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Recovery of a Failed ERP Implementation Process

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Declaration

I, Paul Gregory Palmer, declare that this research report is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the University of the Witwatersrand, Johannesburg.

It has not been submitted before for any degree or examination in this or any other university.

Paul Palmer

31 May 2006

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Abstract

Enterprise resource planning (ERP) has over the past number of years become more predominant in business and a number of organisations around the world have implemented various types of ERP software; such as SAP, JD Edwards, Baan and PeopleSoft. However, the implementation of these systems have, over the past number of years, been done with varying degrees of success.

This research has, through a case study, aimed to understand what steps need to be taken by an organisation in order to recover from a failed ERP implementation process. The majority of the data gathered was from in-depth interviews that were conducted with both users and management of the organisation (Citizen Entrepreneurial Development Agency) as well as with the project management and consultants of the consulting company (EDS Enterprise Solutions) that was involved in the recovery process.

It has focussed on whether the steps taken to recover from the failure are the antithesis of what should have been done in the first place or whether there are steps that need to be taken in a recovery process that are different or not covered in the original implementation process.

The research indicates that in order for an organisation to recover from a failed implementation process it must stick vehemently to project management principles and processes that are consistent with standard implementation practice, but the tone and style of the recovery process needs to change. This change is required in order to win back the organisation, instil trust, buy-in and eventual acceptance of the solution provided.

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Glossary

BPR	Business process re-engineering
CEDA	Citizen Entrepreneurial Development Agency (Botswana)
CEO	Chief Executive Officer
CML	SAP Loans Management Module
CO	SAP Controlling Module
EDS-ES	Electronic Data Systems (Enterprise Solutions) / EDS Enterprise Solutions
ERP	Enterprise Resource Planning
HR	SAP Human Capital Management Module
FI	SAP Financial Accounting Module
KPI	Key Performance Indicators
'K' rating	Accepted rating system for evaluating consultants experience. K1 = most junior consultant while K5 = most senior consultant.
MM	SAP Materials Management Module
SAP	Systems Application Processing

1. INTRODUCTION

1.1. Purpose of the study

The purpose of this study is to identify what events resulted in a failed ERP implementation and what steps need to be taken in order to recover from it. This study focuses on a specific case site.

1.2. Context of the study

Enterprise resource planning (ERP) has over the past number of years become more predominant in business and a number of organisations around the world have implemented various types of ERP software; such as SAP, JD Edwards, Baan and PeopleSoft. According to Hedman and Borell, “ERP systems affect all aspects of a business, including organizational structure, activities and processes, and the environment” (2004:283). Barker and Frolick go onto argue that “[a] successfully deployed ERP system can increase customer satisfaction, reduce inefficient spending, strengthen sales and forecasts, reduce inventory turn around times, and enhance employee productivity and satisfaction” (2003:43). However, a badly implemented ERP system can have just the opposite effect.

Many companies and government organisations in Sub-Sahara Africa have also implemented an ERP system of some sort. However, these systems have been implemented with varying degrees of success. There are implementations that can be classified as a failure: “[a]ccording to the IS implementation literature, a system can be considered a success only of it is perceived to be satisfactory and willingly used by key stakeholders” (Bradford, 2003:211).

There are 5 measures of system success according to Laudon and Laudon. They are:

1. High levels of system use.
2. User satisfaction with the system;
3. Favorable attitudes;
4. Achieved objectives and;
5. Financial payoff.

They further define system failure as “an information system that either does not perform as expected, is not operational at a specified time, or cannot be used in the way it was intended” (Laudon & Laudon, 1994:474).

There are a number of factors that lead to implementation failure and through effective management of these risks an ERP implementation will likely be a success (Al-Mashari & Al-Mudimigh, 2003, Akkermans & van Helden (2002), Barker & Frolick, 2003, Bradford & Florin, 2003, Grossman & Walsh, 2004, Sumner, 2000, Willcocks and Griffiths (1996)).

An ERP implementation will invariably have a large impact on company performance, whether it is negative or positive (Hedman & Borell, 2004, Scheer & Habermann, 2000).

Huang & Palvia argued that ERP implementations in developing countries are also proving to be challenging due to “economic, cultural and basic economic infrastructure issues” (2001:276). Since the case study was conducted in Botswana, these issues need to be discussed on the context of economic and infrastructure issues.

This research focuses on an organisation that has implemented SAP in Botswana and which could potentially be classified as a failure as per the definition described by Bradford (2003) and Laudon & Laudon (1994) above.

It considers what factors led to the actual failure of the implementation as well as what steps were taken by the business and if applicable, the external consultants, to rectify the situation. It also takes into account whether, subsequent to these intervention efforts, the implementation is now regarded as a success.

1.3. Problem statement

1.3.1. Main problem

The proposition of this research is to identify the steps that need to be taken by an organisation in order to recover from a failed ERP implementation process.

1.3.2. Sub-problems

The first sub-problem is to identify the reasons that led to the failure of the ERP implementation.

The second sub-problem is to establish what steps are taken to recover from the implementation failure.

1.4. Relevance of the study

The study fills a gap in the research in that it discusses aspects of ERP implementations that haven't been researched in depth.

The study is beneficial to other companies in that it addresses issues that these companies are potentially facing in implementing an ERP project. It could assist management of that company in that it provides guidance on

what they should be doing during the implementation to avoid failure, but also ensure that they have a disaster recovery strategy should the implementation fail prior to go-live or after. They can also gain an understanding as to what the implications are to their business should the implementation fail and whether they would be able to recover.

The study is also beneficial to consulting companies and organisations that implement ERP solutions. Consultants and project managers in consulting organisations who are responsible for the implementation of ERP projects or responsible for resolving issues resulting in failed ERP implementation would be interested in that the study considers the steps that should be taken in the event of an implementation tending towards failure or that has failed.

Management of organisations who have a failed implementation on their hands would also be interested in the study. They are able to understand what steps need to be taken to recover from the failure and turn the project into a success. Since “management support” is critical to a successful implementation, then they need to take an active role in ensuring that a failure is turned into a success.

The study is also of interest in the academic environment in that the case study provides an opportunity to evaluate why the implementation failed, but also understand the steps taken in an attempt to turn the implementation into a success.

1.5. Delimitations and limitations

1.5.1. Delimitations

This study considers what steps are taken from both a business management perspective of the customer organization as well as

from the perspective of the consulting company that was involved in trying to ensure that the implementation was a success.

The study focuses on how and why the implementation failed. This was done from the viewpoint of understanding whether the steps that were taken to recover from the failure were the issues that originally led to the failure. The study discusses the reasons for failure but will not place blame on any party for the failure.

Being a case study, the scope of the study is limited to the implementation of the SAP system at the Citizen Entrepreneurial Development Agency (CEDA) in Botswana. It considers only the failed implementation at CEDA and does not consider other failed implementations either in Africa or the rest of the world.

This study does not consider what technical steps need to be taken to ensure that the implementation was an eventual success.

1.5.2. Limitations

This research follows the form of a case study and hence will be performed in the "interpretive paradigm" (Falconer & Mackay, 1999:288). In this framework, the research questions investigate "why, how, and under what circumstances, rather than what and how many" (Bell, 2002:23). There are a number of limitations to this method of research and include:

1. The information gathered from the case site cannot necessarily be generalized to other sites that have failed to effectively implement SAP system (or any other ERP system): "Generalization to a population is not usually sought. Rather, the intent is to gain a deeper understanding of the phenomena" (Falconer et al, 1999:288). However, Eisenhardt argues with

strong case study research, it is possible to build a theory based on the research and that "[t]he resultant theory is often novel, testable, and empirically valid" (1989:532).

2. The participants involved in the interviews were aware of "their engagement in the research process; may gain insight into their own perspectives and behaviours, as well as the topic of the research" (Bell, 2002:22). This could impact on the results of the interview process in that the participants could potentially be guarded in their answers.

3. The data has been collected from in-depth interviews: "The methods associated with this perspective tend to be those that enable participants to speak freely and to understand the investigator's quest for insight into a phenomenon that the participant has experienced" (Bell, 2002:23). As a result of this 'open ended' approach, subjectivity could potentially occur as there is the possibility of bias from either the researcher and/or the interviewee. There is the possibility that the interviewee may feel threatened since they were participants in the originally failure and wouldn't want to be viewed in a negative light. However, the researcher discussed this issue with the interviewee prior to the interview in an attempt to minimize the potential bias.

1.6. Definitions

The following definitions are relevant to this research:

ERP: According to Barker and Frolick, "ERP systems are information systems that allow an organization to run a synchronized configuration that strategically connects all aspects of the business" (2003:43).

SAP: An acronym for an integrated software package, "originally developed and marketed in Germany" (Martin and Cheung, 2000:113). SAP stands for "systems, applications and products". (Martin et al, 2000:113).

Implementation: This terms "refers to all of the organizational activities working toward the adoption, management, and routinization of an innovation" (Laudon & Laudon, 1994:479).

Successful Implementation: There are a number measures of system success according as defined by Laudon & Laudon (1994). They are:

- High levels of system use.
- User satisfaction with the system;
- Favorable attitudes;
- Achieved objectives and;
- Financial payoff

Willcocks and Griffiths argue that there are a number of risks that need to be addressed in order for the system to be a success which include "cost, time, technical performance, stakeholder benefits, organizational impacts, user and market acceptance" (1996:231). If the following risks are mitigated then the organization can achieve success in the implementation in that the project has been delivered on-time, in-budget and performs as expected by the organization and its clients.

Failed Implementation: A system can be considered a failure if one or more of the above mentioned measures are negatively rated or the risks that are associated with the implementation aren't mitigated as discussed above and the project fails in that costs aren't controlled, scope isn't managed and the system doesn't perform as expected (or promised).

1.7. Assumptions

The first assumption. The implementation of SAP at the development agency was, prior to the intervention to try and recover the project, a failure as per the definition above.

The second assumption. The implementation is no longer a failure and can be classified as a success as per the definition above.

2. LITERATURE REVIEW

The literature review is critical to the overall reliability of the case study method: “A literature review is a summary of a subject field that supports the identification of specific research questions” (Rowley, 2004:31). In order to effectively collect reliable data, the researcher needs to understand the key issues in the area of ERP implementations and the possible reasons for failure.

The literature review provides a synopsis of the key issues that were derived from the current literature and which were used to derive the research questions. The key concepts in the literature relate to what can be done to avoid system implementation failure; however this information was relied on heavily during the data collection process. This information is used to understand whether the same concepts can be applied in the same manner to recover from an implementation failure.

The purpose of this research was to understand how companies and consulting companies can recover from failed ERP implementations. This literature review broadly discusses:

- What is classified as a failed ERP implementation?
- What are the risks that, if not mitigated, lead to failure? What are the steps that can be taken to avoid failure?
- What are the current issues that are faced by companies trying to implement ERP systems in Sub-Saharan Africa?

2.1. Classification of failure

There have been a number of SAP implementations over the past decade in sub-Saharan Africa and around the world that have been either a

success or failure. However, the classification of the implementation as a success or failure tends to be completely subjective. The company or people responsible for the implementation invariably argue that the implementation was not a failure, while the business may argue that it was or is a 'complete' disaster. Laudon & Laudon argue that a system is a failure if it "does not perform as expected, is not operational at a specified time, or cannot be used in the way it was intended" (1994:474).

They go on to later discuss that there are five measures that are considered the most critical to the measurement of system success among "MIS researchers". They are:

- High levels of system use,
- User satisfaction with the system,
- Favourable attitudes,
- Achieved objectives,
- Financial payoff

  Laudon & Laudon (1994:474).

These measures can be further extrapolated to include Willcocks and Griffiths argument that success also includes:

- Technical performance
- Stakeholder benefits
- User acceptance and
- Organisational impacts

  (1996:231).

Leading on from this, Schniederjans and Kim argue that "one reason for ERP failure is not implementing a paradigm shift in operation areas before ERP implementation" (2003:418). Schniderjans and Kim claim that "about two-thirds of BPR projects either fail completely or fall significantly short of hoped-for outcomes" (2003:419). They propose that "the proper

implementation procedure requires a “sequence’ of careful planning and implementation in conjunction with organisation catalysts for change…” (2003:418). They continue to argue that the corporate culture of an organisation can have a favourable result in the implementation of a solution. It is important to note that the success of an implementation is highly dependent on the preparation that the organisation undertakes in preparing itself for the implementation of an ERP solution.

Zhao argues that some of the reasons that contribute to the failure of an ERP system include “substantial costs for extensive training and facilities updating, disruption to existing business operation, inconsistent or incomplete installations, employee resistance, traumatic experiences for the employees affected by downsizing, etc.” (2004:675). She goes onto to later explain that “the biggest challenge to SAP R/3” is the “inability to accept change” (2004:675).

Jeffcott argues that “[f]ailure is not a simple concept, ranging as it does from cancellation or termination, through late delivery and cost overruns, through to non-compliance with specifications and/or the demands and expectations of clients and users” (2001:2).

There are a number of reasons that contribute to the failure of an ERP implementation, but in terms of identifying specific measures that deem an implementation to be a failure, attitudes and usage of the system by the users is important. However, one must also consider whether the implementation has led to a financial payoff for the organisation according to the expectations of the users as well as the management of the company. It is also essential to consider whether the organisation has achieved operational effectiveness through the implementation of the solution or whether this has severely impacted on their ability to effectively deal with their customers.

2.2. Issues in ERP implementations

There are a number of causes and events that lead to either system implementation success or failure: “research to date has found no single explanation for system success or failure” (Laudon & Laudon, 1994:480). Laudon & Laudon argue that there are 4 factors that have an impact on the implementation outcome. These are:

1. The role of the users in the implementation process.
2. The degree of management support for the implementation effort.
3. The level of risk and complexity of the implementation project.
4. The quality of management of the implementation process.

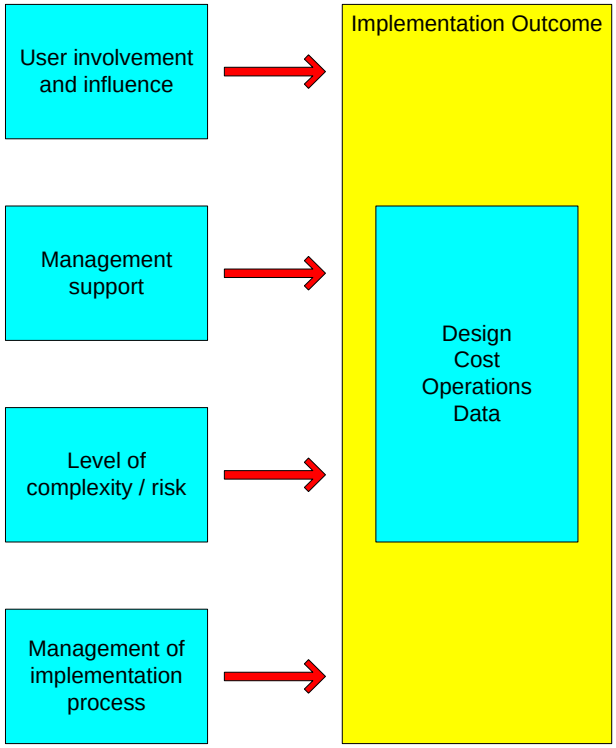

Figure 1 – Laudon & Laudon (1994:481). Factors in Information Systems Success or Failure

Flowers (1996) further argues that there are a number of factors that impact on the result in failure occurring which he argues that these factors cover the following areas:

- Senior management's lack of understanding not only of the technology but also of the general systemic nature of their organizations - the lesson that technological change means organizational change and cultural change is difficult to learn;
- The pressure of time, particularly in public sector organizations, where spending the money before the end of the financial year can result in too little attention to project definition and control;
- A failure to begin the process of systems definition with an organization-wide participative process of defining the needs, identifying the existing systems and their problems, and preparing staff (and management) for change;
- A failure to invest in planning the project within the organization, and buying a 'solution' instead.

Willcocks and Griffiths continue to discuss how IT projects are often affected by, what they term, “typical” problems and these include:

- Lack of strategic framework, or conflicts over strategy;
- Lack of organisational adaptation to complement technological change;
- IT supplier problems and general immaturity of the supply side;
- Poor management of change
- Too much faith in the ‘technical fix’
- A love of technology for its own sake or for the novelty value
- Lack of skills to support the implementation (1996:203-204).

Akkermans & van Helden (2002), Al-Mashari & Zairi (1999) and Sumner (2000) argue that there are a number of critical success factors for ERP implementation. These critical success factors include top management

support, the presence of a champion, good communication with stakeholders, effective project management, project team competence, management of expectations, change management, etc.. to name a few. All of these factors are included in the Laudon and Laudon high level factors in implementation success or failure 'model'. It is this framework that it going to be used to discuss the various aspects of critical success factors to implementation success or failure; however in order to establish the steps involved in the recovery of a failed implementation process, one needs to consider whether these critical success factors.

The critical success factors to an ERP implementation are varied and many organisations will argue that certain factors are critical while others may argue that they are not. Akkermans and van Helden (2002) argue that there are a number of critical success factors that will assist in project success. They are detailed below:

(1) Top management support
(2) Project team competence
(3) Interdepartmental co-operation
(4) Clear goals and objectives
(5) Project management
(6) Interdepartmental communication
(7) Management of expectations
(8) Project champion
(9) Vendor support
(10) Careful package selection
(11) Data analysis and conversion
(12) Dedicated resources
(13) Steering committee
(14) User training
(15) Education on new business processes
(16) BPR
(17) Minimal customisation
(18) Architecture choices

(19) Change management
(20) Vendor partnership
(21) Vendor's tools
(22) Use of consultants
(Akkermans & van Helden, 2002:36)

2.2.1. User involvement and influence

In order to ensure that the implementation is a success, it is critical to ensure that the users are involved from the very beginning in the design of the system (Akkermans & van Helden, 2002; Al-Mashari & Zairi, 1999; Fui-Hoon Nah, Lee-Shang Lau & Kuang, J, 2001 and Laudon & Laudon, 1994). Through direct involvement in the design of the system, the users will have "more opportunities to mold the system according to their priorities and business requirements" (Laudon & Laudon, 1994:481). The user's direct involvement will also result in more user acceptance of the system once the implementation has been completed and the users will then feel that they have more direct ownership of the system (Grossman & Walsh, 2004, Laudon & Laudon, 1994, Sumner, 2000).

Barker and Frolick's argument is that in order for the implementation to be successful, an organisation should ask itself what it expects from their employees: "it should carefully evaluate its current staff and analyze its needs for such a project" (2003:48). Sumner also argues that "lack of expertise, including lack of development expertise, lack of application-specific knowledge and lack of user experience, contributes to project risk" (2000:318). Their case illustrates further how the lack of proper user involvement in the implementation resulted in its failure. They also argue that the business must accept overall responsibility and accept "ultimate ownership" for the implementation (Barker & Frolick, 2003:49).

Al-Mashari and Al-Mudimigh argue that the lack of ownership by the business "led the consultants making decisions that, transparently and negatively, influenced other major roles in the company" (2003:29). Through the business taking ownership for the system they can further mold the system to their requirements, but also will gain a deeper understanding of the current and future prospects that the system would be able to deliver. They illustrate that it is important that the business doesn't "isolate IT from business affairs" (2003:31). Through isolating out the business from the IT and visa versa the IT department may take control of the project and this lack of involvement from the users results in lower levels of knowledge in the business as well as low levels of system acceptance. The solution must be aligned with the business strategy to ensure that the solution delivers what the business is expecting (Akkermans & van Helden, 2002, Al-Mashari & Al-Mudimigh, 2003, Sumner, 2000).

Communication is critical to the success of any project whether it is a major ERP implementation or a minor in house project and communication with the vendor, consultants and internal parties is critical to the success of a project (Laudon & Laudon, 1994, Akkermans & van Helden, 2002). Laudon & Laudon discuss what they term to be the "user-designer communications gap" and argue that it is traditionally a problem in any systems implementation (1994:481). This concept discusses how users and consultants have "divergent organizational loyalties, approaches to problem solving, and vocabularies" (Ibid, 1994:481). Barker & Frolick's experience illustrated that one of the major problems in the ERP implementation was communication: "In the soft drink maker's situation, a lack of communication and uneasiness led to high turnover and great resistance to change" (2003:47). Through effective communication, the organisation will be able to "build the competence of the whole organisation in re-engineering efforts, and

gain everyone's commitment, support and response" (Al-Mashari & Al-Mudimigh, 2003:30).

2.2.2. Management support

Management support is vital to the success of an ERP implementation effort (Akkermans & van Helden, 2002, Barker & Frolick, 2003, Duplaga & Astani, 2003, Huang & Palvia, 2001, Laudon & Laudon, 1994, Sumner, 2000). An implementation requires a huge amount of dedication from the consultants as well as the users and "[e]mployers should come up with creative ways to reward those players who are putting forth such a tremendous effort" (Barker & Frolick, 2003:49). Laudon & Laudon argue that "[i]f an information systems project has the backing and approval of management at various levels, it is more likely to be perceived positively by both users and the technical information services staff" (1994:482). Akkermans & van Helden's research also highlights the importance of top management support in ensuring the success of an implementation process.

Extensive management support can make a large impact on the possibility of success of an ERP implementation: "Although success is not guaranteed by involving the proper employees and treating them with the respect and recognition they deserve, it is definitely a major part of the equation" (Barker & Frolick, 2003:49).

Bradford & Florin (2003:205) "draws upon [the] Diffusion of Innovation (DOI) theory and Information System Success (IS) theory to develop and test a model of ERP implementation success. Results reveal that top management support and training are positively related to user satisfaction, while perceived complexity of ERP and competitive pressure show a negative relationship".

2.2.3. Level of complexity and risk

System implementations, especially ERP implementations, can vary dramatically in their size and complexity: “[a] common theme in ERP literature is the inherent complexity of ERP systems” (Bradford & Florin, 2003:208). Ryan, as cited in Akkermans & van Helden, also alluded to the complexity of inherent in ERP implementations in their research: “[t]he complexity of ERP implementation is very high, given the vast combination of hardware, software and organizational issues involved” (2002:37). Laudon & Laudon identify 3 key dimensions that impact on project risk. They are:

1. “Project size,
2. Project structure,
3. Experience with Technology” (1994:482)

They argue that the larger the project, the greater the risk. Project structure also impacts on the success of the implementation effort: “Users know exactly what they want and what the system should do…[s]uch projects run a much lower risk than those whose requirements are relatively undefined, fluid, and constantly changing” (1994:483). Scope creep often results in projects running over time and over budget (Al-Mashari & Al-Mudimigh, 2003, Duplaga & Astani, 2003, Grossman & Walsh, 2004, Sumner, 2000). The project team and implementation staff must have the “technical expertise” to ensure that the implementation is a success (Laudon & Laudon, 1994:483). Without extensive knowledge and experience from the staff, the results are a project that will run overtime and over budget (Al-Mashari & Al-Mudimigh, 2003, Huang & Palvia, 2001, Laudon & Laudon, 1994, Sumner, 2000).

2.2.4. Management of implementation process

The implementation of an ERP system must be “carefully managed and orchestrated” (Laudon & Laudon, 1994:484). They further argue that poor project management can have the following consequences:

- Cost overruns that vastly exceed budgets.
- Time slippage that is much greater than expected.
- Technical shortfalls resulting in performance that is significantly below the estimated level.
- Failure to obtain anticipated benefits.

There are a number of steps that need to be taken from a project management perspective to ensure that the implementation is a success. These are:

- Project initiation / planning
- Technical and operational considerations
- Management of expectations
- Legacy data conversion
- Testing
- Training
- Economy, culture and infrastructure
- Business Process Re-engineering
- Change Management
- Relationships
- Discipline

2.2.4.1. Project initiation / planning

Once a business has decided to implement an ERP system, it is critical that they have a strong and experienced project management structure (Akkermans & van Helden, 2002, Barker & Frolick, 2003). These people need to have the experience in implementing an ERP system and need to ensure that they have a well defined path. Barker & Frolick illustrated that failure to do so could result in an "implementation process [that is] even more challenging" (2003:46). Included in the project planning phase is the selection of the correct staff to work on the project: "even the best planned project can be sabotaged without the proper selection of employees" (2003:46).

Many organisations are often desperate to get the "package installed as soon as possible", but this is often to the detriment of the entire implementation: "[r]emember the first laws of software implementations: it takes longer and costs more than originally planned" (Grossman & Walsh, 2004:39). It is critical to the implementation that the planning takes into account that there may be "unexpected problems" that could occur that will delay the implementation" (Grossman & Walsh, 2004:39). Project management must plan as much as possible for these events to ensure that they don't cause the project go-live to be unreasonably delayed.

2.2.4.2. Technical and operational considerations

Many organisations have tried to implement an '"out-of-the-box" solution or what is often referred to as "vanilla SAP" (Grossman & Walsh, 2004:38). However, "it is almost impossible and not advisable to change an organisation to meet the out-of-the-box solution of an ERP" (Grossman & Walsh, 2004:38). This solution is

often not sensible due to the complex nature of most organisations. The reasons for the implementation of a “vanilla” solution if often to keep the costs of the implementation down as well as to make upgrading of the system at a later stage quicker and simpler (Grossman & Walsh, 2004:38).

As argued above, the implementation of a “vanilla” solution is often not practical and there is invariably a need to redesign business processes. A lack of effective redesign will tend to lead to an inability of the implementing team to match existing processes to the software which will tend to result in users unwillingness to accept the system (Sumner, 2000).

2.2.4.3. Managing expectations

Companies often spend a large amount of money on investing in ERP implementations and many of them don’t believe that they have seen any tangible results from the implementation: “few organisations have achieved the results that they envisioned when calculating their first planned return on investment (ROI)” (Grossman & Walsh, 2004:39). It is important for the consultants to manage these expectations and reiterate to the client that “cost and organisational efficiencies take time” (Grossman & Walsh, 2004:39).

This management of expectations is also critical to the delivery of the solution (Akkermans & van Helden, 2002, Grossman & Walsh, 2004). The software can often deliver what the customer requires, however it may not be a standard solution or “promised” in the next version: “often, an ERP vendor promises a new feature in the next version of the system” (Grossman & Walsh, 2004:39). The customer and consulting company must ensure that they both understand exactly what the system is going to deliver (Akkermans

& van Helden, 2002). Failure to manage this process can result in lower levels of user acceptance because the system isn't delivering what the business requires.

Effective performance measurement techniques can also go a long way in managing the expectations of the customer as well as ensuring that the project proceeds on time and within budget (Sumner, 2000). Effective performance measurement techniques will ensure that issues are addressed timeously:

> "Having a comprehensive measurement system provides a feedback mechanism to track implementation efforts, identify gaps and deficiencies in performance, and recommend the necessary actions to fine-tune the situation in hand in order to achieve the desired business-centered outcomes" (Al-Mashari & Al-Mudimigh, 2003:31).

Managers must control risk and "take into account distinctive human and organisational practices and patterns of believe and action, as well as traditional project related factors" (Sumner, 2000:318). It is human practice to "discount problems" during an implementation and only alert management or stakeholders after a long period of time (Sumner, 2000:318). It is critical to look for problems early and frequently to ensure that they can be managed as they occur.

2.2.4.4. Legacy data conversion

According to Xu, Nord, Brown & Nord (2002:47), "it is essential that data quality (DQ) issues be thoroughly understood". They further argue that "organisations should obtain knowledge of the critical success factors essential to ensure DQ during the implementation process" (Xu, Nord, Brown & Nord, 2002:47). Failure to take

cognizance of the importance of DQ issues can result itself in implementation failure.

Grossman & Walsh (2004:39) argue that “legacy data cannot always be converted for ERP systems”. This is often due to the nature and structure of the legacy system, but also the systems aren’t always “integrated” and “an organisation might be faced with having data that represents multiple versions of the truth” (Grossman & Walsh, 2004:39).

It is absolutely critical that the data is reliable and “clean” for the conversion into the ERP solution: “[d]ata cleansing and consolidation is a necessary step in the data conversion process. A group must be assigned responsibility to evaluate the quality and completeness of legacy data” (Grossman & Walsh, 2004:40).

2.2.4.5. Testing

During the various stages of the implementation it is critical to ensure that the various components of the system have been thoroughly tested. This includes unit testing for the various modules of the ERP system as well as complete integration testing: “[m]any companies make the mistake of assuming that once an application concept is proven in the pilot phase, it can go live” (Grossman & Walsh, 2004:40).

“Stress testing” must also be done with extensive amounts of data (Grossman & Walsh, 2004:40). Many companies test the components and integrate the solution, but fail to comprehend the amount of data that could load the system and which could potentially result in a solution that falls over on go-live: “small volumes does not necessarily work when put under the operational loads of a live environment” (Grossman & Walsh, 2004:40).

2.2.4.6. Training

According to Grossman & Walsh (2004:40), “training is the stepchild of most software implementations. It is one area that cannot be overlooked or underemphasized”. As mentioned earlier, an ERP solution is a complex solution and extensive user training is a requirement: “Without adequate training, a system can never be used properly, nor can it ever achieve the returns that were projected” (Grossman & Walsh, 2004:40).

Training is critical to system success and the business must realise that training is costly: “Resolving operational and cultural issues contributes greatly to a system’s success. And training is an integral part of that process” (Grossman & Walsh, 2004:40). If training isn’t effectively managed then the risk of the project and implementation effort is increased (Barton, 2001 and Sumner, 2000).

An ERP implementation invariably “involves some annoyance”, but there are steps that needs to be taken to manage the change (Al-Mashari & Al-Mudimigh, 2003:30). Ineffective change management as well as “scarcity of experienced staff, lack of training and education…” can all lead to a failed implementation (Al-Mashari & Al-Mudimigh, 2003:30).

2.2.4.7. Economy, culture and infrastructure

Huang & Palvia identified a number of issues that relate to ERP implementations in advanced and developing countries. They argued that “the implementation of ERP is affected by two broad categories of factors: national / environmental and organisational / internal, **each** of which comprises of five variables” (2001:277). These variables were: “Economy and economic growth,

Infrastructure, IT maturity, computer culture, business size, BPR experience, manufacturing strength, government regulations, management commitment, regional environment" (2001:277-278).

Huang & Palvia broadly argue that growth in an economy will result in a greater investment in IT initiatives: "rapid economic growth fuels IT/IS development because enterprises are eager to gain competitive advantage". They go onto argue that in order for an ERP implementation to be a success, the country or organisation must have a sound infrastructure on which to build their solution (2001:277).

The higher the "levels of IT maturity" within an organisation, the greater their chances are of successfully implementing an ERP solution (Huang & Palvia, 2001:277). Huang & Palvia go onto discuss how the "computer culture" of the organisation is also important to the overall success of the implementation: "a strong culture would have better understanding of application functionality, data management, and more accepting of ERP systems" (2001:278).

In many developing countries "inadequate IT infrastructure, governmental policies, small size of companies, lack of IT/ERP experience, and low IT maturity seriously affect the adoption decision", but also impact on the organisations ability to implement and maintain the solution adopted (Huang & Palvia, 2001:281).

Huang & Palvia (2001) identified China, India and Brazil for the focus of their research. However, there are a number of implementations that have been undertaken over the past number of years in developing countries in Africa, including Botswana. These countries are facing all the issues identified above as well as the lack of infrastructure issues identified by Huang & Palvia.

2.3. Conclusion

The literature suggests that there are numerous risk factors identified that could lead to a failed ERP implementation. These risk factors can be broadly classified into the following categories: user involvement and influence, management support, level of complexity / risk and management of implementation process (Laudon & Laudon, 1994). The figure below breaks these factors down into and illustrates the main issues discussed in the literature.

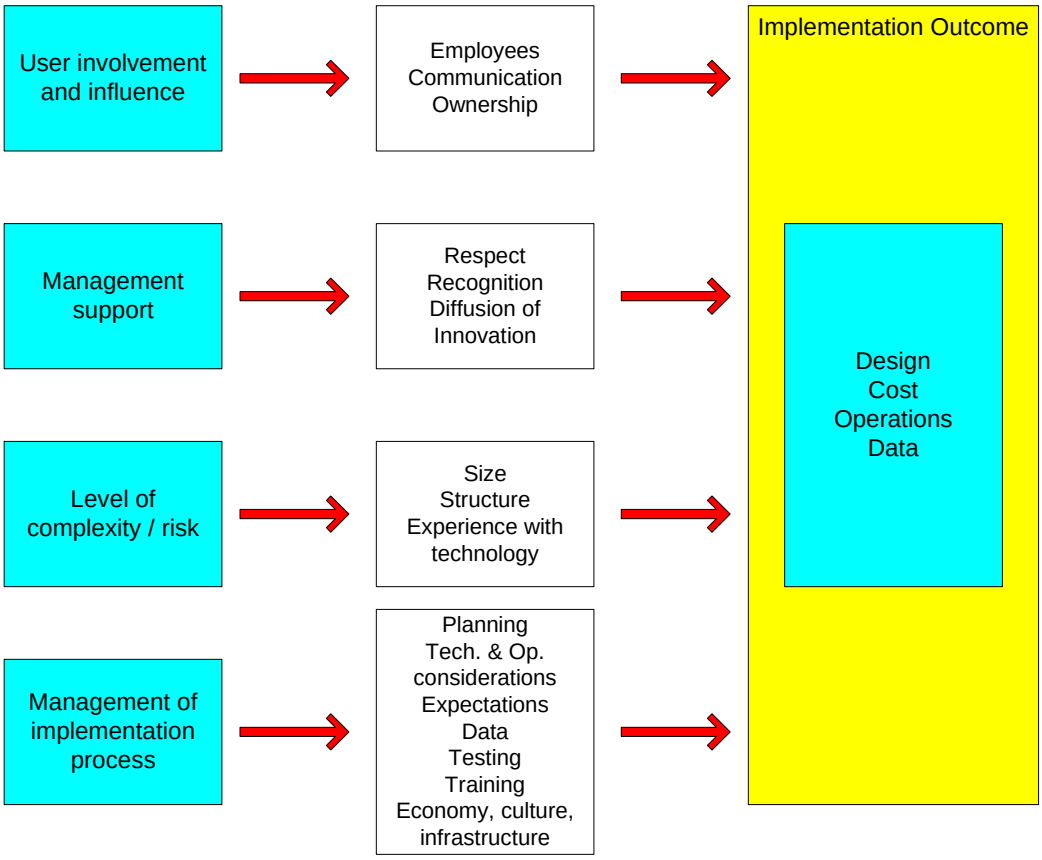

Figure 2 – Laudon & Laudon (1994:481). Factors in Information System Success or Failure. This is amended to include the detail behind the factors that have been discussed in literature.

During the implementation of an ERP system, these risks can be identified and mitigated. But there are instances where, for a number of reasons, these risks are not well managed by the business or project management and result in a failed ERP implementation.

The research opportunity and objectives that have emerged relate to investigating, within a specific case site, of the factors that have lead to a failed implementation, but more importantly whether the same steps that resulted in the failure were addressed by the business in order to recover from the failure itself (Rowley & Slack, 2004:31). There is also an opportunity to investigate whether there were any other initiatives that were under taken outside of the points discussed in the literature that lead to the ultimate recovery of the implementation.

2.4. Research Questions

The proposition of this research was to identify the steps that need to be taken by an organisation in order to recover from a failed ERP implementation.

The research questions were intended to address the sub-problems. The first sub-problem was to identify the reasons that led to the failure of the ERP implementation. The literature reviewed provided a strong foundation from which to evaluate the reasons that contributed to the failure of the implementation.

The following questions assisted in establishing the reasons for the failed implementation:

- What are the key factors that led to the failure of the ERP implementation?
- Could anything be done during the project to ensure that the implementation wasn't a failure?

- Did infrastructure contribute to the failure? Communications, culture, economic factors?

The second sub-problem was to establish what steps are taken to recover from the implementation failure.

The key issue that needed to be addressed was whether, in terms of standard ERP implementation practices, what should have been done in the first place to ensure that the project wasn't a failure were the same steps that needed to be followed in order to recover from the failure or whether other steps needed to be completed in order to recover from the failure.

The following questions aimed to outline how the organisation has managed to recover from the failed implementation and assist organisations in the future in ensuring that they avoid a failed ERP implementation.

- What steps were taken to recover from the ERP failure?
- What have been the major contributors to ensuring that the implementation became a success?

3. RESEARCH METHODOLOGY

This chapter discusses the method that was used in order to answer the questions posed above.

3.1. Research method

The case study research was done as qualitative research. According to Falconer & Mackay, “qualitative researchers study thinks in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them” (Falconer & Mackay, 1999:288). Chua (1986) as sited in Falconer & Mackay (1999:288), goes onto argue that “[q]ualitative research may be positivist, interpretive or critical”.

The research problem stated in section 1.3 required the researcher to gain insight and reveal the nature of failed ERP implementations, but the issue of the steps that were taken to recover from the implementation are subjective. However, it is critical to get close to the participants viewpoint: “qualitative investigators believe they can get closer to the subject’s perspective through detailed interviewing and observation” (Falconer & Mackay, 1999:288).

This research does “conform to Burrell and Morgan’s (1979) interpretive paradigm” (Falconer & Mackay, 1999:288). The research seeks “a relativist, shared understanding of phenomena” through open ended interview questions (Falconer & Mackay, 1999:288). The interpretive paradigm has been used because we have derived meanings from “perceptions, experiences, and actions” (Bell, 2002:28).

In order for the researcher to gain an in-depth understanding of the process that was followed in order to recover from the failed

implementation; detailed interviews were conducted with various respondents within the organisation, EDS Enterprise Solutions (EDS-ES) and external consultants. The questions were open ended and respondents were asked to comment on their own experiences as well as perceptions that they gained during the initial implementation as well as during the stabilisation project.

In addition to the interviews that were conducted, various other internal documentations were reviewed, such as steering committee minutes and project management meeting minutes.

In summary, the research method was qualitative research, performed in the interpretive paradigm using the case study method. The data collection methods were interviews, observations and company specific documentation (Eisenhardt, 1989).

3.1.1. Qualitative Research

Qualitative research aims to "study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Falconer & Mackay, 1999:288). This research studies CEDA's original implementation and understands from management, user and consultant perspectives the reasons for the implementation failure and the steps taken that resulted in eventual success.

3.1.2. Case study method

The reasons for using the case study method is because it "may offer insights that might not be achieved with other approaches" (Rowley, 2002:16). The focus of this research is to understand "how" the organisation recovered from a failed implementation:

“case studies are useful in providing answers to ‘How?’ and ‘Why?’ questions, and in this role can be used for exploratory, descriptive or explanatory research.

Yin (1994) as sited in Rowley (2002:18) characterises a case study as “an empirical inquiry that investigates a contemporary phenomena within its real life context, especially when the boundaries between phenomenon and context are not clearly evident”. The failed implementation is taken within the context of the company and Botswana, but also is “a valuable way at looking at the world around us” (Rowley, 2002:18). We understand the events that led to a failed implementation within a single setting: “case study is a research strategy which focuses on understanding the dynamics present within single settings” (Eisenhardt, 1989:534).

Through using the case study method for this research, it is possible to generate and test a possible theory: “case studies represent an important research track in organizational science, not only as a method of generating hypotheses for quantitative studies, but for generating and testing theory” (Patton & Appelbaum, 2003:60).

3.1.3. Interpretive paradigm

The researcher chose the interpretive paradigm for the research. This is because, “interpretive studies reject the possibility of an objective accounting of events and situations, seeking instead a relativist, shared understanding of phenomena” (Falconer & Mackay, 1999:288). This paradigm allows for interpretation of the events and perceptions of the people involved in the process, but also recognise the role the researcher has in the data collection and analysis process.

3.2. Case site and interview sample

Since the case study method was used, the next section describes the case site and discusses the interview sample used.

3.2.1. Case site

The case site that was used was the Citizen Entrepreneurial Development Agency (CEDA) in Gaborone, Botswana. The company is a development agency that provides either grant funding or low interest rate loans to citizens of Botswana for start-up businesses or expansion funding.

In September 2003, CEDA went live with their SAP solution. However, in February 2004, they contacted EDS-ES to assist them in trying to resolve the issues that had arisen during the implementation and subsequent to go-live. Management of CEDA were concerned that they were due to be audited and needed to ensure that the system was stable, usable and auditable.

They didn't believe that the current state of the system, nor the knowledge of the users would ensure that their audit wasn't qualified.

In November 2004 the audit was signed off. It was unqualified. CEDA management believes that the implementation was a failure, but has subsequently been turned into a success. As shown in the literature review, there is little direct research done on how organisations can recover from a failed implementation and the unique access to the site along with managements commitment ensures that this is a worthwhile research topic.

Formal approval has been granted to conduct this research from both CEDA and EDS-ES.

3.2.2. Interview sample

There were a number of people that were interviewed as part of the research. They are people that were directly involved in the ERP project from a CEDA management perspective as well as user perspective, but also subsequently involved in the "stabilisation project"[1] to ensure that the implementation was an eventual success.

Interviews also included the project management of EDS-ES as well as the consultants that were responsible to ensure that the ERP solution become a success once it had already gone live. These respondents were responsible for the actual "stabilisation" of the system.

A total of 13 interviews were conducted. These interviews were conducted between 8 February 2006 and 31 March 2006 in both South Africa and Botswana.

The names and roles of the respondents cannot be disclosed for confidentiality reasons as the parties involved in the original implementation are currently involved in a law suit which has not yet been settled.

[1] "Stabilisation project" was the name that EDS-ES termed their intervention at CEDA. It began with data and system evaluation in March 2004 and concluded in September 2004.

3.3. Research design

Rowley (2002:18) defines research design as the "logic that links data to be collected and the conclusions to be drawn to the initial questions of a study; it ensures coherence". She continues to argue that there are 5 aspects to research design:

1. "The study's questions
2. The study's propositions
3. The study's units of analysis
4. The logic linking the data to the propositions
5. The criteria for interpreting findings" (Rowley, 2002:19).

The proposed case study design has questions that were asked of the participants in an open interview with the aim of understanding what steps were undertaken to ensure that, should an ERP implementation fail, there is a means of recovery.

3.4. Data collection

Data was collected using the following sources:

- In-depth interviews
- Observations (by the researcher)
- "Archival searches" (Patton & Applebaum, 2003:60). This will include any documentation that is made available by EDS-ES and CEDA.

Data collection in case studies and the interpretation of the data is crucial to the overall success, reliability and validity of the research (Rowley, 2002).

3.4.1. Interviews

The main source of data collection was done via interviews. They were done at a time that was convenient to the interviewee. The interviews were done, where possible, outside of the office. This was done to ensure that the interviewee wasn't distracted by colleagues or other work issues, but also to ensured that they feel that they can talk freely without being overheard.

Each interview took approximately an hour and the questions were distributed to the relevant interviewees prior to the interview so that they had time to prepare. At the start of the interview the researcher provided background to the research and tried to diminish any fears that the respondent may have regarding the research that they may be individually viewed in a negative light. The point of the research was to understand 'how' the organisation recovered from a failed implementation and not to lay blame on any party.

3.4.2. Observations

The data gathered through the interviews were supplemented by the researcher through general observations of the interviewees during the interview. However, the researcher also had unique access to the site and supplemented the interviews based on the information that the researcher made while being on-site at CEDA.

Careful consideration will be taken to ensure that the data collected during the interview is not confused with the observations that the researcher makes. The researcher has ensured that his own observations and knowledge of the site didn't effect the data collection and interpretation.

3.4.3. Documentation

CEDA is a government organisation and hence there are numerous other articles that will be used to supplement the data collected during the interviews. These will include the following:

- Government papers and reports
- Legal documentation (if available)
- Newspaper articles
- Internal documentation from EDS-ES and CEDA.

3.4.4. Data storage

A “case study database” was created stored the data collected (Rowley, 2002:23). The research was also backed up on a USB memory device as well as the network.

3.4.5. Triangulation

According to Rowley, “triangulation uses evidence from different sources to corroborate the same fact or finding” (2002:23). The fact that data was collected from the various sources mentioned above assisted in ensuring that there was triangulation in the research and hence confirmed validity.

3.4.6. Chain of evidence

Rowley further asserts that the “researcher needs to maintain a chain of evidence” (2002:23). The researcher ensured that this is adhered to through “appropriate citation of documents and interviews” (2002:23).

3.5. Data analysis and interpretation

It is critical to building a theory to ensure that the case data is analysed: “analysing data is the heart of building theory from case studies” (Eisenhardt, 1989:539). It is also critical to ensure that the existent literature is taken into account when analysing the data: “an essential feature of theory building is comparison of the emergent concepts, theory, or hypotheses with the extant literature” (Eisenhardt, 1989:544). Since the data collected was qualitative, the researcher used inductive reasoning to infer theory from the data as well as the available research.

3.5.1. Data analysis

According to Rowley, “good case study analysis adheres to the following principles:

1. The analysis makes use of all the relevant evidence
2. The analysis considers all of the major rival interpretations, and explores each of them in turn
3. The analysis should address the most significant aspect of the case study
4. The analysis should draw on the researchers prior expert knowledge in the area of the case study, but in an unbiased and objective manner” (2002:24).

The data analysis was difficult and fluid in that data analysis and collection at times occurred simultaneously (Rowley, 2002:24). The analysis of data followed the principles as discussed by Rowley above.

3.5.2. Data interpretation

The nature of the research was such that interpretation of the data was going to be the essence of the research.

The interpretation of the information may lead to new ideas or solutions to the problem, but may also uncover new issues in ERP implementations that may not have been documented. Since the research was done in the interpretive paradigm, aiming to "explain and understand the social world from the point of view of those directly involved in the social process", interpretation was key in understanding the wider scope of issues that impact on an ERP implementation (Falconer & Mackay, 1999:289).

3.6. Generalisation, validity and reliability

There are "three concepts" that "establish the basis on which other researchers should regard a piece of research as knowledge that can be assimilated into the knowledge base of a field of study" (Rowley, 2002:20). They are:

1. Generalisation
2. Validity
    a. Construct
    b. Internal
    c. External
3. Reliability

3.6.1. Generalisation

Generalisation is important, but “can only be performed if the case study design has been appropriately informed by theory, and can therefore be seen to add to established theory” (Rowley, 2002:20).

Through extensive research in the area of ERP implementation failure and success, the researcher could align the issues that CEDA faced during the implementation and subsequent stabilisation initiative to ERP failure and success research conducted and documented and hence generalisation within the CEDA case study was possible.

Validity looks at whether the research “measures what it is supposed to measure” (Leedy & Ormrod, 2001:31). Since the research was a case study in the interpretive paradigm, validity was a concern.

The aim of the research was to gain an understanding into the steps that need to be taken by an organisation in order to recover from a failed implementation process which, through the evidence gathered and interview sessions, the research has measured what it was supposed to measure.

3.6.2. Construct validity

Rowley defines construct validity in terms of “establishing correct operational measures for the concepts being studied” (2002:20). It is important to ensure that bias is reduced and this is essentially achieved through strong measures. Linking into construct validity would fall the issue of triangulation to ensure that the information gathered during the research can be confirmed via the various sources.

The research approach ensured that construct validity was achieved. This was achieved through interviewing a cross section of the organisation (from senior management to user), as well as through the authors own experiences within ERP implementations that could be applied to the implementation, legal documentation that could be potentially made available to the author and through conducting interviews with independent contractors and project managers that have worked with the organisation.

3.6.3. Internal validity

According to Rowley internal validity is for “explanatory or causal studies only, and not for descriptive or exploratory studies” (2002:20).

Internal validity was therefore not a requirement of this research.

3.6.4. External validity

Rowley contends that external validity is “establishing the domain to which a study’s findings can be generalised” (2002:20). External validity links into the issue of generalisability above. Since this was a single case site with established theory in the areas of ERP implementation success and failure external validity may be achieved.

3.6.5. Reliability

Reliability is achieved “through thorough documentation of procedures and appropriate recording keeping” (Rowley, 2002:20).

In terms of this research, every effort was made to ensure that reliability was achieved as per the guidelines above.

However, this research was a case study in the interpretive paradigm and hence the interpretations and inferences that the researcher makes have a major impact on the final outcome of the research. It is impossible to predict whether similar research done in another case site will lead to the exact same results, but would nevertheless add to the emerging theory.

3.6.6. Data presentation

There are a number of literature articles that outline the reasons for failure and success in ERP implementations. These include authors, to name a few, such as Akkermans & van Helden (2002), Al-Mashari & Zairi (1999), Barker & Frolick (2003), Duplaga & Astani (2003), Fui-Hoon Nah et al, (2001), Gargeya & Brady (2005), Huang & Palvia (2001), Laudon & Laudon (1994) and Sumner (2000). The data gathered from the organisation, as well as interview session information, is presented in relation to the literature.

4. CASE STUDY REVIEW

4.1. Initial Remarks

The Citizen Entrepreneurial Development Agency (CEDA) is “an agency for the development of viable, sustainable Botswana citizen owned businesses” (www.ceda.co.bw, accessed 17 Apr. 06). It provides loans to citizens of Botswana at subsidized rates for the specific development of business within Botswana.

CEDA’s objectives include the following:

- “The businesses nurtured by CEDA must add value to the economy of Botswana.
- Foster citizen entrepreneurship and empowerment through encouragement of local entrepreneurial culture and increasing the level of entrepreneurial skills.
- Achieve economic diversification in line with the national Development Plan 8 theme of sustainable economic diversification.
- Encourage the development of competitive and sustainable citizen businesses by rewarding competitiveness and discouraging inefficiency.
- Create sustainable employment opportunities through development of sustainable citizen businesses.
- Promote the development of vertical integration and horizontal linkages between citizen businesses and primary industries in agriculture, mining and tourism through effectively pursuing the many small business opportunities associated with the exploitation of natural resources.
- Improve efficiency in the delivery of services to businesses, in particular the small business support services (e.g. advisory and

training services), which have been of inferior quality and poorly marketed in the past, by delivering these services more effectively through more thorough preparation" (www.ceda.co.bw, accessed 17 Apr. 06).

In order to achieve these objectives, the management and board of CEDA identified the need to ensure that their systems were sufficient to handle the management of these loans that they provided to the citizens of Botswana, but at the same time ensuring that they have systems in place to ensure their own internal and external reporting requirements.

4.1.1. CEDA's decision to implement SAP

CEDA's existing systems did not meet the existing requirements of the business nor could the systems handle the growth that the company expected to have in the coming years and hence the board and management recognised the need to select a new system: "the board and management recognised a requirement for the implementation of a new solution and a process was initiated to select a new platform" (Respondent A).

This process included tenders being submitted by a number of Botswana and foreign organisations proposing various solutions to meet CEDA's requirements.

CEDA's decision to implement SAP was made after a rigourous review process in which a number of products (including SAP) were carefully evaluated. The products were assessed based on a number of criteria and these were then appraised by the various business units according to the fit of the organisation to the product functionality. According to Respondent C, the solution that SAP provided could meet CEDA's business requirements and the

functionality that it provided was sufficient for the organisation (Respondent C).

4.1.2. The choice of the implementation partner

During the tender process and evaluation of the various system offerings, SAP was only proposed by one implementation partner and hence the decision to implement SAP resulted in the implementation partner being the selected partner to implement the solution: “since CEDA chose SAP, the implementation partner was the automatic choice” (Respondent A).

CEDA were comfortable with the implementation partner’s proposal and were satisfied that they had the right credentials to implement the proposed solution. They also had a local office in Gaborone, Botswana which suited CEDA’s “empowerment agenda” (Respondent A).

Although the implementation was the partner’s first SAP implementation, the partner seemed to understand CEDA’s business and overall requirements. Added to this was that fact that CEDA had a good relationship with the partner which they believed would be beneficial in the implementation and following the implementation during the support phase of the project. The implementation partner also had regional and international support which CEDA felt would assist in the success of the implementation since the local office would be able to call on their regional counterparts for assistance if required.

4.2. Implementation of the System

The implementation of the system started off well and at the end of blueprint, the organisation was comfortable with the solution that had been proposed. However, during the realisation phase, the organisation began to realise that some of CEDA's requirements weren't being catered for.

CEDA's project team had "looked at the high level design of the solution and not at the detail to ensure that the business requirements were being catered for" (Respondent C). During the realisation phase and going into go-live and post go-live support, there were a number of issues that plagued the project. These were not resolved prior to go-live and as a result, all respondents commented that they believed that at the time of go-live and prior to EDS-ES starting the "stabilisation project" the initial implementation project was a failure.

There were a number of factors that led to the failure of the initial implementation. They are broadly highlighted below. These include:

1. User involvement and influence
2. Management support
3. Level of complexity and risk
4. Management of the implementation process

The researcher would like to re-iterate that he is not looking at laying blame for the failure of the system, but rather looking at illustrating the steps involved in ensuring subsequent recovery of the system which the business believed to be a failure.

4.2.1. User involvement and influence

User involvement within an implementation project is critical to ensuring the overall success of the project. In order to achieve success, the users need to have the relevant business process knowledge and experience (Fui-Hoon Nah, Lee-Shang Lau & Kuang, 2001). Fui-Hoon Nah et al argue that "[t]he team should have a mix of consultants and internal staff so the internal staff can develop the necessary technical skills for design and implementation" and that "[b]oth business and technical knowledge are essential for success" (2001:290). This team, that is assigned to the project, should have the relevant experience in terms of business knowledge and experience, but should also be committed to the project: "The ERP project should be their top and only priority and their workload should be manageable" and "[t]eam members need to be assigned full time to the implementation (Fui-Hoon Nah et al, 2001:291).

A number of respondents commented that the correct people from within CEDA weren't placed on the project. They believed that a number of the people placed on the project didn't have the right knowledge of the business or its processes to effectively reflect the requirements of the business:

> "Key people in the organisation weren't represented correctly on the project. The team members didn't understand the overall business objectives and processes and hence struggled to get them implemented in the project" (Respondent C).

The user involvement in the original implementation wasn't "up to scratch" (Respondent K). The CEDA resources on the project didn't focus and they "often expected the consulting company to

deliver based on experience", but they didn't "put enough effort into the process themselves" (Respondent K).

Knowledge sharing between the consultants and the users is also essential to ensuring that the project is a success subsequent to go-live since the users need to ensure that they can operate the system once the consulting company leaves site: "[t]he sharing of information within the company, particularly between the implementation partners, and between partnering companies is vital and requires partnership trust" (Fui-Hoon Nah et al, 2001:291).

According to Al-Mashari & Zairi, training and education is "an important component of [a] successful BPR implementation" (1999: 90). The failure to successfully deliver effective training to the users could potentially harm the implementation process. Training on the CEDA implementation was done, but according to a few respondents, the training was done too early:

> "Although training was done [various issues] led to a delay in the use of the system by staff and therefore when staff had to use the system eventually, they had already forgotten how to process their respective transactions" (Respondent B).

> "Training was done early and there wasn't enough training to ensure that the users were comfortable and could operate the system" (Respondent F).

According to respondent C, the configuration that was completed on the system for training purposes wasn't the complete and final configuration that the project went live with. As a result of this inconsistency between the training system and productive environment various issues were encountered by the users in processing their transactions on the system following the go-live:

> "Training was conducted on the basis and the assumption that the configuration of the system was correct. Training was done too early, but the fact that the training was done early and on a system that's configuration wasn't correct compounded the problems of the implementation" (Respondent C).

Respondent G believed that the training that was conducted was "insufficient" (Respondent G). This idea was re-iterated by respondent I who felt that the structure of the training didn't suit the organisation:

> "Training wasn't good – the users didn't get an overall knowledge of the system, but rather just enough training to transact on the system (transactional rather than process training)" (Respondent I).

4.2.2. Management support

Management support throughout the organisation is required throughout the implementation process and this is from junior management through to the board (Akkermans & van Helden, 2002; Al-Mashari & Zairi, 1999; Barker & Frolick, 2003; Duplaga & Astani, 2003; Fui-Hoon Nah et al, 2001; Gargeya & Brady, 2005; Huang & Palvia, 2001; Laudon & Laudon, 1994 and Sumner, 2000). Fui-Hoon Nah et al go onto argue that "top management needs to publicly and explicitly identify the project as a top priority" and "senior management must be committed with its own involvement and willingness to allocate valuable resources to the implementation effort" (2001:292).

Throughout the implementation process, management needs to ensure that the staff within the organisation and allocated to the

project are aware of the critical nature of the project to the organisation:

> "Managers should legitimize new goals and objectives. A shared vision of the organization and the role of the new system and structures should be communicated to employees. New organizational structures, roles and responsibilities should be established and approved. Policies should be set by top management to establish new systems in the company. In times of conflict, managers should mediate between parties (Fui-Hoon Nah et al, 2001:292).

Al-Mashari and Zairi argue that "committed and strong leadership in the upper echelons of management" is critical to the success of any implementation. They go onto argue that this leadership should be "visible" and "creative in thinking and understanding in order to provide a clear vision of the future" (1999:92).

A number of respondents felt that management support wasn't sufficient in the original implementation. The CEDA managers "didn't take things seriously and they didn't believe that the implementation was critical to the organisation and hence the information that was required for the project was often not forthcoming from the managers" (Respondent K).

Since management didn't believe in the project they were extremely reluctant to dedicate resources to the project: "the CEDA users were also not extracted from their day-to-day activities and committed to the project and hence CEDA over worked their employees" (Respondent K).

A number of respondents also felt that the teams that were allocated to the project weren't the correct employees to allocate to the project.

The consulting company was expected to deliver based on their experience, however, according to respondent K, “the CEDA resources on the project didn’t focus and they often expected the consulting company to deliver based on experience, but they didn’t put any effort into the process themselves”. The team wasn’t accepting accountability for the delivery of the project because they were expecting each other to deliver rather than working together.

Respondent K, continued to argue that “the CEDA employees also didn’t know the business processes and didn’t prepare for the project” which in turn resulted in a failure within the blueprint phase to adequately identify the requirements of the business.

4.2.3. Level of complexity and risk

The business didn’t understand the complexity of the project and expected SAP “to bend to suit the organisation and at times the users tried to provide a work around within the system to suit CEDA’s requirements” (Respondent K). An additional contributor to the project failure was that the “CEDA employees also didn’t know the business processes and didn’t prepare for the project” as they didn’t really understand the complexity of the system and what they were getting into (Respondent K).

As mentioned previously, Fui-Hoon Nah et al (2001), argued that business knowledge and experience is critical to ensuring success of the project and hence under-estimating the complexity of the implementation and not assigning knowledgeable resources to the project could have (and did) have an impact on the eventual outcome of the original implementation.

4.2.4. Management of the implementation process

The management of the implementation process includes a number of factors such as:

1. Management of expectations / communication
2. Project initiation / planning / management
3. Technical and operational considerations
4. Relationships / Discipline
5. Business Process Re-engineering
6. Economy, culture and infrastructure
7. Change Management

Management of expectations / communication

Generally the controls that had been put in place to ensure that the project was progressing as expected failed during the realisation phase of the project and this is partly attributable to the cordial relationship that existed between CEDA and the implementation partner.

Communication is critical to the success of any project and ERP implementations are no exception. There needs to be effective communication within the organisation as well as with the project team (Akkermans & van Helden, 2002, Al-Mashari & Zairi, 1999, Fui-Hoon Nah et al, 2001).

According to Respondent A, “the governance controls weren’t in place and there were events that were happening within the project that weren’t being communicated up to management or highlighted to them”. These project issues weren’t being communicated to senior management or line management and hence these issues were not being resolved timeously. As a result of this

communication breakdown, management didn't feel that they were receiving the information that they should regarding the status of the project and also didn't feel like they were getting independent reviews of the status of the project.

According to Respondent A, the goals and timelines of the project didn't seem to be well defined and these project goals and timelines seemed to continually shift. The lack of communication within the project and between the project and management resulted in the reasons for the shifts being essentially unknown to the board of CEDA:

> "There was a general understanding that there were problems, but since the timelines kept on moving a decision was made to go-live thereby allowing further discovery of problems within a productive environment" (Respondent A).

The management of expectations is also critical to the success of the implementation which goes hand-in-hand with effective communication. CEDA believed that communication had broken down within the project environment:

> "The project team had a very good relationship. Although this sounds like a good thing, the result was that issues that arose within the project were not addressed as the project team believed that they could address the issues later (at the pub, out at dinner, etc…)" (Respondent C).

CEDA therefore expected functionality to be delivered as part of the project that was not going to be delivered: "The portal failed to live up to expectations and was left out of the final go-live of the project as it wasn't going to meet the requirements of the business" (Respondent C).

CEDA, according to a number of respondents, were also reliant on the implementation partner to provide them with the expert advice that they needed: "they had experience (being a global organisation) and should have ensured that they brought the relevant experience and methodology to the project" (Respondent A). CEDA expected the implementation partner to successfully implement the solution, but whether this was communicated to the implementation partner is unknown, however according to Fui-Hoon Nah et al, the team is made up of both internal and external resources and no single party should be responsible for the success of the project.

Project Management

In order for an implementation to be successful it there are a number of factors related to project management and these include:

> "Effective BPR programme management which includes adequate strategic alignment, effective planning and project management techniques, identification of performance measures, adequate resources, appropriate use of methodology, external orientation and learning, effective use of consultants, building process vision, effective process redesign, integration BPT with other improvement techniques, and adequate identification of the BPR value" (Al-Mashari & Zairi, 1999:93).

The implementation partner's project manager assigned to the project was, according to one respondent, "bulldozed by the business" (Respondent K). The relationship between the CEDA project manager and implementation partner project manager was also extremely cordial and "hence issues that could have resulted in conflict were ignored" (Respondent K).

In the implementation, the resources assigned to the project, as mentioned previously, didn't seem to have the correct level of knowledge to effectively communicate the requirements through to the business. The project management could have identified these resources and ensured that they gained had the support of management to ensure that the information that they needed to gather was readily available or alternatively replace the resource on the project with more capable resources.

The consultants were also expected to deliver the project and this was re-iterated by a number of respondents, however during an implementation process, the teams should be "cross functional" and "should be made up of people from both inside and outside the organisation" and hence both parties are responsible for delivery (Al-Mashari & Zairi, 1999:93).

The effective use of consultants can result in project success, however the "success of consultants in BPR is determined by their level of experience in implementing similar projects in other organisations, as well as their ability to direct the re-engineering efforts to areas of substantial benefits to the organisation" (Al-Mashari & Zairi, 1999:95). According to respondent A, this was "the implementation partners' first implementation" and therefore the experience of the consultants may have impacted on the success of the implementation.

Any implementation will inherently result in "major structural change[s] in the form of new jobs and responsibilities" and "it becomes a prerequisite for successful implementation to have formal and clear descriptions of all jobs and responsibilities that the new designed processes bring along with them" (Al-Mashari & Zairi, 1999:93). CEDA's roles and responsibilities didn't change following the implementation and the resources allocated to the project were re-allocated back into their roles that they occupied prior to the

implementation. CEDA didn't initiate a structural change following the implementation, but rather expected the system to bend to suit the requirements of the organisation (Respondent C).

Change Management

The change management initiatives that were conducted during the implementation were, according to a number of respondents, extremely weak (Respondents C, D, F & K). The CEDA users "didn't appreciate what they were getting and just expected the system to work" (Respondent K).

One of the major reasons identified for the failure of the project was the incompletion of the project deliverables at the time of go-live. There was a large portion of the project that was identified as an essential requirement, but this was not delivered. Although it was only identified late in the project, CEDA expected the solution to be delivered and when this was not delivered, the faith in the system was severely affected.

Goals and Measures

Performance measurements should be set to ensure that resources achieve their goals and various evaluation criteria should be set to ensure that the measurement of performance is fair: "setting high goals for performance and extendable targets for BPR are important success factors" (Al-Mashari & Zairi, 1999:94). CEDA's project team members didn't have any performance targets that needed to be achieved and hence individual performance on the project wasn't effectively measured.

4.3. CEDA's view of the system following the implementation

The respondents agreed that following the go-live of the project and the following weeks, the system was a failure. This in essence is due to the factors that have been highlighted above, but generally the system was not delivering the solution that the business expected and as a result, the buy-in to the system the organisation may have had during the implementation phase deteriorated.

According to one respondent, "the implementation was a failure because it didn't meet the expectations of the business or the users. The implementation partner managed to deliver 80% of the blueprint, but the 20% not delivered resulted in the failure" (Respondent K).

CEDA also didn't believe that the system could deliver according to their requirements and they didn't trust the system integrity. According to respondent G, "the perception within the business was that it was a failure and the staff were uncomfortable with the system and the processes. They didn't believe that the system was a success". The users generally felt like they couldn't use the system and there were unsure of the integrity of the data following the implementation and as a result contacted SAP to conduct a post-implementation review. This, according to respondent B, was confirmed by an SAP system audit that stated that "the system as it currently was would result in an external audit failure".

4.4. The appointment of EDS-ES

Following the go-live of the project and the subsequent problems, the implementation partner was asked to "close the project and hand-over to the business" (Respondent A). The new CEDA project manager then recommended to the business that they appoint a partner to come in and

evaluate and stabilise the environment. EDS-ES was selected because of their reputation within the Botswana market and expertise within the SAP environment:

> "The project manager had experience in working with EDS-ES and recommended to the CEO that they should engage EDS-ES from previous working experience. The CEO had final approval and a decision was made quickly to engage a party that they felt had experience within the SAP market in Botswana, implementation experience, and who they believe could resolve their issues" (Respondent A).

EDS-ES arrived to "an incomplete system and certain tasks on the project hadn't been completed" (Respondent A).

4.5. The stabilisation project and CEDA's view of the system following the intervention

EDS-ES arrived on site in March 2004 and began conducting an initial review of the data in the system and undertook to understand the extent of the data quality issues in the system. This assessment provided the EDS-ES consultants with an opportunity to understand the nature of the data problems, but also to the opportunity to establish where they were originating from (in original take-on or from incorrect processing on the system or both).

Following the initial assessment period each issue was documented and a plan for resolution was highlighted to the business. This was accepted by CEDA and EDS-ES was appointed to address the outstanding issues that CEDA faced. EDS-ES titled their initiative at CEDA the "*Stabilisation Project*".

The stabilisation project aimed to address both data problems and outstanding configuration and process issues that CEDA faced: “EDS-ES was tasked with correcting the system integrity and ensuring that the system performed as expected. They needed to validate the system design and correct any configuration problems that occurred or were identified in any of the modules” (Respondent B).

EDS-ES brought in specialists in each area (FI, CO, MM, HR, CML) as well as an integration specialist to ensure that the outstanding issues were addressed and aimed to ensure that CEDA achieved an unqualified audit. The initiative lasted approximately 6 months in total and the final audit conducted by CEDA’s external auditors was unqualified : “the stabilisation project was a success in that CEDA managed to get a clean independent audit” (Respondent A & C).

Following the intervention by EDS-ES, CEDA believed that they had a firm base on which they could now build and grow their system. Staff morale also “improved as they could now utilize the system and perform their day-to-day activities” (Respondent A).

The staff also began to trust the system more and believe the systems’ integrity:

> “This was due to the fact that many of the system issues had been resolved, however I don’t believe that this was the major contributing factor, but rather the consultants had managed to instill trust into the users based on their level of experience, but also they accepted the system more readily once it could be confirmed that the system did have integrity” (Respondent G).

The staff also believed that they had learnt a lot about the system and could conduct their day-to-day activities.

> "At the time of EDS ES leaving, the quality of data was better and CEDA managed to get a clean audit from the external auditors. It was a long audit, but this was expected. When the audit started, CEDA didn't expect to get a clean audit as corrections were still being done to the system at the time of the audit, but at this time the users knew what to do" (Respondent B).

The CEDA staff also felt that they had learnt a lot through on the job training and knowledge transfer: "the processes were refined and users were trained. It wasn't formal training, but rather knowledge sharing (on the job training)" (Respondent F).

EDS-ES addressed the pitfalls of the original implementation and the results of the stabilisation, according to respondent B, were:

- "Complete processes were put in place in all modules.
- Proper integration between modules was achieved.
- Data clean up was done as far as possible (given the availability of data).
- Balances that could not be reconciled were taken into upload accounts and these were reconciled and balances cleared as much as possible. The net differences on all the upload accounts were approved by the board for write-off.
- All modules have been functioning reasonably well, except for intermittent problems encountered from time to time. These problems are both user and system related and expected
- CEDA is now running the system and getting reasonable numbers and errors that occur in the system are more manageable" (Respondent B).

4.6. Research Findings

The proposition of this research was to identify the steps that need to be taken by an organisation in order to recover from a failed ERP implementation. The first sub-problem is to identify the reasons that led to the failure of the ERP implementation. This sub-problem has been addressed.

This section addresses the second sub-problem, which was to establish what steps were taken to recover from the implementation failure.

4.6.1. User Involvement and influence

4.6.1.1. Training, Education and Knowledge Sharing

Although no formal training was conducted during the stabilisation project, the consultants were instructed to ensure that there was a "high degree" of knowledge transfer which contributed to them being more comfortable in their system use at the conclusion of the EDS-ES initiative (Respondent I). From the start of the stabilisation initiative, the consultants tried to ensure that the users understood all the tasks and processes and where there were clear gaps ensured that the users took the time to understand the process.

Literature has identified training, education and knowledge sharing as critical to the success of any ERP implementation (Al-Mashari & Zairi, 1999; Barton, 2001; Grossman & Walsh, 2004; Fui-Hoon Nah, 2001 and Sumner, 2000). Fui-Hoon Nah et al go on to argue that:

> "As part of the change management efforts, users should be involved in design and implementation of business processes and the ERP system, and formal education and

> training should be provided to help them do so. Education should be a priority from the beginning of the project, and money and time should be spent on various forms of education and training" (2001:293).

CEDA and EDS-ES' approach from the start was to ensure that the super users were trained on the system and knowledge transfer occurred between the users and the consultants. There was a large amount of "knowledge sharing or on the job training" which occurred as part of the stabilisation project which contributed a lot towards the success of the initiative (Respondent F).

CEDA as an organisation also focussed more on training and ensuring that the users in the various branches were comfortable with the use of the system: "CEDA took to ensuring that the organisation accepted the system and this was through a train-the-trainer approach" (Respondent C). They aimed to aggressively address the problems that had occurred in the initial implementation were avoided in the stabilisation project.

CEDA also, during and following the stabilisation project, implemented an issue tracking system and set up a help desk. This ensured that issues were addressed, but that there was a post-go-live support structure that the users could turn to should they need support or assistance. The users knew that they have a support structure in place should they need assistance and hence felt more comfortable to work on the system.

Training of the users conducted in the initial project was done early and effectiveness thereof seemed to be lacking. There was also no extra training done and support staff and on-going support strategies were lacking. Although there seemed to be enough knowledge within the organisation, this business knowledge wasn't translated into skills that could have been used on the system. The

users felt that they had forgotten the processes that needed to be completed on a daily basis. Throughout the stabilisation project, the users were continuously involved in the processes and tasks that were being completed. The consultants ensured that the users (as far as possible) completed the tasks with the assistance of the consultants rather than the consultants completing the tasks themselves.

> "Training, reskilling and professional development of the IT workforce is critical. User training should be emphasized, with heavy investment in training and reskilling of developers in software design and methodology. Employees need training to understand how the system will change business processes. There should be extra training and on-site support for staff as well as managers during implementation. A support organization (e.g. help desk, online user manual) is also critical to meet users' needs after installation" (Fui-Hoon Nah et al, 2001:293).

4.6.1.2. Testing

EDS-ES ensured that the users were involved in the process from the beginning and ensured that they were aware of the processes that needed to completed and signed off: "EDS-ES told CEDA to track their own issues and write the project reports; EDS-ES were there to assist" (Respondent K). The result of this approach was the "CEDA employees felt the pressure to perform against their peers and respect the deadlines that had been set" (Respondent K).

The users were required to ensure that the tasks were completed on-time and needed to report back to the project team and management on a regular basis the status of the project. This

ensured the users bought into the process and as a result they became acutely aware of the importance of ensuring the system integrity and reliability.

Testing of any system during the blueprinting, realisation and go-live phases of any project are important to the initial success of the project as well as ensuring the business buy-in to the system. The business involvement in the testing of the system ensures that there are no surprises following the go-live. The business needs to test their requirements rather than relying on the consultants to deliver functionality that they believe to be the business requirements, but aren't exactly correct. According to Fui-Hoon Nah et al,

> "Software development, testing and troubleshooting is essential, beginning in the project phase. The overall ERP architecture should be established before deployment, taking into account the most important requirements of the implementation. This prevents reconfiguration at every stage of implementation" (2001:294).

The consultants worked hand-in-hand with the users and once each process had been completed, the users were required to test, document and sign-off the process that the issue had been resolved.

> "Troubleshooting errors is critical. The organization implementing ERP should work well with vendors and consultants to resolve software problems. Quick response, patience, perseverance, problem solving and firefighting capabilities are important. Vigorous and sophisticated software testing eases implementation" (Fui-Hoon Nah et al, 2001:294).

Expectations of the users and management of what the system was capable of achieving and the status of the project. The perception within the business was that it was a failure and the staff seemed be uncomfortable with the system and the processes; “they didn’t believe that the system was a success” (Respondent G). Through user involvement in the testing and trouble shooting, the users could see that the system was delivering and meeting the requirements of the business which in turn assisted in ensuring that there was a greater degree of buy-in into the system and that the system was a success.

4.6.1.3. Communication

A number of respondents commented that the communication between EDS-ES and CEDA was strong. According to respondent K, “EDS-ES changed a lot of things on the system and within the organisation, but the communication [about what was happening] was extremely strong” (Respondent K). The consultants seemed to be “cold”, but “everyone on the project team knew where they stood and knew the targets that they had to achieve” (Respondent K).

EDS-ES “managed to set the rules and the tone and they [CEDA business users] understood that they couldn’t relax within this new project environment” (Respondent K). The EDS-ES team communicated effectively to the CEDA users what it was that they were trying to achieve and pushed to ensure that the implications of the changes and decisions made were fully understood by the business. They understood what they needed to do in order to achieve the results and the tone of the project and strong communication between the consultants and business ensured that expectations were well managed.

Weekly status meetings were held and specific tasks were addressed on a weekly basis which ensured that tangible results were seen by the business and the organisation and project team felt like they were achieving their targets. Each module and each consultant reported on a weekly basis in the same format as outlined in appendix B.

The communication between the consultants and business users was assisted through seating arrangements that were arranged when EDS-ES arrived on site. The project management ensured that there were dedicated resources for the various modules of SAP, but also ensured that there was a 1:1 relationship between consultant and user and that these people had to sit next to each other. This, according to the respondents, ensured that the team wasn't divided from the start and immediately assisted in ensuring that the project team worked together.

The communication between the project team in the original implementation broke down during the realisation phase and this should have been addressed by both CEDA and the implementation partner. A lack of communication within a project environment could only add further problems and complexities into an already complex environment which would have contributed to the failure of the original project.

Communication has been widely identified as critical to ensuring project success (Akkermans & van Helden, 2002; Aladwani, 2001; Al-Mashari & Zairi, 1999; Duplaga, 2003; Fui-Hoon Nah et al, 2001 and Martin & Cheng, 2000). Communication needs to be addressed both internally and externally and must be addressed at every level in the organisation.

Management needs to ensure that the users (and the rest of the organisation) are aware of the importance of ensuring the success

of the project. The users should be aware of the benefits of the system:

> "In an attempt to change the attitudes of potential users of ERP, management must first try to affect the cognitive component of users' attitudes. A major strategy for achieving this goal is communication. One effective communication strategy is to inform potential users of the benefits of ERP. The marketing people usually communicate the benefits of a product, rather than its attributes, to customers, in order to draw their attention and heighten their realization. Top management, in the same way, can create more effective awareness for the ERP system by communicating its benefits to the workers. In many cases, ERP implementation failed because of lack of communication. Knowledge about what the system can deliver to the organization and its workers can build anticipation for the system. Nevertheless, one must watch out for unrealistic workers' expectations, which may deepen the resistance problem, thus causing its failure from the outset. Moreover, the success of future introduction initiatives depends on building a cumulative base of credibility by management." (Aladwani, 2001:272).

Communication is also critical between the implementation partner and the client: "good coordination and communication between the implementation partners are essential" (Fui-Hoon Nah, 2001:296). One of the issues identified by the business in the original implementation was a breakdown in communication between the implementation partner and themselves. Throughout the stabilisation initiative, EDS-ES communicated extensively within the project team, but regular meetings were held between key project members, project management and the CEO of CEDA.

4.6.1.4. Resources

CEDA undertook to assign the correct resources onto the project; however, they also ensured that the users that were now allocated to the project completely understood the overall business objectives and processes. The resources assigned to the stabilisation project were now tasked with looking at the "detailed design" of the solution to ensure that the "business requirements were being catered for" (Respondent C). These key business users were assigned to the stabilisation project full time and they were removed from their existing roles within the organisation to focus on stabilising the system: "the CEO pushed resources at the project and there was a lot more communication within the business" (Respondent F). CEDA threw "more resources at the stabilisation project in terms of manpower, but also financial resources" (Respondent A).

Knowledgeable and dedicated resources are important to ensuring the success of the project through actual delivery of the business requirements as well as the ability to configure and develop the system according to those identified requirements (Akkermans & van Helden, 2002 and Fui-Hoon Nah, 2001).

According to Respondent C, "key people in the organisation weren't represented correctly on the [original] project" and this was resolved during the stabilisation project (Respondent C).

It is critical that the project team consists of the right people on the project: "The team should be familiar with the business functions and products so they know what needs to be done to support major business processes" (Fui-Hoon Nah, 2001:289). CEDA made a conscious decision to "beef up" their project team and focussed on saving modules that had already gone live. Through the 'beefing' up of the project team that business removed some of their original

project team members because management felt that they “had project fatigue and hence they moved them off the project and reallocated them back into the business”. New ‘fresh’ project members were assigned to the business and EDS-ES at the start of the project insisted that these were key members within the organisation that had extensive business knowledge and an understanding of the business requirements.

The management resources were also tasked with being more involved in the project and had to have a greater understanding of the issues that the project was facing: “management were more proactive in ensuring that they understood the problems that were arising from the project, but also ensure that the problems could be resolved timeously. The CEO was more involved in the project and attended all project management meetings” (Respondent A).

> “Senior management must be committed with its own involvement and willingness to allocate valuable resources to the implementation effort. This involves providing the needed people for the implementation and giving appropriate amount of time to get the job done” (Fui-Hoon Nah et al, 2001:290).

During the stabilisation there were minor hiccups, “but more resources were pushed onto the project” (Respondent K). According to Respondent F, “in the stabilisation project there was a lot more support given by management, but they also pushed the resources on the project to ensure that there was now a favourable outcome” (Respondent F).

“Good project management is essential. An individual or group of people should be given responsibility to drive success in project management” (Fui-Hoon Nah et al, 2001:290). In terms of the project management on the project, CEDA employed a “hands on project manager that had experience with SAP implementations

before. This ensured that the new consulting company [EDS-ES] were kept in check and this project manager could direct EDS-ES" (Respondent C). It also guaranteed that the consultants were kept in check ensuring that changes were not being made unnecessarily and that the project tasks were effectively planned and managed. The project manager also ensured that communication was open and regular between the key players in the organisation.

EDS-ES ensured that there were a number of experienced consultants dedicated to the project full time which contributed to the success of the initiative. According to respondent C,

> "The EDS-ES consultants offered variety and tried to find out what CEDA was trying to achieve through the implementation of the SAP solution. The users felt that they could talk to the consultants about the overall process within the business and how that translated into the solution on SAP" (Respondent C).

The system knowledge of the consultants also contributed to the eventual success of the solution.

> "The consultants were open and communicative. The knowledge of the consultants was also a contributing factor in that they understood the business process as well as the system extremely well" (Respondent F).

Akkermans & van Helden (2001) argue that "project team competence" has been identified as a critical success factor in ensuring project success. According to Respondent C, "the EDS-ES team was more knowledgeable and could provide solutions to the problems that the organisation faced" (Respondent C).

4.6.2. Management support

4.6.2.1. Management of expectations

At the start of the stabilisation project, CEDA's management also ensured that the business and super-users allocated to the project were aware of the importance of the project as well as what management expected from them.

> "There was a large degree of staff buy in across the organisation and the change management initiatives were stepped up to ensure the overall success of the system. There was also board support that was communicated down to the organisation which contributed to the recovery" (Respondent C).

According to Fui-Hoon Nah et al, "The team should be given compensation and incentives for successfully implementing the system on time and within the assigned budget" (2001:289).

Each employee working on the project was given new KPI's which effectively communicated to the employees what the organisation was expecting of them and also what would happen in the event of success or failure on the stabilisation project: "the system success was also included into the KPI's of each individual working on the project" (Respondent C). This effectively communicated the expectations of management and ensured that the super users were aware of what they were expected to deliver:

> "Expectations at every level need to be communicated. Management of communication, education and expectations are critical throughout the organization. User input should be managed in acquiring their requirements, comments, reactions and approval" (Fui-Hoon Nah, 2001:289).

Many organisations believe that the implementation of an ERP system is going to resolve all of their process and system problems and this expectation is often directly or indirectly communicated from both the consulting company and parties within the organisation.

Throughout the stabilisation project, the users were aware or made aware of the process and the pro's and con's of the system and what they could expect the system to deliver.

Barton identified "unrealistic expectations" as a reason for system failure (2001: 12). These expectations could have been communicated from the business, consulting company or within the business, but effective management of these expectations is critical to system acceptance and eventual success.

The success of any project initiatives is highly dependent on the effective management of business expectations and any project, whether it's an initial implementation or the recovery of a failed process needs to ensure that the management of the expectations of the business are carefully managed (Akkermans & van Helden, 2002).

In the initial implementation, the business "didn't know what they were getting" (Respondent I). The approach taken by EDS-ES varied from the original implementation in that "they tried to find out what CEDA was trying to achieve through the implementation of the SAP solution. The users felt that they could talk to the consultants about the overall process within the business how that translated into the solution of SAP" (Respondent C).

4.6.2.2. Inter-departmental co-operation

Management, following the implementation partner leaving site, were extremely proactive and quick to ensure that the project was going forward. There was, according to Respondent F, a lot more support given by management and departments collaborated a lot more because they now understood the implications of failure (Respondent F).

The various departments also recognised the need to co-operate more since there were transactions that were being processed on the system that were impacting other departments (through the integrative nature of SAP) that were not fully understood in each department. For example, the credit department were processing transactions that were impacting the finance department who didn't understand where the transactions were coming from and hence reversing the process.

Akkermans & van Helden argue that "inter-departmental co-operation" is a "high-ranking factor" in ensuring the success of an ERP implantation (2002:36). The reason for it being "high-ranking" is that ERP systems are really about closely integrating different business functions; this is what sets them apart from many other IT efforts. Therefore, close co-operation between these business functions would seem to be a natural prerequisite" (2002:36).

Through effective communication and co-operation during the stabilisation project, the users could understand the integration between the various modules and how each transaction or process was impacting on the various departments.

> "The importance of communication across different business functions and departments is well known in the IT

implementation literature. As noted above, this need for communication across functional boundaries is all the more important in an ERP context since the primary objective of ERP systems is to integrate business functions (Akkermans & van Helden, 2002: 33).

4.6.2.3. Clear goals and objectives

CEDA recognised the need to close the gaps in the system and these needed to be addressed urgently. This is because CEDA was fast approaching their audit and an independent review from SAP Africa highlighted that, based on the current state of the system and knowledge of the users, the CEDA audit would be qualified.

The board recognised the need to move quickly and hence provided the CEO with full signing powers to make the decisions that he felt would result CEDA achieving their goals. They essentially cut all the "red-tape". The CEO was granted authority to appoint an experienced SAP project manager to head up the initiative to ensure that the system was stable and hence was ensuring that they now had the right resources in the position:

> "[t]he contribution that was made by the new project manager (considering that he had SAP experience) was invaluable. He clearly laid down what needed to be done in order to recover from the implementation and he communicated extensively with management and the users" (Respondent F).

With the arrival of EDS-ES on site, a number of respondents remarked that the consultants were "cold" and didn't seem to be too open to socialising with the users, however the objectives that were

“dictated” to them ensured that they understood the targets that they had to meet as well as the consequences of missing those targets.

The goals and objectives of the stabilisation project were clear. This was because there were defined issues that needed to be resolved and these were addressed by the super-users and consultants one-by-one. According to a number of respondents the goals and objectives of the original implementation weren’t communicated to the business and hence buy-in was lacking from both the user and management perspective.

According to Akkermans & van Helden clear goals and objectives are important to ensuring that the project is successful, however ensuring that these are clear-cut at the outset are not as easy as one hopes:

> “It has long been common knowledge that the first phase of an IT project should start with a conceptualisation of goals and ways to accomplish these. Clear goals and objectives seem to form a clear-cut CSF, but can actually be rather problematic. This is because, at the outset of an ERP project, it is often very difficult to determine them in a clear-cut manner. Hence the call of Austin and Nolan to manage ERP initiatives as new business ventures, rather than as IT projects and the suggestion of Austin and McAfee to employ a path-based approach to ERP implementation. On a more methodological level, this viewpoint is in line with the concept of IS development as one of evolutionary complexity” (2001:36).

4.6.2.4. Project champion

During the initial implementation there was no clear project champion that was ensuring the project had the focus, recognition and support that it needed. However, during the stabilisation initiative, the CEO took on the role as project champion.

Through the CEO taking on this role, the rest of the organisation understood the importance of the project and the importance of ensuring that the solution that was going to meet the needs of the business: “the CEO was key in the background and as the head of the organisation he supported the change. The CEO really took the role and the stabilisation of the project seriously and ‘cracked the whip’ (Respondent K, 8 Feb. 06).

There was also a large degree of board support for the implementation which was openly communicated to the rest of the business: “there was also board support that was communicated down to the organisation which contributed to the recovery” (Respondent C).

The advantage of the CEO being the project champion was that he had the authority to make critical business decisions. His approach was also to have an ‘open door’ policy thereby encouraging the project team members and consultants to openly communicate concerns and issues to him for quick resolution.

This had seemed to be lacking from the original implementation in that there was no clear project champion to ensure business buy-in and communicate the goals and objectives to the project team.

Akkermans & van Helden argue that “the success of technological innovations has often been linked to the presence of a champion,

who performs the crucial functions of transformational leadership, facilitation, and marketing the project to the users" (2002:33; quoted from Somers & Nelson, 2001). They go onto argue that this project champion is usually "somebody at senior management level" and as a result this person "has the authority to make substantial organisational changes happen" (Akkermans & van Helden, 2002:33).

4.6.2.5. Change management

During the stabilisation project there was more focus on the change management initiatives that were required: "change management initiatives assisted in ensuring that the organisation bought into the new system through training and knowledge sharing" (Respondent D).

There was a greater degree of change management in the stabilisation initiative. According to Respondent C, "there was a large degree of staff buy in across the organisation and the change management initiatives were stepped up to ensure that overall success of the system" (Respondent C). This change was in response to a severe lack of change management in the original implementation.

Change management initiatives are required in order to ensure acceptance of a new system or process into a business environment (Al-Mashari & Zairi, 1999; Barton, 2001 and Fui-Hoon Nah et al, 2001).

Fui-Hoon Nah et al, argue that "change management is important, starting at the project phase and continuing throughout the entire life cycle" (2001:294). The organisation has to accept that there is a need for change and be "open to change" (Fui-Hoon Nah et al,

2001:294). The change efforts involve communication and training as well as moulding the culture towards the change. During the initial implementation the change efforts were minimal: "there was a severe lack of change management throughout the process" (Respondent G) and many of the issues were a result of "a lack of change management" (Respondent K). Respondent I went onto argue "there were no clear change management initiatives and they didn't manage to achieve the buy-in from the business into the system" (Respondent I).

4.6.3. Level of complexity / risk

4.6.3.1. Legacy data conversion

Through the stabilisation project and reconciliation of data, the users could begin to trust the system more which led towards further buy-in from the business. According to respondent G, the failure of the initial implementation could be attributed a lot to the fact that the users didn't trust the integrity of the system and the stabilisation project resulted in system success since the "consultants had managed to instil trust into the users based on their level of experience, but also they accepted the system more readily once it could be confirmed that the system did have integrity" (Respondent G).

The data that was converted in the original implementation was flawed which resulted in reconciliations being extremely difficult to achieve. This was due to a number of factors that included "not enough time to collect data from the legacy systems" (Respondent F).

Following the go-live, the data within the system, according to the users was unreliable and making their lives more difficult. They

didn't understand the issues that they were facing, nor did they have the ability to problem solve. At the conclusion of the stabilisation project, the data had been reconciled as far as possible and what was not possible to reconcile was written off by the business. However, the tasks of the stabilisation initiative ensured that the users became more familiar with the data in the system and assisted them in reconciliation and problem solving.

Legacy data conversion is important to ensuring system usability and reliability and the common adage "garbage in garbage out" is applicable within the data conversion into an ERP system (Akkermans & van Helden, 2002).

4.6.3.2. Careful package selection

The package that CEDA selected, being SAP, is a complex solution and required a large amount of dedication from the business to ensure that the implementation of the solution was a success.

The business began to realise, following the initial implementation, the complexity of the solution that they had selected and realised that they had to change their approach in order to ensure the success of the system. The organisation realised that they couldn't sit back and relax now that the system had been implemented, but rather that they had to actually work with the solution that they had implemented.

> "ERP systems are complex, and implementing one can be a difficult, time-consuming, and expensive project for a company. The technology is tightly integrated and requires a commitment from all divisions and often a change in the way a company does business to make it work" (Barton, 2001:4).

However, the ineffective definition of the business requirements resulted in the failure of the system to adequately address the requirements. Although the system can deliver what the business needs to achieve, the inability of the business to translate their requirements and for the implementation partner to convert those business requirements into system design resulted in the system also failing. (Respondent H).

The system that was implemented was “vanilla” SAP and what was often referred to as SAP standard functionality and no attempt was made to “adapt the system to CEDA’s requirements which in turn resulted in the system not addressing the processes within the organisation” (Respondent C).

4.6.4. Management of the implementation process

It is widely researched and accepted that effective project management techniques and strong project management will have an influence on the overall success of an implementation process (Al-Mashari & Zairi, 1999 and Akkermans & van Helden, 2002).

The project management processes that were followed during the stabilisation initiative were, according to respondents G, I and J, the normal processes that should have been followed in a project environment, but “there was no room for error” (Respondent G). Once the integrity of the system and previous implementation was lost, it was critical to ensure that the same issues didn’t occur again, because if they had occurred again “recovery would have been virtually impossible” (Respondent G).

EDS-ES were professional and open, but pushed the users to do the work. The EDS-ES consultants were accepted as part of the team and a more personal relationship may be benefited the project and could have

contributed to a favourable relationship going forward, but wasn't part of the success of the stabilisation initiative.

According to one respondent, one of the key factors that led to the success of the project was that the "consultants had managed to instil trust into the users based on their level of experience, but also the business accepted the system more readily once it could be confirmed [by the consultants] that the system did have integrity" (Respondent G).

The project management during the stabilisation were unforgiving of slippages, changes and errors. The project was monitored extremely closely and any slippage in terms of timeline was dealt with immediately.

4.6.4.1. Project initiation / planning

The stabilisation project was planned extensively and both the scope and timelines were non-negotiable. Both parties were aware of the implications of a subsequent failure and EDS-ES needed to ensure that their reputation was not tarnished. Although the time-frames were tight, the project management communicated these timeframes to the business as well as the project team members and these team members bought into the project and endeavouring to ensure the subsequent success.

The planning in the original implementation seemed to be troubled in that timelines and scope seemed to change throughout the project which, due to other reasons outlined above, the business didn't understand and hence trust in both the system and implementation partner were subsequently questioned.

According to Al-Mashari & Zairi "proper planning for the BPR project with adequate time frame are key factors in delivering a successful BPR project on time" (1999:95).

4.6.4.2. Technical and operational considerations

The stabilisation project addressed the problems that had been encountered by the business in the original implementation through the implementation of a “vanilla” solution (Respondent C). The EDS-ES consultants provided solutions to the problems that were being faced by the business: “The users felt that they could talk to the consultants about the overall process within the business and how that translated into the solution on SAP” (Respondent C).

As mentioned previously, the implementation of a “vanilla” solution is often not practical and there is invariably a need to redesign business processes. A lack of effective redesign will tend to lead to an inability of the implementing team to match existing processes to the software which will tend to result in users unwillingness to accept the system (Sumner, 2000).

4.6.4.3. Project team competence / experience

The resources that EDS-ES dedicated to the project were “strong” and this had a major impact on the “success” of the project (Respondent K). According to Respondent J, EDS-ES didn’t “go in with juniors” because of the complexity of the project and hence the experience of the consultants contributed to the success of the stabilisation (Respondent J).

The team what was dedicated to the project was well structured and had clear tasks that needed to be achieved. The project management structure was also clear and there was a large degree of management guidance.

CEDA also ensured that the project team members allocated from the business were also experienced and competent. The team members allocated to the project were senior in the organisation had enough knowledge and experience about the business and its processes to ensure that these requirements were translated into system requirements.

The business ensured that key role players were brought into the project and "these key players were often functional heads" (Respondent I). Through the system managing to achieve an unqualified audit, the "credibility of the vendor [EDS-ES] and the project team was established" (Respondent H).

The original project team were weaker in both business and technical knowledge than the project on the stabilisation project which had an impact on the first project team to deliver.

Al-Mashari & Zairi argue that "an effective use of consultants is useful in ensuring successful implementation of BPR" (1999: 95). They go onto discuss how consultants can bring skills and experience to the table that may not exist within the organisation or could only exist at a large cost to the organisation (Al-Mashari & Zairi, 1999).

4.6.4.4. Clear goals and objectives

Through EDS-ES setting the rules and the new tone of the project, the goals were clearly defined, like a shopping list, and the tasks on the list had to be resolved within a specific time period and by specific people:

> "The style of the project changed; the [original] implementation partner's team was large and often CEDA

> users felt like a spare wheel, whereas with EDS-ES it was a much smaller team and much more disciplined" (Respondent K).

The consultants from EDS-ES had, according to Respondent A, "a systematic way of ticking off the issues and ensuring that the business was extensively involved in the project". The business was acutely aware of the timelines and these were communicated and agreed upfront with the business and EDS-ES ensured that each timeline was met.

The consultants that were involved in the stablisation was involved in ensuring that CEDA employees gained the knowledge that they required throughout the duration of the stabilisation project and through the team structure and being forced to complete the status reports and report back to management, they were aware of where they stood and brought into the project much more readily.

EDS-ES had an extremely aggressive approach that was focussed on ensuring that the issues within the system were dealt with quickly: "they ensured that each issue was signed off by the user and his/her manager thereby ensuring that if they signed it off they understood exactly what was being done" (Respondent F).

There was a heightened sense of urgency within the business and the business users became a lot more disciplined in the use of the system as well as ensuring that they understood the processes and transactions that needed to be performed to ensure that the business could perform optimally.

The business undertook to change the employee performance evaluations to incorporate aspects of the stabilisation project and overall success of project which in turn "contributed to greater focus by the users" (Respondent A). The "discipline on the project was

restored and what was previously an IT project became a business project in the end" (Respondent A).

4.6.4.5. Business process re-engineering

Although business process re-engineering isn't always critical to every SAP implementation, it is necessary to refine the processes and ensure that the new / existing processes are catered for within the new solution design.

Through the stabilisation project, the processes that had been implemented in the original implementation were reviewed and, if required, were refined. A key aspect of the stabilisation project was ensuring that the business understood the processes that had been implemented and ensuring that these processes met the requirements of the business. It was also ensuring that the processes that had been implemented were not negatively impacting on the system integrity.

As one respondent stated: "the processes [with EDS-ES] were refined" (Respondent F).

The processes were refined and reviewed by the project team in conjunction with the business managers and as a result there was more business ownership and buy-in to the new process and also a greater degree of trust in the system. This process refining wasn't completed during the original implementation which, once again, impacted on the overall success of the project. During the original implementation, the processes implemented should have been refined and tested by both the business and implementation partner to ensure that the system is robust:

"During process redesigning, it is necessary that the process integrity component be designed to ensure that an appropriate level of internal control is built into the new system and business processes. The systems integrity component must be focused on establishing a robust environment in which the business processes will operate. The development of the integrity environment should mitigate the organisational risks of the department as a whole, and should ensure that the controls implemented in the system do not encumber the business processes" (Soliman & Youssef, 1998:894).

4.6.4.6. Relationships

Relationships between the consulting company and the client as well as between the consultants and the clients project team members can have a major impact on the success of the overall implementation.

According to a number of respondents, the EDS-ES relationship was "highly professional" (Respondent A). The relationship with the consultants and users was also very good: "the consultants were open and communicative" (Respondent F). According to Respondent F, the knowledge of the consultants was a contributing factor to cementing a relationship between the consultants and the users. They went onto state that the experience that the consultants had in implementations and support assisted in helping the users buy into the system when they could see how things were actually working within the SAP environment (Respondent F).

The relationship with the implementation partner's consultants and CEDA's consultants was extremely cordial which resulted in issues not being addressed and communicated for fear of upsetting the

relationship: “EDS –ES also had a very professional relationship which was at time perhaps too rigid, but it was the correct attitude following the relationship that was too relaxed with the implementation partner” (Respondent C).

4.6.4.7. Economy, culture and infrastructure

As discussed previously, many developing countries lack ERP implementation experience and infrastructure to effectively and successfully implement an ERP solution. The implementation partner, according to respondent A, didn’t have enough experience to implement in that it was their first SAP implementation into the Botswana market. A number of respondents contributed the subsequent success of the stabilisation project to the experience of EDS-ES and its consultants. This was in contrast to initial failure being attributed, in part, to the inexperience of the consultants and the implementation partner.

A number of failures weren’t highlighted in the project due to the culture of Botswana and hence the culture of the organisation. The African culture has been to “protect” each-other and hence it’s not in the nature of the employees of the organisation to show any incompetencies (Respondent K).

According to a number of respondents, the language spoken within the project team lended itself to a more collaborative working environment. The EDS-ES consultants ensured that they always spoke English (a common language between users and consultants) and hence the CEDA project team made a conscious effort to always speak English amongst themselves: “language was a great dividing factor in the original implementation in that the team spoke Afrikaans amongst themselves and as a result, the CEDA

team resorted to speaking Setswana amongst themselves" (Respondent K).

The culture of the organisation is also such that there needs to be a great level of communication at high levels in the organisation: "the chief's need to speak to each other" (Respondent H).

5. CONCLUSION

The proposition of the research was to identify the steps that need to be taken by an organisation in order to recover from a failed ERP implementation. The research conducted focussed on a specific case site, namely the Citizen Entrepreneurial Development Agency in Botswana. The researcher conducted interviews that aimed to understand what steps were taken in order to recover from a failed ERP implementation, but in the process needed to address two sub-problems. These are:

- To identify the reasons that led to the failure of the ERP implementation and;
- To establish what steps are taken to recover from the implementation failure.

5.1. Initial Implementation

There were a number of reasons identified by the respondents as to why the project failed in the first instance. These can be broadly highlighted into the following areas:

5.1.1. User involvement and influence

There seemed to be a general lack of user involvement in the original implementation. The users felt as though they had been sidelined in the process of the implementation in that the project team was divided, but also the business managers didn't dedicate enough time and resources to the implementation effort.

During the implementation it seemed as though the business expected that the implementation partner, who should have enough

experience and expertise, would successfully implement the system and the business could start using the system following the go-live.

The training, education and knowledge sharing during the implementation seemed to be lacking. A number of the respondents commented that the training conducted during the implementation was done too early and also conducted on systems that didn't have the final configuration in. As a result, the users were trained on a system that looked and operated differently following the go-live. The knowledge sharing during the implementation between the users and the consultants was hampered through communication barriers which included project team split in terms of location within the project room, but also by language barriers. The implementation partner's consultants spoke Afrikaans while the CEDA project team spoke Setswana amongst themselves.

The testing conducted on the system by the business users during the implementation seemed to be lacking and this could be attributed to a lack of knowledge on how to use the system, lack of training and general lack of involvement in the implementation process.

During the implementation there was a breakdown of communication between the key project team members, project management and the business. The project team members were not communicating effectively because of language and culture differences. According to one respondent, the implementation partners consultants insisted on speaking Afrikaans amongst themselves and as a result the CEDA project team spoke Setswana amongst themselves. The communication between the project managers (the implementation partner and CEDA) broke down because of the "cordial" relationship that they had between themselves (Respondent K). The project managers weren't

addressing project issues because they, according to some respondents, believed that they could address the issues later on at the pub.

The communication between the project management and senior management of the organisation also broke down during the project. According to senior management, they were not aware of the issues that had arisen during the blueprint and realisation phase, and as far as they were concerned the project was progressing as expected.

The resources allocated to the project from both the implementation partner and CEDA were weak. According to a few respondents, the business resources that CEDA allocated to the project were not knowledgeable enough to ensure that the business requirements were translated into system requirements. The CEDA resources were also not officially allocated to the project full time and as a result, the business expected them to conduct their daily tasks as well as work on the project.

The resources allocated from the implementation partner also didn't have enough experience to ensure that the system was implemented successfully. The knowledge of the resources was lacking and as a result, according to respondent G, couldn't provide the solutions that CEDA was looking for and as a result the business users lost confidence in the ability of the consultants to provide the right solution and transfer knowledge (Respondent G).

The project seemed to also suffer after go-live when the senior resources (from the implementation partner) were re-assigned to other projects and the formal handover to the business seemed to be incomplete. Whether this was from a lack of handover process or whether the handover wasn't effective since there was a lack of skills in the organisation is unknown. The staff that were assigned

to the project “were not experienced enough to handle a short, complex implementation” (Respondent G).

5.1.2. Management support

The change management during the implementation was also severely lacking and this is evident in the amount of management support and general business buy-in that was achieved. According to a number of respondents, the managers and senior management hadn’t bought into the implementation and didn’t really understand what they were getting. They had been sold a solution to their problems and were expecting the implementation partner to implement a system, but were providing very little support to ensure that the business requirements were addressed.

There were no clear goals and objectives from the implementation of the system. CEDA seemed to be implementing a system that, they believed, would deal with many of their operational issues, but didn’t seem to have any clear goals from what they wanted to achieve from the system. The users expected the system to work and the business believed that the implementation was running fairly smoothly. The users were also not aware of the importance, strategically for the organisation, in ensuring the system implementation was a success. The goals and objectives for the system and reasons for implementation didn’t seem to be effectively communicated to the users.

The project champion seemed to be distant from the project and, from discussions with the respondents, the project champion had very little involvement in the project.

5.1.3. Level of complexity / risk

One of the main reasons for EDS-ES' involvement in the project was to address the legacy data conversion issues that had been encountered during the realisation, go-live and post go-live of the implementation process. The legacy data that had been converted into the system was incomplete and inaccurate and as a result the users were struggling to report accurate figures to management as well as their clients.

Data integrity was a major contributing factor that led to the failure of the project since the business didn't believe that the data was correct and reconcilable: "the data was incomplete and users didn't know how to use [the system] it" (Respondent F). The system "wasn't achieving the expected results, but rather making the lives of the users extensively more difficult" (Respondent F).

CEDA was also facing an audit and both CEDA and SAP Africa believed that the system would fail an audit from both a data and process view.

SAP is also a complex package which requires a lot of training and knowledge to ensure the system performs optimally. As mentioned previously the training conducted on the system was lacking, the data converted was incorrect and processes hadn't been clearly defined.

5.1.4. Management of the implementation process

The controls that had been put in place to ensure that the project was progressing as expected failed during the implementation. According to respondent A, there were issues that had occurred on the project that the steering committee and senior management

were not aware of (Respondent A). As mentioned previously, this has been attributed to the cordial relationship between the project managers as well as the breakdown in communication between the CEDA's senior management, the project management and the project steering committee.

The goals and timelines on the project were also not being well managed and communicated to the parties involved. From senior management's perspective, the "timeline seemed to continually shift" (Respondent A).

There was functionality that the business was expecting to be delivered as part of the implementation that was not delivered at the time of go-live, but it was not until the last moment that CEDA realised that the functionality wasn't going to be there. CEDA was expecting the implementation partner to deliver the functionality, but was also (throughout the project) expecting them to provide expert advise and specialist skills that didn't seem to be forthcoming, in the eyes of the business.

The business resources, as mentioned earlier, didn't have enough knowledge or experience to ensure that the business requirements were communicated through to the project team.

Performance measures and goals during the implementation weren't set and the consultants and users didn't have any evaluation criteria in place to ensure that they performed optimally and worked towards ensuring success for the business.

5.2. Summary of factors that contributed to the recovery of the failed implementation process

There were a number of factors that were identified that contributed to ensuring the success of the system following the initial failure. These factors will be discussed using the same framework as what has been discussed in previous sections.

The general consensus from the respondents was that, following the EDS-ES intervention, the project was an overall success. This is due to the following:

- There was a greater level of confidence in the system following the intervention;
- There was a large degree of buy-in from the business, which was contributed in a large part to forcing the business to buy-in to the stabilisation project through ensuring that the users got the various processes signed off by the business. (Respondents F, G, K, 8 Feb 06).
- The business were confident that the data in the system was more correct and could be reconciled;
- The users could understand the errors that were occurring and had a greater problem solving ability
- The audit that was conducted following the intervention was, against all odds, unqualified;
- The business was running using SAP;
- EDS-ES also “allocated senior resources” to the project which contributed to the success of the stabilisation initiative (Respondent G). The consultants assigned knew the objective that needed to achieved and also ensured that they “crossed their t’s and dotted their i’s” (Respondent G).
- The users believed that they were part of the project team (Respondents G & K).

- EDS-ES also looked into the restructuring and streaming of the departments according to the process flows that had been defined within the organisation which contributed to the business understanding the system in conjunction with the business processes.

5.2.1. User Involvement and influence

5.2.1.1. Training, Education and Knowledge Sharing

Formal training and education is critical to a project implementation and ineffective training (for whatever reason) will contribute to the failure of an implementation. However, in order to recover from the process, training again is key, but an organisation must ensure that they have super-users who are willing and capable of effectively learning the system and supporting the organisation going forward.

Although no formal training was conducted during the stabilisation project, there was a large degree of knowledge sharing that occurred between the super-users and the EDS-ES consultants. Without the knowledge sharing between the consultants and users the organisation would have had a system which they once again may not have been able to transact on or support which might have led to subsequent failure.

5.2.1.2. Testing

An extensive amount of testing was conducted during the stabilisation project by both the EDS-ES consultants as well as

the users. The users were forced to test the processes as they were responsible for ensuring that the processes had been signed off by the business and management. The knowledge sharing between the super-users and the consultants also ensured that the super-users were capable of thoroughly testing the process.

Through testing processes and procedures the users could understand the system better and understood that the system was actually performing as expected. Dedicated users during the testing cycle of an implementation is vital to ensuring the success of the project as well as ensuring business buy-in into the solution that has been provided.

5.2.1.3. Communication

The communication between the project management during the stabilisation project was regular and every issue was tracked and reported on. The management were also more involved in the process in that the senior management and CEO attended project management meetings on a weekly basis and any major issues were addressed and dealt with during these meetings. Please refer to appendix A for a sample copy of the minutes from project management meetings.

A failure to communicate effectively to the organisation would have been extremely detrimental to the overall success of the project. In the initial implementation the organisation on many levels believed the communication to be inadequate and subsequent communication failures between EDS-ES and CEDA might have resulted in further organisational problems.

5.2.1.4. Resources

The resources during the stabilisation project were knowledgeable and dedicated to the project full time. CEDA removed the resources from their roles within the organisation and dedicated them to ensuring the system's eventual success.

In order for an organisation to succeed following a failure it is critical that they ensure that the resources are dedicated to the project and have the right level of expertise and knowledge to ensure the subsequent success. Should an organisation, during a recovery process, not dedicate the correct resources to the project the result could be an even greater failure and the possibility of future success would be further diminished.

5.2.2. Management support

5.2.2.1. Management of expectations

Throughout the stabilisation project, the expectations of the business was carefully managed by the project management and the consultants. The issues were addressed on a day-to-day basis and any issues that were not promptly addressed or could not be quickly resolved were communicated through to the project management and CEO.

The business was also now acutely aware of the repercussions of not managing the expectations of the users and also of not dedicating the right amount of time and resources to ensure the success of the project. Ineffective management of expectations will have a huge negative impact on the overall success of any ERP project whether it be implementation or recovery and

hence management must ensure that expectations are managed at all levels.

5.2.2.2. Inter-departmental co-operation

The departments, following the initial failure, realised the need to co-operate amongst themselves. The initial lack of co-operation had resulted in transactional processing and reporting errors that had negatively impacted upon their own performance within the organisation.

During the stabilisation project, the super-users, through knowledge sharing, gained a better understanding of the integrative nature of SAP and thus realised the need for a large degree of co-operation required between the departments.

An ERP system is, by its very nature, integrated and hence a greater degree of interdepartmental co-operation will be required to ensure that a project is a success.

5.2.2.3. Clear goals and objectives

The goals and objectives of the implementation were eventually communicated through to the business and the super-users and business users recognised the importance of the system, both operationally as well as strategically.

Through effective communication and management of expectations, clear goals and objectives will be understood by both the users within the organisation as well as any external consulting company should they be used. In order to ensure success, user buy-in is critical and unless users understand the

goals and objectives of the organisation (and the reasons for a project of this size and nature) the required level of buy-in will not be achieved.

5.2.2.4. Project champion

At the start of the stabilisation project, EDS-ES requested the CEO to be the project champion for the stabilisation initiative. The CEO had, seen the result of the failure and the impact that it had on the organisation and as a result readily accepted the appointment.

Having the CEO as the project champion increased the profile of the project, and the importance thereof, in the organisation. The business realised that the project was important to the success of the organisation as a whole, but the users and super-users now realised that they were being 'watched from above' and thus needed to ensure that their performance was up to scratch.

A high profile project champion is necessary for project visibility, but also results in the organisation understanding the fact that the project is critical to the business and goes a long way in effectively communicating goals and objectives to the organisation.

5.2.2.5. Change management

The organisation realised that there was a large degree of change management required to ensure the subsequent success of the project.

The change management initiatives were a lot stronger in the stabilisation project and both users and management bought into the stabilisation initiative. Change management is often sidelined during an implementation for various reasons; however, especially following a failure, the change management efforts need to be visible, clear and extensive to ensure the subsequent success of the project.

5.2.3. Level of complexity / risk

5.2.3.1. Legacy data conversion

There was no conversion of the legacy data during the stabilisation project. The legacy data had already been converted onto the SAP system. However, there were a number of reconciliation issues that needed to be addressed. The EDS-ES consultants reconciled the data in conjunction with the super users which contributed significantly to ensuring that the users accepted the integrity of the system.

In order for a system to be accepted by the users; the data must be clean, reconciled and signed-off. If this is not the case, the users can't accept that the information loaded into the system is correct and hence system failure will almost be guaranteed.

5.2.4. Management of the implementation process

5.2.4.1. Project initiation / planning

The project planning and initiation was carefully conducted by both EDS-ES and CEDA project management.

The project management principles that were adhered to, by the project management, were standard processes that would be followed during a normal implementation process, except that there was no room for error. The project was therefore planned and executed as one would have done in an initial implementation, except that the project was managed on a task by task basis and reports were provided on a daily basis to management.

Through this 'micro-management' of the project the business could see tangible results which they felt hadn't been seen on the initial implementation which contributed towards more and more support and buy-in from the business as the stabilisation project progressed.

5.2.4.2. Technical and operational considerations

The stabilisation project reviewed the implementation and the processes that had been implemented during the initial project and where possible and required, improved the process or provided a new solution. The technical problems that CEDA were facing on the system were addressed by the consultants and the data, which previously had not been reconciled, was reconciled and signed off.

The EDS-ES consultants managed to provide solutions to the problems which the users had faced since the go-live. This resulted in the users accepting the system and the overall solution since they could begin to trust the solution and its integrity.

5.2.4.3. Project team competence / experience

The project team which EDS-ES and the business allocated to the project was senior and had the correct level of experience to ensure the translation of business requirements into system solutions.

An inexperienced team in the stabilisation project would have been extremely harmful to the organisation. The users, in the original implementation, didn't believe that the solution had resolved the issues that the organisation faced. An inexperienced project team would have further compounded the problems in that the lack of business knowledge and experience would have potentially resulted in the same solution being deployed to the business.

5.2.4.4. Clear goals and objectives

The stabilisation project had clear goals and objectives. Issues had been identified by the business and these were addressed one-by-one. The failure to address these tasks had serious repercussions for the business in that the business would receive a qualified audit.

5.2.4.5. Business process re-engineering

The project team addressed the gaps in the business processes that had been implemented as a part of the implementation or that were occurring from pre-SAP days. These processes hadn't been addressed previously which had contributed to failures in system processes. Through interdepartmental co-

operation and minor process definition many of the processing issues were addressed.

A failure to look at processes and ensure that business processes and system process are aligned in an ERP implementation could be damaging to the overall success of any project.

5.2.4.6. Relationships

Business relationships are key to overall success, however the relationships between the users and the consultants contributed to the success of the project. The relationship was professional which contributed to the users accepting the consultants as knowledgeable and accepting the overall solution that the consultants had offered.

5.2.4.7. Economy, culture and infrastructure

The consultants ensured that they took cognisance of the language differences between themselves and the business and as a result ensured that they always spoke a common language, English, when in each others company.

Culture differences can result in project divisions and the project team should ensure that they take cognisance of the differences within and between project team will ensure that communication and relationships remain open and beneficial to all parties.

5.3. Research problem addressed

The main proposition of the research was to understand what steps need to be taken in order to recover from a failed ERP implementation process. From the findings outlined above regarding the reasons for the initial failure and the steps taken to recover, it is clear that in order to recover from a failure one needs to stick vehemently to project management principles.

EDS-ES and CEDA were successful in their recovery of the system because they applied the same project principles as what would be applied in any implementation process; the only exception was that there was absolutely no room for error. The users had lost their faith in the system and a subsequent failure would have been virtually impossible to recover from, but from the interviews, the reasons for success (in most instances) are the opposite of those outlined as reasons for failure.

So, although there were basic issues that failed in the original implementation that were addressed in the stabilisation project the style of the projects were different. In the stabilisation project, there was a greater sense of urgency in that the business realised that, in order to get an unqualified audit, the system issues needed to be resolved urgently which resulted in them throwing more time, effort and resources at ensuring the subsequent project success.

5.4. Further research possibilities

If one goes to further define project success as solving the operational problems of the organisation, ensuring that business can evolve with the system, that the system will support the evolution and is value for money, then there is more research possibilities in investigating whether

organisation believe that they are getting value for money when they implement an ERP solution.

The stabilisation project that was under-taken by EDS-ES had a defined fix and once those tasks had been completed the project could potentially have been defined as a success. Further research could be undertaken to understand whether the processes as discussed above to ensure the success are applicable within an organisation that decides to re-implement from scratch rather than continue with their existing implementation.

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7. APPENDIX A

7.1. Interview questions

1. Are there high levels of system use?
2. Is there user satisfaction with the system?
3. Are there favourable / more favourable attitudes to the system?
4. Has the system achieved its objectives?
5. Has the business achieved tangible business benefits from the implementation of the system?
6. What key factors that led to the failure of the ERP implementation?
7. Could anything be done during the project to ensure that the implementation wasn't a failure?
8. Did infrastructure contribute to the failure? Communications, culture, economic factors?
9. What steps were taken to recover from the ERP failure?
10. What have been the major contributors to ensuring that the implementation became a success?

7.2. Sample minutes of project management meeting (Stabilisation Project)

The minutes attached are the minutes from the first week of the stabilisation project and effectively highlight some of the key issues addressed and the detail to which the project was being managed.

STATUS REPORT FOR THE PERIOD

14TH June TO 18TH June 2004

Distribution	Project Sponsor	CEDA: CEO
		CEDA: Deputy CEO
	Internal Audit Manager	CEDA
	Finance Manager	CEDA
	Human Resources Manager	CEDA
	Project Manager - CEDA	CEDA
	Project Manager - EDS ES	EDS Enterprise Solutions
	FI Consultant	EDS Enterprise Solutions
	FI Consultant	EDS Enterprise Solutions
	FI/CO Consultant	EDS Enterprise Solutions
	FI/GL Consultant	EDS Enterprise Solutions
	Loans Consultant	EDS Enterprise Solutions
	HR Consultant	EDS Enterprise Solutions
	MM Consultant	EDS Enterprise Solutions
	Authorisations Consultant	EDS Enterprise Solutions

1. Client Sponsor Decision/Attention:
None

2. Steering Committee Decision/Attention:
None

3. Team Management resolution:
Oss logon
Internet
Email to za.eds.com
Release Procedure Problem (to be discussed between Phillip, Dave and Wilma when consultant on site next week).
Helpdesk – setup and implement
PC for materials management superuser
Remote support facility: • Internet • 1 x dedicated dialup modem • 1 x shared dialup modem (existing fax can be used for this)

4. Work planned and completed this period: 1	
Activity:	**Comment:**
Project start date 14 June 2004	• All key consultants on site except for the PS consultant who should commence work on 21st June 2004. • Awaiting internal auditor to join the team.
FAP posting of November 2003 bank statement	
Meeting with power users – MM and FI to discuss all issues that need attention.	Done, meeting conducted and list compiled. Issues list combined and prioritised with Scope of Work issues
Consumption of stocks	Issue resolved. Stock corrected by relevant users. Procedure written-procedure is to be distributed to relevant users by Mogale Masala
HR - Working through Issues list, Scope document and Post Implementation Review and combining issues/problems into one list	Client agreed on issues on list which will be worked on

4.2 Work planned but not completed this period:		
Activity:	**Comment:**	**Planned Completion Date:**
System test	Not practical to do system test prior to issue resolution	
Duplication of Invoice	Issue solved,	As soon as FI

4.2 Work planned but not completed this period:		
Activity:	**Comment:**	**Planned Completion Date:**
Verification	configuration changed. FI Power user to test and give feedback.	power user gives go-ahead.
HR - System testing	A run-time error occurs when attempting to open infotype screens on both DEV and QA. The problem was reported to Joel and he is working on the problem	ASAP

4.3 Work not planned but completed this period:	
Activity:	**Comment:**
User support – bank reconciliations	
Updating search term on Loans customer masters	
Posting FAP bank statements for Dec 2003	Statement posted, errors to be documented, investigated and processed by business
Posting FAP bank statements for Jan 2004	Statement posted, errors to be documented, investigated and processed by business
Posting FAP bank statements for Feb 2004	Statement posted, errors to be documented, investigated and processed by business
Correcting bank recon configuration	Incorrect config on bank accounts corrected. Accounts for transfer of money between companies set up
Completed unit testing. Postings to Cost Centres appear on Cost Centre & Profit Centre reports.	Appear to be working correctly in QA.
Postings to Internal Orders appear on Internal Order reports, however unable to settle Internal Orders in DEV & QA. Diagnosis: No number range for settlement documents defined in Controlling Area CEDA.	To be corrected.
Confirmed that certain Cost Centres & Profit Centre reports do not work in QA. They have Run time errors.	To be corrected.

4.3 Work not planned but completed this period:	
Activity:	**Comment:**
Issue on service entry problems for Purchase Orders	Was raised as issue in meeting, investigated – interviewed users and tested on system. It was found no problem exists so none was logged.
HR - Schema W000 (SAP standard) was recovered and the current schema was changed to &000 for future reference. Another schema (Z000) was created which will in future be the schema to use.	Standard practise is that Schema W000 should not have been worked on and be kept standard for reference purposes. Schema Z000 should be used.
HR - The rules for Gratuity was Combined and streamlined to be more understandable and manageable.	Gratuity is one of the problem Areas/Issues which have to be looked at. With the previous state it would have been a difficult task to find out what the problems were

4.4 Work in progress for this period:		
Activity:	**Target completion date:**	**% Complete**
Information gathering system familiarisation	16 June 2004	
System testing	19 June 2004	
Updating search terms	23/6/2004	50%
Training of power user - Training on Goods Issuing to Cost Centres, stock overview, system differentiation	Ongoing	Ongoing
Investigating ways to pay vendors deposits Investigated, 2 possible ways to go about. Will communicate to relevant users and get go-ahead Low priority for now as it is not part of in scope issues – after audit if no time is available prior to audit	After audit	40%

5. Planned work for next period:
Posting FAP bank statements for March 2004
Posting FAP bank statements for April 2004

5. Planned work for next period:
Document & train users in error processing (FAP bank statements May & June 2004)
Completion of June 2004 bank statements (Delayed due to backlog processing)
Investigate sweeping of bank accounts
Investigate upload of unallocated items
Plan upload of industry sectors and branch codes for Loan (currently out of scope)
Cash Advance Process
Profit Centre structures need to be confirmed by business.
Internal Order settlement number range to be defined.
Looking at report structures.
New Valuation classes and account assignment to be set up – Time Intensive Exercise
Procedure for clean up of old purchase requisitions and purchase orders
Procedure for buying assets
HR - Solve Payroll-issues on the list by changing rules and configuration
HR - Obtaining a new list with wagetypes, symbolic accounts and FI-accounts. This will then be revisited with FI

6. Risks
Support – time spent on support issues
Business buy-in – This project was running as an IT initiative with no visible management support and buy in. This needs to be addressed.
Allocation of auditor & starting work with auditor
Hardware / Network / Internet
Basis support & responsiveness
Oss logon – no access to Oss is seriously delaying resolution of issues
Lack of external email (to EDS & selected other addresses) – This means that abap resource should be moved on site at CEDA as the only method of communication is telephone and this is unacceptable.
Release Procedure which is not working the way it should, could be a major risk for organisation.
The run-time error when looking at Infotypes when changing and testing the payroll could slow down the solving of payroll issues if it is not resolved soon.

7. Scope Changes:
Configuration of industry keys in AR to mirror industry sectors in loans and the update of AR with information from Loans

8. General:
A few new issues has been raised which falls outside the scope of the stabilisation project. The MM Power User requires reasonably high portions of time for training as he is new to the organisation and has had no formal training on SAP. He does have a firm grasp on the Business as a whole however. This might impact some of the time lines in future but attempts will be made to control deadlines whilst not neglecting proper training of the power user. Suggestion: Knowledgeable users to train staff thereby releasing consultants to focus on the Stabilisation Project.

7.3. Consistency Matrix

The matrix below summarises the research that is currently available and how it addresses the sub-problems outlined in section 1.3.2.

CONSISTENCY MATRIX				
Sub-problems	**Literature**	**Questions, propositions or hypotheses**	**Data source(s)**	**Data analysis**
Identify the reasons that led to the failure of the ERP implementation	Al-Mashari, M. & Al-Mudimigh, A. (2003) Barker, T. & Frolick M. N. (2003) Bradford, M. & Florin, J. (2003) Duplaga, E. & Astani, M. (2003) Grossman, T. & Walsh, J. (2004) Hedman, J. & Borell, A. (2004) Huang, Z. & Palvia, P. (2001) Koch, C. (2001) Martin, I. & Cheung, Y. (2000) Patton, E. & Appelbaum, S. (2003) Scheer, A & Habermann, F. (2000) Sumner, M. (2000) Xu, H., Nord, J., Brown, N. & Nord, G. (2002)	The literature has shown that there are a number of steps that need to be taken to ensure that ERP implementations are a success. Should these steps not be taken, then there is a high chance of the implementation failing.	Interview Research Questions: What key factors that led to the failure of the ERP implementation? Could anything be done during the project to ensure that the implementation wasn't a failure? Did infrastructure contribute to the failure? (communications, culture, economic factors) Other data sources: Newspapers Legal documentation Internal company documentation	Organisation of data collected. Consistency matrices. Mind maps.
Establish what steps are taken to recover from the implementation failure	None. Current literature with regard to the above question will be evaluated and contributions made to building a theory.	Since there is no literature that specifically addresses the issue of recovery of a failed implementation, this research will address the issue of how the implementation failed and then establish whether the steps that were taken to recover from the failure were exactly the same as the steps should be taken to avoid failure or whether they are significantly different.	Research Questions: What steps were taken to recover from the ERP failure? What have been the major contributors to ensuring that the implementation became a success?	Organisation of data collected. Consistency matrices. Mind maps.

Critical success factors to project success

CRITICAL SUCCESS FACTORS TO PROJECT SUCCESS	A	B	C	D	E	F	G	H	I	J	K
User involvement and influence						√	√		√	√	
Training (including new business processes)		√			√	√	√		√	√	
Testing							√				
Communication	√	√	√			√	√				√
Dedicated resources							√		√		
Management support	√	√	√				√			√	√
Economy, culture and infrastructure		√				√		√			
Managing expectations / realistic expectations?	√	√	√		√	√	√	√	√		
Interdepartmental co-operation					√						√
Clear goals and objectives	√			√	√		√	√	√	√	√
Project champion	√		√		√						√
Dedicated resources	√		√	√			√			√	√
Steering committee											
Change management			√		√	√		√			
Level of complexity / risk		√									
Legacy data conversion		√				√			√	√	
Careful package selection								√			
Management of the implementation process	√	√							√		
Project Initiation / Planning	√	√	√						√	√	
Technical operational considerations			√						√	√	
Managing expectations	√	√	√		√	√	√	√	√		
Project team competence / experience	√	√	√	√		√	√	√	√	√	√
Clear goals and objectives	√	√	√		√		√		√		√
BPR							√			√	
Change management			√	√		√	√	√	√	√	√
Trust in the system and consultants (credibiltiy)						√	√	√			
Relationships		√	√	√		√					√
Project Management	√		√	√	√						√
Culture					√						√
Project Discipline	√	√									

Table 1 – Interview summary of critical success factors to project success

8. APPENDIX B

CEDA STABILISATION PROJECT

CONSULTANT STATUS REPORT FOR THE PERIOD

14TH June TO 18TH June 2004

Module: **FI/Data clean up**

1. Client Sponsor Decision/Attention:
None

2. Steering Committee Decision/Attention:
None

3. Team Management resolution:
Oss logon

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Internet Email to za.eds.com

4.1 Work planned and completed this period:	
Activity:	**Comment:**
Project start date 14 June 2004	
FAP posting of November 2003 bank statement	

4.2 Work planned but not completed this period:		
Activity:	**Comment:**	**Planned Completion Date:**
System test	Not practical to do system test prior to issue resolution	

4.3 Work not planned but completed this period:	
Activity:	**Comment:**
User support – bank reconciliations	
Updating search term on Loans customer masters	
Posting FAP bank statements for Dec 2003	Statement posted, errors to be documented, investigated and processed by business

4.3 Work not planned but completed this period:	
Activity:	**Comment:**
Posting FAP bank statements for Jan 2004	Statement posted, errors to be documented, investigated and processed by business
Posting FAP bank statements for Feb 2004	Statement posted, errors to be documented, investigated and processed by business
Correcting bank recon configuration	Incorrect config on bank accounts corrected. Accounts for transfer of money between companies set up

4.4 Work in progress for this period:		
Activity:	**Target completion date:**	**% Complete**
Information gathering system familiarisation	16 June 2004	0%
System testing	19 June 2004	0%
Updating search terms	23/6/2004	50%

5. Planned work for next period:
Posting FAP bank statements for March 2004
Posting FAP bank statements for April 2004
Document & train users in error processing (FAP bank statements May & June 2004)
Completion of June 2004 bank statements (Delayed due to backlog processing)
Investigate sweeping of bank accounts

5. Planned work for next period:
Investigate upload of unallocated items
Plan upload of industry sectors and branch codes for Loan (currently out of scope)

6. Risks
Support – time spent on support issues
Allocation of auditor & starting work with auditor
Hardware / Network / Internet
Basis support & responsiveness
OSS logon – no access to OSS is seriously delaying resolution of issues
Lack of external email (to EDS & selected other addresses) – This means that ABAP resource should be moved on site ad CEDA as the only method of communication is telephone and this is unacceptable.

7. Scope Changes:
Configuration of industry keys in AR to mirror industry sectors in loans and the update of AR with information from Loans