planning Systems: Systems, Life Cycle, Electronic Commerce and Risk. 1st Edn., Cambridge University Press, Cambridge, UK., pp: 232.

Orlikowski, W.J. and J.J Baroudi, 1991. Studying information technology in organizations: Research approaches and assumptions. Inform. Syst. Res., 2: 1-28.

Parkinson, R.E., K. Tailor, V. Wood and J. Marneweck, 1999. Basic Administration for SAP, The Administrator's Guide for SAP Professionals. Prime Publishing, Rocklin, California, USA.

Pentland, B.T., 1995. Information systems and organizational learning: The social epistemology of organizational knowledge systems. Account. Manage. Inform. Technol., 5: 1-21.

Pettigrew, A., 1985a. Contextualist Research and the Study of Organizational Change Processes. In: Research Methods in Information Systems, Mumford, E., R. Hirschheim, A. Fitzgerald and T. Wood-Harper (Eds.). North Holland, Amsterdam.

Pettigrew, A., 1985b. Contextualist Research: A Natural Way to Link Theory and Practice. In: Doing Research that is Useful in Theory and Practice, Lawler, E.E. (Ed.). Jossey Bass, San Francisco.

Pettigrew, A., 1985c. The Awakening Giant: Continuity and Change in ICI. Basil Blackwell, Oxford.

Pettigrew, A., 1987. Context and action in the transformation of the firm. J. Manage. Stud., 24: 649-670.

Pettigrew, A., 1990. Longitudinal field research on change: Theory and practice. Org. Sci., 1: 267-292.

Pettigrew, A., 1992. The character and significance of strategy process research. Strategic Manage. J., 13: 5-16.

Poston, R. and S. Grabski, 2001. Financial impacts of enterprise resource planning implementations. Int. J. Account. Inform. Syst., 2: 271-294.

Quattrone, P. and T. Hopper, 2002. If I don't see it I cannot manage it!' the quasi-ontology of SAP. Translations and Boundary-Making in Multinational Organizations.

Robey, D. and D. Farrow, 1982. User involvement in information system development: A conflict model and empirical test. Manage. Sci., 28: 73-85.

Robey, D. and M. Newman, 1996. Sequential pattern in information systems development: An application of a social process model. ACM Trans. Inform. Syst., 14: 30-63.

Romanelli, E. and M.L. Tushman, 1994. Organizational transformation as punctuated equilibrium: An empirical test. Acad. Manage. J., 37: 1141-1166.

Sabherwal, R., R. Hirschheim and T. Goles, 2001. The dynamics of alignment: Insights from a punctuated equilibrium model. Org. Sci., 12: 179-197.

Scapens, R. and M. Jazayeri, 1998. SAP: Integrating information systems and the implications for management accountants. Manage. Account.: Mag. Chartered Manage. Accountants, 78: 46-49.

Solimon, F. and M. Youssef, 1998. The role of SAP software in business process re-engineering. Int. J. Operat. Prod. Manage., 18: 886-895.

Taylor, J.C., 1998. Participative design: Linking BPR and SAP with an STS approach. J. Org. Change Manage., 11: 233-245.

Walsham, G. and T. Waema, 1994. Information systems strategy ad implementation: A case study of a building society. Trans. Inform. Syst., 12: 150-173.

Wastell, D. and M. Newman, 1996. Information system design, stress and organizational change in the ambulance services: A tale of two cities. Account. Manage. Inform. Technol., 6: 283-300.