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# Change management within an enterprise-wide packaged software implementation

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# CHANGE MANAGEMENT WITHIN AN ENTERPRISE-WIDE PACKAGED SOFTWARE IMPLEMENTATION

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# ABSTRACT

Investments in information technology have in many cases failed to deliver the anticipated benefits. It is now accepted that real value can only be leveraged by linking IT implementation to organisational change and process redesign. The management of this change is inextricably linked to the overall success of the implementation.

The focus of the research was on identifying what the key elements of successful change management were. Research into generic change management was used as a basis for determining these critical success factors. The applicability of these factors in the case of an enterprise wide package software implementation was then tested through a case study method.

The research showed that the factors developed were applicable in managing technology driven change. In addition to the factors developed, additional factors were identified as being relevant in the case of packaged software implementations.

# CHAPTER ONE: THE RESEARCH PROBLEM

## 1.1 Background

Survival in the corporate world of the nineties and beyond, will fundamentally depend on an organisation's ability to adapt to changing circumstances and reinvent itself. Senge (1990), speaks of the need to develop "learning organisations", or organisations which continually expand their capacity to create their future.

There are many key drivers which are reshaping the corporate landscape of the future. Global competition and continuously changing business environments are but two of these (Benjamin and Blunt, 1992). These authors argue that businesses will continually have to refine their business processes in response to these changes. The current trend towards reengineering business processes is a key element of this philosophy.

As business shapes it's future path, the role of Information Technology (IT) within this corporate paradigm is both a unique and challenging one. IT is seen as a key enabler of reengineered processes and as the glue which will bind the various organisation domains.

In many cases, this role has been extended to include not only supporting new processes, but fundamentally shaping them (Davenport and Short, 1990). The "symbiotic" relationship between IT and process improvements is highlighted by McCrindell (1994), who believes that new technology often provides the stimulus to act.

The traditional role of IT as an automator is being questioned in the light of historic failures to realise true business benefits. It is now accepted that the true benefits from IT can only be leveraged when applied as an enabler of business transformation. IT is seen as the engine which will drive organisational change and provide competitive advantage. Despite huge advances in technology, the effective implementation of this technology within organisations remains as a barrier to the realisation of IT's real potential. It has been argued that the benefits of IT implementation have in many cases been slow in coming as the organisational change associated with such implementation is not adequately managed (Benjamin and Blunt, 1992). It is further argued that the effective management of this change is one of the key challenges facing IT executives in the coming decade (Benjamin and Blunt, 1992).

## 1.2 Importance of the Research

The challenges facing IT management in the 1990's are unique and in many ways daunting. They will be called upon to implement technology solutions which will dramatically alter the way in which organisations compete. This technology seems set to have a profound effect on all aspects of corporate life, in particular, the human dimension.

The extent to which this challenge will be effectively met is largely dependent on the extent to which the change associated with the adoption of the technology is managed.

The challenge facing IT managers will be to manage the organisational change associated with the implementation of IT. The extent to which this challenge is met will ultimately shape the role of IT into the 21st century

## 1.3 The research Problem

Vast investments in IT have in many cases failed to deliver the anticipated benefits. It is now accepted that IT can only truly add value if implemented in support of reengineered business processes. In fulfilling this role however, it has been argued (Corbitt and Norman, 1991), that the implementation of new technology frequently does not succeed, as a result of an inability to understand and manage the change process.

It is therefore imperative to develop guidelines to managing IT driven change to ensure that the true promise of IT is realised. Much work has already been done on identifying key elements of successful change within the context of generic technology implementation. The focus of this research will be specifically on enterprise wide software packages (EWSP's).

The integrated nature of these products supports the process orientation inherent in reengineering projects, and their use as an enabler is a critical component of successful reengineering projects. This view is supported by Hammer (1990) who suggests that much of reengineering would be mere fantasy without the enabling power of information technology

## 1.4 The research Objective

Given the importance of managing IT-driven change, it is believed that a set of critical success factors can be developed to guide IT managers in meeting this challenge. Specifically, the objective of this research is as follows:

*To identify the critical success factors (CSF's) in managing the change associated with the implementation of enterprise-wide packaged software solutions.*

## 1.5 Chapter Outline

A chapter outline of the remainder of the report follows

| | |
|---|---|
| Chapter Two: | Literature Review |
| Chapter Three: | Research Methodology |
| Chapter Four: | Presentation and Analysis of the Results |
| Chapter Five: | Interpretation of the Results |
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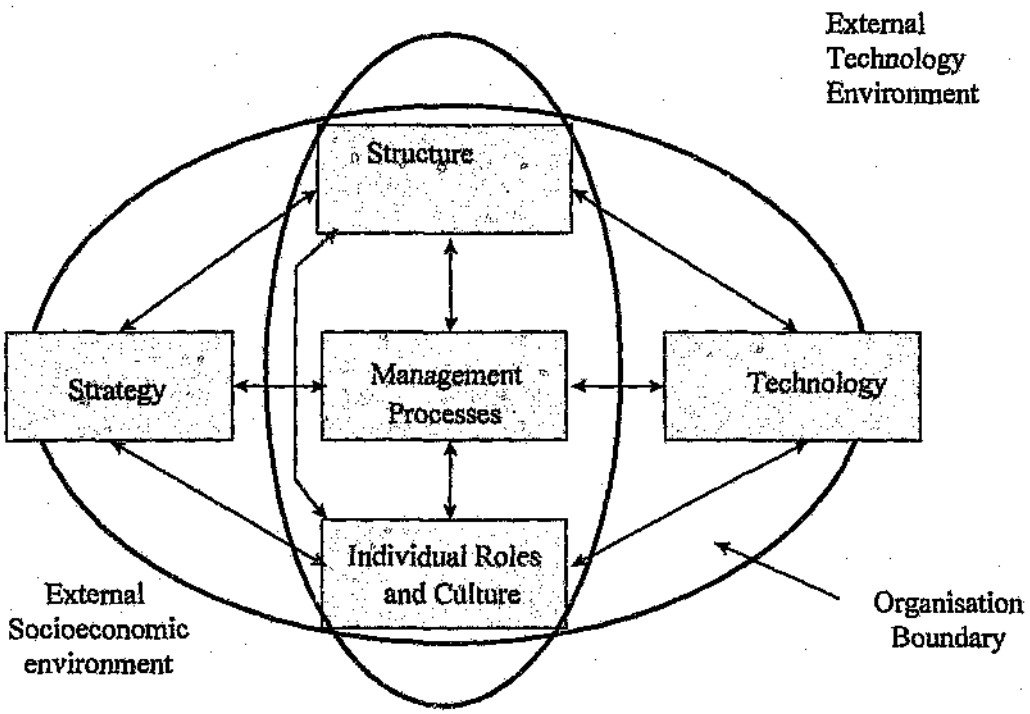
# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Role of IT within the organisation

The business paradigm of the future will be characterised by continuous and ongoing change. To understand this change and the nature of it's impact, it is useful to develop a conceptual framework of the organisation of the future.

The concept of organisational domains has been widely used for this purpose. In terms of this approach, organisations can be viewed as consisting of key segments which uniquely identify them from other organisations. This concept has been formalised into a model, known as the MIT 90s paradigm. Accordingly, the following organisational domains can be defined:

**MIT 90's Paradigm**



1. Organisational structure

It has been suggested that common characteristics of organisational structure are hierarchy, rules and procedures, differentiation of organisational units, degree of task specialisation and span of control (Sankar, 1991). As this is traditionally the most tangible and malleable domain, it is most frequently targeted in "business improvement" campaigns (Overholt, Kroeger, Prager 1994)

2. Business processes

Processes are the discreet sequence of tasks performed to achieve a specific objective. Hammer and Champy defined business processes as:

"...a set of activities that, taken together, produce a result of value to the customer"

(Hammer and Champy, 1993)

Business processes provide a critical link between the organisational strategy and information technology within the organisation. They provide the mechanism for aligning business and IT strategies (Scott Morton, 1991)

3. People

The people domain relates to the attitudes and behaviours of employees within the organisation, as well as the reward systems which support behaviour patterns. Sankar (1991), speaks of the "Behavioural Domain", which involves:

*"...attitudes, personality determinants, perception, leadership behaviour, value and group behaviour among other factors."*

*Sankar (1991)*

4. Technologies

Information and technology systems are the structures, constraints, and demands of the communication, manufacturing and service delivery systems within the organisation (Overholt, Kroeger, Prager 1994).

Using the above model, it can therefore be seen that IT is but one component or domain within an organisation. The integrated nature of the model does however suggest that none of the above domains operates in isolation to another. As such, the "learning organisation" of the future will need to manipulate and align all four of these "levers of change" to compete successfully in the future.

## 2.2 Impact of IT implementation on the organisation

Although IT is only one component within the above model, Overholt, Kroeger, Prager (1994), argue that it is perhaps the most significant domain to induce change. These authors suggest that organisations are:

*"...increasingly focusing on information technology systems to create change throughout the entire organisation". IT is being recognised as a powerful enabler of change which has the ability to effectively knit together all the key organisational domains".*

Overholt, Kroeger, Prager (1994),

The pervasive nature of IT is clearly evident when analysing it's impact across the organisation.

As an enabler of BPR, IT changes the way in which people perform their jobs. It is not only the tasks themselves which change, but the manner in which those tasks are to be performed which are changed. Zuboff (1991) talks about the informated organisation, in which the database is an equalising source of knowledge. This is especially true of enterprise-wide software packages, where high levels of integration are apparent. In such organisations, access to information enables workers to perform jobs they were previously unable to. In many cases this may result in redundancies, particularly in the middle management strata (Benjamin and Levinson, 1993)

Integrated software enables process reengineering by eliminating functional boundaries. This has a significant impact on organisational structure by facilitating the trend to flatter, outcome orientated organisations. The organisational changes in turn necessitate changes in job descriptions and skills.

By speeding up processes, IT is a key enabler of time-based competition. The speeding up of process cycle times in turn impacts on the work ethic inherent in the organisation.

By realigning the status, power and working habits of individuals within an organisation, the implementation of new technology may violate some of a group's shared values and meanings (Cooper, 1994). The implementation of new technology has a direct impact on an organisation's culture, and this culture-technology conflict is frequently a source of substantial resistance.

## 2.3 Software Packages

The pervasive and invasive impact of IT on an organisation outlined above is magnified in the case of enterprise-wide packaged solutions (EWPS's). Many organisations are selecting the package route as a strategic choice in terms of technology direction. This approach is in line with the thinking of Hopper (1990), who emphasises the importance of intelligent application of IT as a means to sustainable competitive advantage, as opposed to the technology itself. Accordingly, organisations are seeing the merit in not "reinventing the wheel", but rather applying technology creatively in driving organisational improvement.

The need for enterprise wide software packages has been strengthened as a result of the decentralising focus during the 1980's. The development of strategic business units has left organisations with a variety of inconsistent technologies which inhibit the introduction of enterprise wide applications. The need to have a centralised data repository which determines standards and strategic direction is thus essential. (Carlyle, 1990)

The emphasis on cost-cutting within IS has forced many organisations to face the "make-or-buy decision. In many cases, external vendors have more business knowledge and experience and are thus better suited to the provision of IT services (Carlyle, 1990). This fact, coupled with the ever-increasing need to co-ordinate the enterprise through tight coupling of core processes, provides a compelling argument for EWPS.

In addition, EWPS provide better quality business information by integrating processes and providing real-time snapshots. The business trend towards need based team forming is supported by providing open access to information with few requirements for approvals.

In essence, EWPS enables IT to become a transparent back-engine which drives the organisation. The technical infrastructure is in many ways invisible to the organisation, freeing people up to focus on the creative utilisation of the technology.

## 2.4 Causes of Implementation Failure

Having highlighted the role of IT and specifically enterprise-wide packaged solutions as a key enabler of corporate renewal, it is necessary to focus on the reasons the potential of these systems is frequently not realised.

It has been suggested that ..."the major deterrents to successful IS implementation include both technical and organisational issues" (Krovi, 1993). Technical issues include poor system design, lack of a development methodology and inadequate requirements definition (Rockart and Hofman, 1992). It is however argued that the behavioural dimension of IT implementation is more complex and more likely to determine the ultimate success or failure of the implementation. This sentiment is echoed by Corbitt and Norman (1991), who suggest that:

*"a failed effort to implement new technology may in 9 out of 10 cases be a failure to understand and adequately manage the change process".*

*(Corbitt and Norman, 1991)*

This view is shared by Prager and Overholt (1994), who believe that projects often fail not because of technical flaws, but because the people in the organisation reject them.

## 2.5 The dynamics of change

In managing change, what really needs to be managed are the transitions within the organisation. Bridges (1991) defines transition as "the psychological process people go through to come to terms with the new situation". He believes that transition involves three distinct phases; ending, neutral zone, and new beginning. Managing change essentially involves an acknowledgement and understanding of these three aspects.

People have a natural resistance to change. the American economist John Galbraith once said:

*"Faced with the choice between changing one's mind and proving there is no need to so, almost everyone gets busy on the proof"*

(John Galbraith)

In order to manage organisational transition, it is necessary to understand the dynamics of change resistance.

## 2.6 Causes of resistance to change

Individuals within an organisation develop beliefs and assumptions over time as to the nature of the environment in which the organisation operates and the operational routines which are seen as key to the organisation's success. This paradigm develops through interaction with other individuals in the organisation and effectively results in a relatively homogenous approach to the interpretation of complexities facing the organisation (Johnson, 1992). This paradigm then forms an intrinsic part of the organisational fabric.

When faced by change through, for example, the implementation of new technology, people will attempt to interpret this change within the boundaries of their existing paradigms. Effective change therefore requires a paradigm shift in terms of which people have to extend their comfort zones and align themselves with a new corporate culture. The magnitude of such a realignment inevitably results in resistance and an attempt to maintain the status quo.

## 2.7 IT Managed Change Vs General Change

Models from the change management literature provide a valuable starting point from which to analyse technology enabled change. It has however been argued by Benjamin and Levinson (1993), that technology based change is in certain aspects unique from other change initiatives. Specifically, the following key differences exist:

- The change reaches across traditional functional boundaries. This is particularly true of integrated software packages, which facilitate and in many cases depend on a process orientation. This sentiment is echoed by Rockart and Hofman (1992) who argue that IT systems are working across not only functional boundaries within the value chain, but frequently across multiple business units and multiple organisations.

- Knowledge and power shifts in the organisation. Prior to the implementation of an IT system, knowledge is generally resident in the people, specifically the senior people within the organisation. This knowledge was in many cases the source of their power and influence in the organisation. With the implementation of the IT system, the source of knowledge shifts from the individuals to the database. Depending on the organisational culture, and specifically the corporate attitudes to information sharing, this power shift can cause major resistance to the adoption of the new technology.

Cooper (1994), speaks of the "inertial impact" of culture on IT implementation, and Overholt, et al (1994) speak of the set of "... beliefs, values and attitudes" which an information system creates in individuals. These authors argue that many organisations typically build their cultures around the underlying technology. When this technology is changed, through for example the implementation of a new system, this may violate some of the shared norms and values of the individuals in the organisation. When this happens, culturally-based resistance to the new IT occurs and the ability to implement the new IT is inhibited.

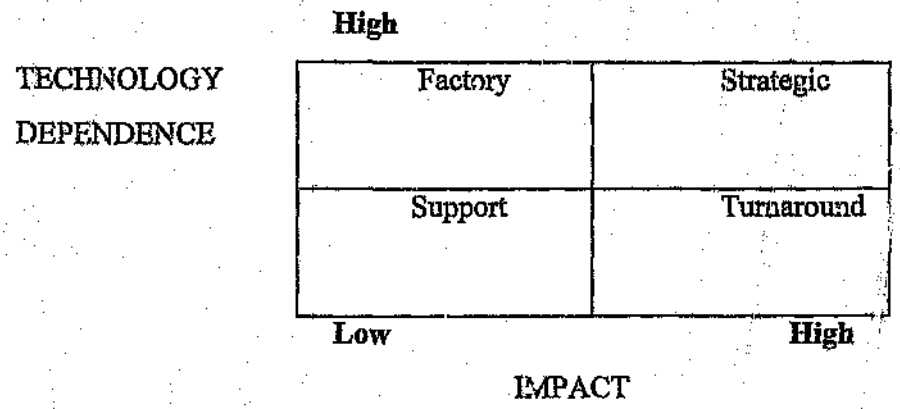
- Process cycle times speed up. Process reengineering generally focuses on reducing cycle times. As a key enabler of these reengineered processes, IT is directly associated with the increased business pace. The security created through familiarity is threatened in such situations, giving rise to resistance.

- IT changes not only how people work, but also what they do. Used as a mechanism to shape corporate strategy, IT frequently creates new demands on employees.

## 2.8 The Strategic Grid

The strategic grid developed by Robert McFarlane provides a useful framework within which the impact of EWPS's can be analysed. In terms of this matrix, information systems can be classified into one of four categories, depending on the their impact on the organisation and the degree to which the organisation is dependent on the technology. In terms of this matrix, systems could be defined as support if the existence of the business was dependent on them; and as factory if they were depended on to achieve profitability. Strategic systems are those which are designed to provide the organisation with a competitive advantage, and turnaround systems are aimed at sustaining this advantage. (McFarlane, 1984)

**Strategic Grid**




Organisations who move from a mainframe, batch-type environment to a fully integrated real-time environment experience a fundamental paradigm shift. Their dependence on technology increases substantially as the information system becomes core to all their business processes. In terms of the McFarlane grid, this moves them up the vertical axis of the matrix.

As highlighted above, the true potential of information technology can only be realised if this technology is implemented in support of reengineered business processes. In the case of EWPS, the product itself is widely available, and as such it is merely a commodity. The product itself does not offer any strategic advantage. What it does offer is an enabling mechanism which, if implemented correctly, can create a strategic advantage for an organisation. In this sense, EWPS has the potential to be classified in the strategic quadrant in the McFarlane grid.

The design and implementation of a strategic system places an organisation, from a technological point of view, on the top right hand corner of the grid. The realisation of the strategic opportunity however, requires a paradigm shift in terms of which the people within the organisation also move from the support to the strategic quadrant. This shift is effected through the change management techniques discussed below.

For an information system to be truly strategic, a dual approach is required. On the one hand, the technology and business must be aligned towards the achievement of strategic advantage. On the other hand, the organisational dynamics must be managed to ensure alignment of the organisation to the new business paradigm.

Taking these issues into account, it is necessary to analyse what are seen as key elements in managing IT driven change.

## 2.9 Key Elements of Successful Change

Current thought in the change management literature suggests that there are a number of key elements to the management of successful change. This will be used as a basis in developing the key components of successful change management within an EWPS implementation. Although these components are indicative of what must go right, the presence of all of them does not necessarily ensure success. It is the effective combination of all of them in varying degrees which ultimately determines success or failure.

### 2.9.1 Develop an awareness of the need for change.

It is critical to develop a strong business case for the need to change. People within the organisation must feel compelled to change; they must feel that the future of the organisation is being threatened by the status quo. Within the IT paradigm outlined above, the awareness for change must incorporate more than a focus on technology; the need to change organisational structures, processes and skills must be emphasised. Beckhard and Harris, as quoted in Benjamin and Levinson (1993) cite satisfaction with the status quo as a condition which will foster significant resistance to change.

### 2.9.2 Develop a clear vision of the future and a plan to achieve it

It is essential to create an awareness of where the organisation is moving to and how it is going to get there. In many cases the implementation of an IT system is only one dimension of the plan. A contextual awareness of the IT and it's role in the overall strategy is therefore important.

Beckhart and Harris (1987) equate a vision as the magnet which sustains commitment to the effort. The vision itself goes some way to resolving the management paradox of having to create stability in times of change (Price Waterhouse,1996). A constant message encapsulated in a compelling vision both stabilises and motivates change. It provides a road map where both the route and final destination is shown and serves as a source of stability throughout the change initiative.

### 2.9.3 Strong mandate from senior management

Clement (1994), states that:

*"Management leadership - especially top management - is probably the most critical element in a major organisational change effort".*

It may be argued that the requirement is not so much for top management commitment, but for commitment from what Kotter (1995) calls "a powerful guiding coalition".

In the case of an EWPS, the successful implementation of the system is dependent on people learning and committing to new ways of doing things. The acceptability of behaviour patterns is determined from the behaviour exhibited by those perceived as organisational leaders. These people may well be senior management, but may also include union leaders or customers. The extent to which these peoples behaviour is perceived as supporting the new technology will largely shape acceptance behaviour by others in the organisation.

It is the action of these people rather than their words which is critical. All the stakeholders in a technology implementation must buy into the system and buy-in must be visible to the organisation as a whole.

### 2.9.4 Continuous evaluation and communication of the ongoing impact

In many cases, fear and uncertainty are the greatest internal causes of resistance to change. This is particularly true in IT implementations where the technology is seen as a black hole by many employees. Fear ranges from losing one's job, to losing power, control, comfort or security. The pervasive nature of EWPS's does in many cases result in some or all of these materialising. Irrespective of the expected outcome the FUD factor (fear, uncertainty, doubt) is best combated through open and honest communication.

The impact of the technology must be communicated to all stakeholders as early and often as possible. People must be made aware of how the IT will impact them and the benefits which they as individuals can expect from the process.

### 2.9.5 User participation in the process

Once an awareness of the need to change has been created, true commitment to the cause is best achieved through involvement in the process. To quote Bruss and Roos (1992):

*"The secret to change management is for all employees to feel like masters of their fates rather than bystanders"*

In the case of EWPS's, user involvement has multiple benefits. By incorporating users in the system design phase, they can learn and develop as the system develops. The change process is effectively broken down into manageable steps which are far easier for individuals to internalise.

Continuous hands-on involvement also creates greater familiarity with the technology. This helps overcome the uncertainty which new technology inevitably introduces and which frequently causes implementation failure.

Involvement of key users serves to bridge the gap between the system knowledge of the technical experts and the practical business realities. Without this involvement, the risk exists of developing a system based on high level management intent which is not workable on the ground. The consequence of this would inevitably be user frustration and rejection.

User involvement is arguably the most powerful tactic available to manage change with EWPS systems. With these types of solutions, the facility exists to offer on-going tangible exposure to the driver of change. This can be used to boost user confidence and provide a source of empowerment in a situation initially perceived as threatening.

### 2.9.6 Modification of organisational structures and reward systems to reinforce changed behaviour

Functionally rich systems such as EWPS's need to be supported by appropriate organisational structures. These types of systems typically require changes in operator skills, organisational procedures and structures, and cultural fabrics (Benjamin and Levinson, 1993).

Mankin et al (1988), speaks of the need to support "user reinvention". In many cases, effective systems enable people to perform their work in a shorter space of time. A key decision needs to be taken as to how these time savings are utilised. One approach is to reduce the work force through layoffs or natural attrition, resulting in short term financial gain. An alternative option is to allow users a degree of creative space within which they can find new tasks and responsibilities to fulfil (Mankin, 1988). A good example of this within EWPS implementations can be found in the development of so-called super users within particular domains. The knowledge and expertise gained by these people during the course of the implementation enables them to fulfil a unique role within the organisation as a mechanism for corporate knowledge transfer

In certain cases, job levels and pay structures need to be modified to reflect these new skills and responsibilities.

### 2.9.7 Knowledge and Skills transfer

In many cases, the information technology is the glue which holds the change initiative together. The durability of this "glue" is dependant on the extent to which employees understand the new technology and are able to use it effectively. This familiarity is best achieved through extensive, broad-based transfer of knowledge and skills.

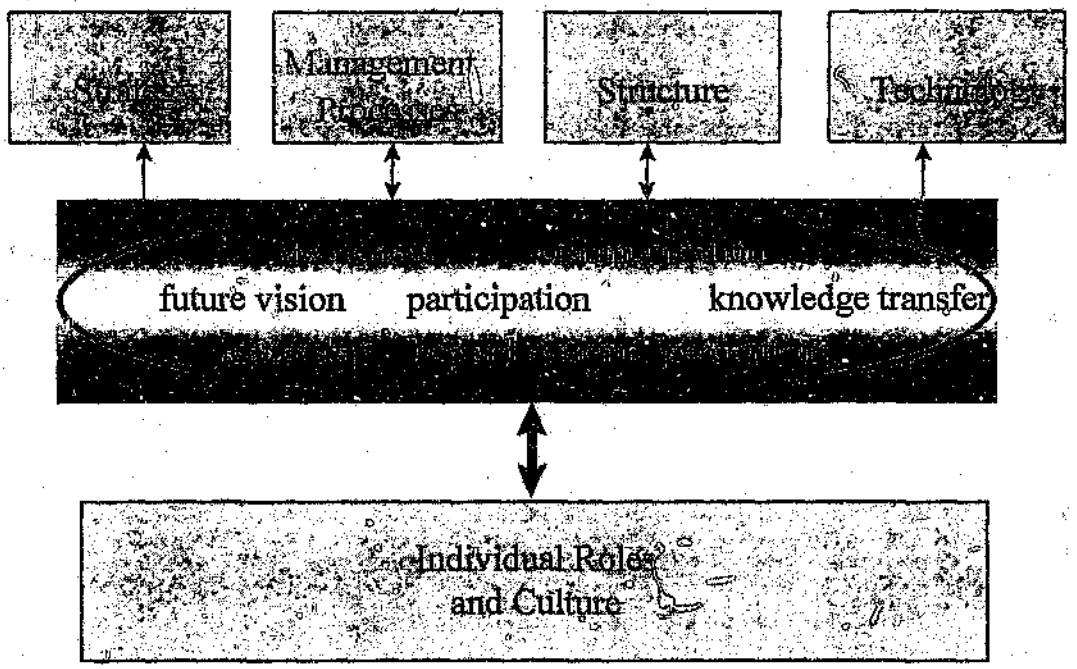
### 2.9.8 Understanding and planning the impact on existing organisational norms and paradigms.

Access to information frequently determines power and status in an organisation. The quickest way to change the distribution of power is to change the characteristics of the information flow (Sankar, 1991). The integrated nature of EWPS's fundamentally alters the information flow within the organisation and the centralised database provides broad access to information. This impacts on the established power structures in the organisation and may give rise to substantial resistance, particularly from those who perceive a loss of power. This impact needs to be understood and managed.

## 2.10 Theoretical Conjecture

The primary aim of this research is to identify the key elements in managing the change associated with the implementation of an enterprise wide software package. To do this however, one has to define and describe the relationships between the key variables. The development of the theoretical conjecture below is derived from the following modified graphical representation of the MIT 90's paradigm discussed on page 9.

**Package Implementation Paradigm**



**Theoretical Conjecture**

*The implementation of an enterprise wide software package impacts on key organisational domains, namely the technology base, organisational strategy, business processes and organisational structure. Implementation success is dependent on managing the impact on individual roles and culture. This is achieved through adherence to the following critical success factors:*

- *awareness of the need for change*
- *creating a vision of the future*
- *leadership from senior management*
- *communication*
- *user participation*
- *modification of reward systems*
- *knowledge and skills transfer*
- *managing perceptions*

## 2.11 Empirical Generalisations

The following empirical generalisation has been developed:

> *The successful implementation of enterprise wide software packages is dependent on managing the consequent changes to individual roles and culture within an organisation. This is best achieved through adherence to the following critical success factors*

- *creating an awareness of the need for change*
- *creating a vision of the future*
- *leadership from senior management*
- *continuous communication*
- *user participation in the process*
- *modification of organisational structures and reward systems*
- *knowledge and skills transfer*
- *managing perceptions and impact on organisational norms*

## 2.12 Summary and Conclusions

Understanding and managing the impact of IT implementation on the organisation is key to the successful outcome of the project. Having analysed the key elements in managing technology driven change, it is necessary to determine the validity of these factors in EWPS implementations. This is done through the research methodology below.

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1 Research Question

The following research question is posed:

*What are the critical success factors underlying the management of the change associated with the implementation of an enterprise-wide software package?*

## 3.2 Research Method

The research method used for the collection of information was based on a case study example. Information was gathered by means of semi-structured interviews with people who were substantially involved in the implementation effort. A series of questions were drafted based on the literature review above, and used as a basis for discussion (see appendix 1). The author's involvement in the project also enabled participant observation as a data collection and opinion formulation technique. The value of the case study method as a means of building information management theory is highlighted by Smith (1990), who stated:

*"Case studies of whatever form are a reliable and respectable procedure of social analysis... much criticism of their reliability has been based on a misconception of the basis upon which the analyst may justifiably extrapolate from an individual case study to the social process in general...The validity of the extrapolation depends not on the typicality or representativeness of the case but on the cogency of the theoretical reasoning"*

Smith (1990)

## 3.3 Research Sample

The case study was based on an organisation in the manufacturing industry. Data was drawn from key users who were involved in the first phase of the project. The scope of this phase focused mainly on the outbound logistics processes (inventory management, sales cycle and production planning. The integration aspects to costing and financial applications was also included.

The manufacturing facility of the organisation is based at the company's head office. The sales and marketing office is located some 600 km away, close to the key customers. The project enjoyed a high profile in the organisation, with a number of articles appearing in the company newsletter (see appendix 3).

Regular integration meetings were held between the key functional areas, frequently resulting in lengthy and sometimes heated debate on business philosophy. The enthusiasm and commitment of those involved in the project was a key factor in resolving these issues for the common good.

An interview schedule was drafted, allowing for thirty to forty minute sessions with each of the respondents. These sessions were recorded, with the consent of the respondents. The purpose of these sessions was to gain an understanding of the individuals reaction to the implementation, as well as their perceptions as to the overall organisational response. The key factors identified in the literature review were used as a framework within which the discussion was structured.

# CHAPTER FOUR: PRESENTATION AND ANALYSIS OF THE EVIDENCE

## 4.1 Key Themes

Based on the responses received during the course of the interviews, a number of key themes were apparent. Appendix 11 presents a table of responses, indicating the percentage of interviewees who indicated that these factors were significant or would have been significant in managing the change initiative. Following on from this is a discussion about each of these themes which provides insights into the significance of each factor.

### Awareness and Alignment

The first three questions in the interview focused mainly of the significance of change awareness and the importance of aligning the change initiative to the organisational strategy.

The need for change was to a large degree initiated by the external environment. Changes to the industry structure, as well as dissatisfaction from key customers made senior management aware of the need for change. This awareness was filtered through the organisation and used to drive the implementation.

The perceived need for change was directly related to the level of commitment of the people involved in the process. The need for change varied across the different, traditionally functional units of the organisation. Where the need was greatest, those people involved were more willing to see the advantages which the system had to offer. They were more prepared to take the initiative and assume ownership, as the system was seen as a vehicle to assist them in performing their jobs more effectively.

As stated by one of the respondees:

*"The greater the need for change, the greater the desire is to change"*

In those situations where the need for change was not as strong, people tended to show a greater resistance to the initiative. They felt comfortable with the status quo and therefore did not see the purpose of the system. In some cases, this gave rise to an element of fear, as people saw the system as a threat to their jobs. By not being aware of the potential benefits, they tended to focus on the perceived disbenefits.

**Structure**

The fourth question focused on the importance of structure within the process. This was aimed at testing the proposition that structure and stability in change were important in sustaining the initiative.

Having a clear understanding of the steps involved in the process had the effect of focusing peoples' commitment to the total effort. By understanding the big picture, there was a greater ability to see the role of the individual in the overall effort. Outlining the steps in the process was particularly important in the case of integrated systems, as it provided clarity regarding the integration issues in the process.

In certain cases, people needed a change in mindshift, and this was facilitated through creating a structure as the path to be followed and the eventual result was more clear.

**Leadership**

The fifth question was aimed at determining the importance of management commitment and leadership in the process.

There was an extremely high level of commitment from senior management to the process.

As mentioned by one of the respondents:

*"It was like a bright light shining on the project all the time"*

This commitment had a significant impact in shaping peoples' behaviour throughout the process. In essence, this commitment set an example to those involved in the process and acted as a motivating influence for them.

*"The involvement of senior management and their commitment to the process showed people what the importance of their efforts were"*

It was generally felt that without high level commitment from senior management, people would have been more inflexible to change. The perception would have existed that if they did change and things did not work, they would be held responsible. In a sense, management commitment acted as a safety net to those involved, providing recognition for new behaviour patterns through example. As stated by one of the respondents:

*"If management does not show commitment to the process, you have the problem of commitment to your own job. You will rather focus on your normal job, as this is perceived as more important"*

**Communication**

The role of communication in managing the change process was investigated through question six.

The level of communication was directly related to the level of commitment of the people involved in the process. Where the communication was continuous and frequent, people bought into the implementation to a greater degree, because they felt they were part of the process. Where the communication was not as extensive, for example at the lower levels of the organisation, people tended to blame the system when problems were encountered, rather than trying to resolve the problem.

The level of communication had an added benefit in that it saved time throughout the process. By keeping people informed, they understood the impact of their actions on those around them. This is particularly true in highly integrated systems. By facilitating communication, particularly cross-modular communication, time was saved due to not having to revisit system design issues.

**User Participation**

The role of key users in the process and their level of involvement was evaluated in questions seven and eight

The level of user involvement in the process was directly related to the level of user acceptance. User involvement fulfilled two key roles in the process. On the one hand, it ensured comprehensive requirements input from those on the ground, resulting in an overall more functionally rich system. On the other hand, it was highly effective in ensuring system ownership. By getting people involved in the process, they took ownership of the system and understood the reason and value of changing. The acceptance of ownership in turn facilitated the transfer of knowledge. As people perceived the system as being their own, they took the initiative in teaching themselves how it worked. This initiative extended post-implementation, as these people actively sought new and better ways to do things.

User participation had the effect of narrowing the expectations-reality gap. Where people were not adequately involved in the process, they had expectations of what the system would do once implemented. When these expectations were not realised, people became disillusioned. As stated by one of the respondees:

*"People lost faith in the system, because it did not accommodate their requirements entirely"*

Where people were involved in the process, they perceived the system as an opportunity to enhance their jobs. Where the levels of participation were lower, they perceived the system as a threat to their jobs.

**Sustaining the change**

The role of reward systems and knowledge transfer as mechanisms for sustaining change was investigated in questions nine, ten and eleven.

It was clear from the responses received that reward systems should include both financial and non-financial mechanisms. Non-financial rewards included job enrichment as a result of role redefinition in the organisation. The mere opportunity of getting involved in the project as a means of increasing skills and marketability also acted as a reward.

The rewards provided were significant in sustaining the new behaviour post-implementation. It acted as a motivating factor to those involved by recognising and rewarding their new behaviour patterns. In many cases this was important as people assumed greater responsibility within the organisation as a result of restructuring. It also set an example to others who subsequently got involved in the project. By making the rewards apparent, it sent a very powerful message regarding the consequences of behaviour changes.

Knowledge transfer from the consultants to the business was highly significant in maintaining the change initiative post-implementation. Where this occurred, the organisation was far better positioned to accommodate changes in the business within the system. This ability enhanced the overall buy-in and ownership of the system. The continual sharing of information ensured better synergy between the theoretical knowledge of the consultants and the practical experience of the business. It also resulted in a greater level of understanding and acceptance of the final system.

**Managing perceptions**

The role of organisational culture and the importance of managing changes to the culture was explored in question twelve.

The integrated nature of EWPS's facilitates information sharing. This in turn enables a more teaming environment as people start working together. In many cases, the integration aspect removed a lot of administrative responsibilities and people found they had more time on their hands. In certain cases, this resulted in people sticking to the old ways of doing things as a means of justifying their jobs.

Where some people were taken from their normal jobs, this sometimes created a greater burden on those remaining. Managing their response to the increased workload was important in fostering a positive response from them to the system and associated changes.

# CHAPTER FIVE: INTERPRETATION OF THE RESULTS

## 5.1 Meeting the Objectives

Substantial investments in Information Technology have in many cases failed to deliver the anticipated benefits. It is now generally agreed that the true potential of IT can only be realised when the technology is implemented in support of reengineered business processes. In fulfilling this role, the implementation frequently fails due to an inability to understand and manage the change associated with the initiative. The objective of the research, as outlined in the research objective, was to identify the critical success factors (CSF's) in managing the change associated with the implementation of enterprise-wide packaged software solutions. Based on the change management literature, a set of CSF's was developed. The applicability of these factors was then tested in an EWPS implementation.

In terms of the empirical generalisations developed, the research highlighted the following:

1. Creating an awareness of the need for change
   All the respondents indicated that this factor was significant in managing the change.

2. Creating a vision of the future
   The importance of structure and the creation of a future vision was supported by just over half the respondents. Overall, it was however perceived as the least significant factor.

3. Leadership from senior management
   Most respondents indicated that this factor was significant in the overall initiative.

4. Continuous communication

   The importance of communication was supported by all respondents. Significantly, this was the second most frequently mentioned factor overall.

5. User participation in the process

   Participation was perceived as the most important factor in managing the impact of change caused by the implementation.

6. Modification of organisational structures and reward systems

   The importance of reward systems, particularly non-financial was supported by all respondents.

7. Knowledge and skills transfer

   The majority of the respondents indicated that they believed this was an important factor.

8. Managing perceptions and impact on organisational norms

   This was perceived as significant, but not to the degree of other factors analysed.

## 5.2 New Findings

The research showed that the factors developed were significant in managing the changes associated within the systems implementation. The significance of certain factors over others was apparent, specifically the role of communication and participation.

In addition to the factors developed, it was clear that additional issues are significant in the case of EWPS implementations. Specifically, the ability to foster a high level process orientation to the business was significant in facilitating understanding and system ownership. This factor, although not specifically addressed through the structured interview questions, was supported by all the respondents.

The development of a process understanding was very significant in the overall initiative. As the project progressed, people became more process-orientated. They understood their role in the overall process and realised the significance of their actions on others. This understanding was key to the facilitation of communication between previously functional units. As the levels of communication increased, a more teaming environment developed. People began to perceive problems as "our problem" rather than "the other guys problem". The broad-based acceptance of responsibility was key to facilitating change which was perceived as being for the common good.

An additional factor, not widely espoused in the change management literature, was that of knowledge transfer. The research indicated that this was significant in sustaining the change initiative post-implementation. The knowledge transfer, of both system as well as business concepts, played an important role in facilitating the paradigm shift from a traditional batch environment to a real-time integrated environment.

## 5.3 Impact on Theory

Overall, the findings are consistent with the conceptual framework developed within the theoretical conjecture. The new findings highlighted above, suggest that the framework could be expanded to incorporate these factors, which appear to be significant in the case of EWPS implementations.

# CHAPTER SIX: CONCLUSIONS

## 6.1 Suggested Areas for Further Research

Having identified the important issues in managing technology driven change, it would be valuable to focus on the practical mechanisms through which these issues can be implemented. Additional research could focus on how to foster an awareness of the need for change within an organisation; how to implement effective communication channels through for example project news letters, and the nature of corporate reward systems to ensure the change initiative is sustained.

The factors which appear to be specific to EWPS, i.e. the knowledge transfer process and the fostering of a process orientation could be investigated in greater detail. Specifically, the role of these factors in facilitating a paradigm shift in previously batch-orientated organisations.

## 6.2 Management Guidelines

Based on the literature review and research conducted, a set of guidelines have been formulated to enable organisations involved in the implementation of EWPS to truly exploit the potential of these systems through the alignment of system functionality and organisational dynamics.

I. Having a common frame of reference is key to ensuring a broad level of understanding and commitment to the process. One of the major obstacles to achieving this in the case of EWPS implementations is in the terminology used. Frequently, the terminology used within the package means different things to people in the business, giving rise to confusion. It is therefore imperative that time be spent upfront bridging the gap between "package-speak" and business understanding.

II. Once a common frame of reference has been developed, clearly identify the steps involved in the process as well as the desired end-point. This is often best achieved through a "back-to-front" approach in terms of which reporting requirements are identified upfront and then used to drive the project.

III. Involve as many people in the process as possible, and always attempt to over communicate. User involvement should not ignore the role of lower level users who will operate the system at the end of the day.

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# APPENDIX 1

## Interview Questions

With respect to the following questions, indicate whether the following issues were important in managing the change effort. If they were not apparent in your experience, do you believe they would have made a difference?

1. Was there an awareness of the need to change, or was it merely a management dictate?

2. If you thought there was a need to change, what did you regard as the consequences of not changing?

3. Was there clarity regarding the role of the systems implementation in the overall strategy and vision of the organisation

4. Was the end-point established as well as the steps required to attain this result?

5. Were the senior management committed to the process? If so, what difference did this make?

6. Was the impact of the implementation clearly and continuously communicated to all involved parties?

7. To what degree were key users involved in the implementation process?

8. What impact did this have on the overall acceptance and utilisation of the system?

9. Were the organisational structures and reward systems modified in any way to support the changes in behaviour? E.G. career paths for super users?

10. To what degree was there a transfer of knowledge from the consultants to the organisation?

11. Do you believe this was significant in sustaining the change post-implementation?

12. To what extent did the system impact on individual or organisational power bases? If so, was this change understood and managed?

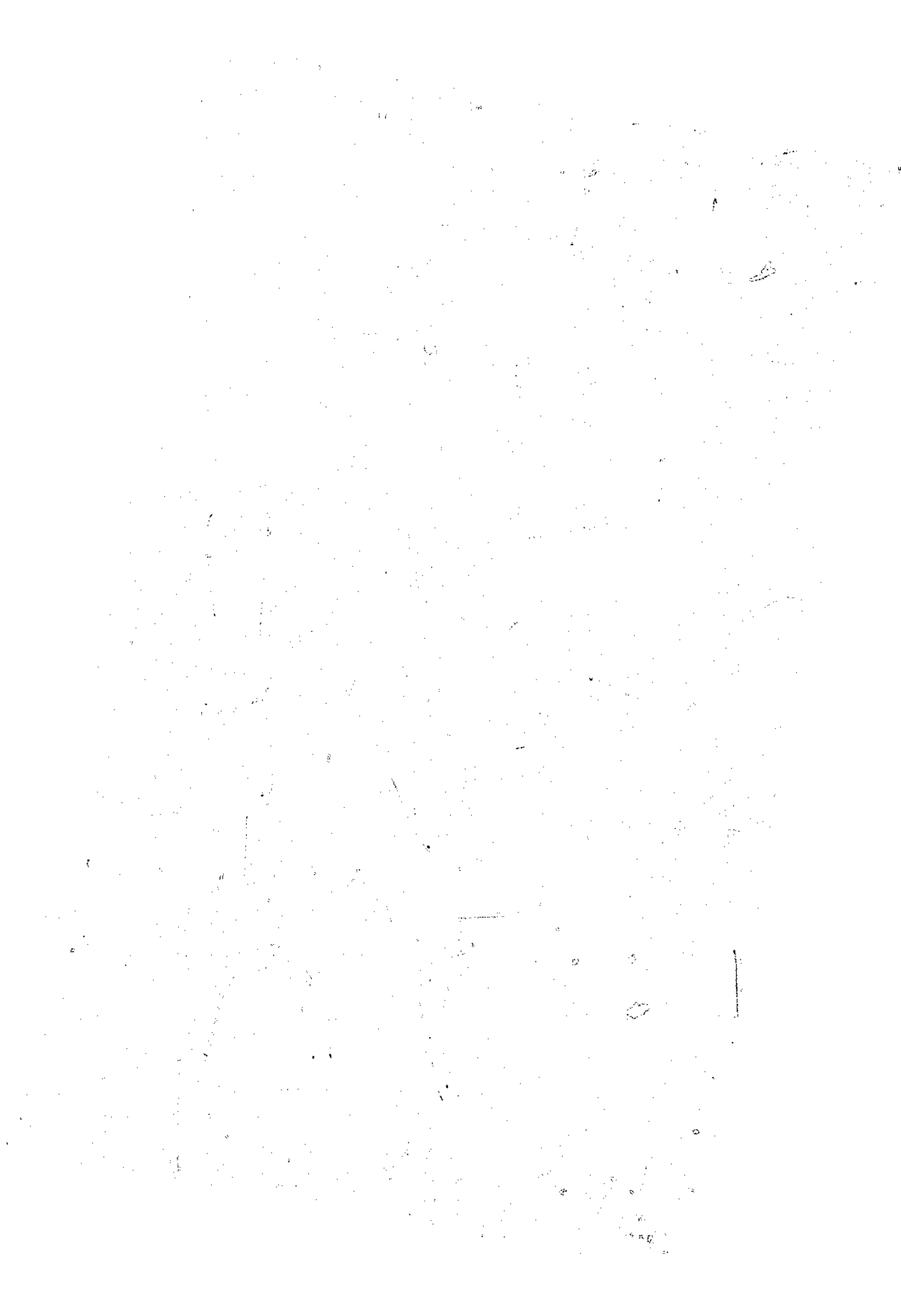
# APPENDIX 11

## INTERVIEW RESULTS SHOWING FREQUENCY OF RESPONSE

| | No of Responses | Frequency of Response | % of Total Responses |
|---|---|---|---|
| Awareness | 8 | 11 | 8.73% |
| Structure | 5 | 7 | 5.56% |
| Leadership | 7 | 10 | 7.94% |
| Communication | 8 | 18 | 14.29% |
| Participation | 8 | 27 | 21.43% |
| Reward Systems | 8 | 13 | 10.32% |
| Knowledge Transfer | 7 | 9 | 7.14% |
| Managing Perceptions | 6 | 11 | 8.73% |
| Process Orientation | 8 | 14 | 11.11% |

**KEY**

Number of responses indicates the number of respondents who believed the factor was significant
Frequency of Response indicates the total number of times the factor was mentioned by all respondents
% of Total Responses indicates the frequency of response as a percentage of total responses received



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