

TOWARDS UNDERSTANDING THE DYNAMIC TENSIONS  
BETWEEN CREATIVITY AND CONTROL IN AN INFORMATION  
TECHNOLOGY FINANCIAL SERVICES COMPANY

by

JAMES JOHN DALLAS  
Student number: 201509751

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Supervisor: Dr Mark Dent

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**CONFIDENTIALITY CLAUSE**

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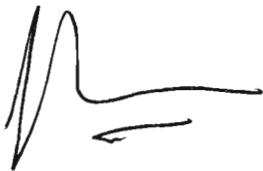
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**RE: CONFIDENTIALITY CLAUSE**

Due to the sensitivity of the research it would be appreciated if the contents remain confidential and not be circulated for a period of five years.

Sincerely

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**J. Dallas**

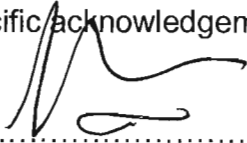
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## DECLARATION

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This research has not been previously accepted for any degree and is not being currently submitted in candidature for any degree. The dissertation reflects my own work except where specific acknowledgement is given.

Signed:



Date:

07th March 2007

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## **ACKNOWLEDGEMENTS**

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I would like to thank my supervisor for supporting me on this difficult and at the same time rewarding journey.

I would like to thank my colleagues for ignoring my imperfections and giving me the chance to learn.

I would like to thank my family for believing in me and for their support during this project.

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## ABSTRACT

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This study explores the reasons behind why EasyPay, a financial services Information Technology company, has not been able to balance the need to innovate its service offering with the pressure to stabilise its service and maintain revenue growth. Despite its good financial performance, service delivery issues had hampered the company for a long period of time. Poor customer service continued to restrict growth and put the company's long-term survival at risk. The researcher believes that the understanding this research has provided will put management in a position to formulate a more effective strategy to take the company from its current reality to its future vision.

There was an overwhelming amount of information available in the form of events, patterns, issues and opinions. This information had to be organised and understood. The theory was built from the ground up and derived directly from the evidence collected. The research was iterative in nature and, as such, yielded questions along the way, and this guided the review of the literature.

There was first a need to develop a systemic appreciation of the dynamics of the situation before deciding on what strategic management plan to suggest that would balance the pressures on the business and satisfy customer needs. This study therefore focused on developing an appreciation of the situation. Systems thinking theory was used in developing this appreciation, as it provided a language for describing and understanding the forces and interrelationships that shaped the behaviour of the system in EasyPay.

When the system had been grasped the researcher went back and revisited the events and patterns, and used the derived systemic model to explain more clearly what happened in the company. The researcher discusses the mental models that he became aware of, in the course of the study, that were in part

responsible for the existence of the system in EasyPay. Finally the researcher suggests some recommended actions and highlights areas that he believes require attention.

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## **CHAPTER 1: INTRODUCTION**

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### **1.1 INTRODUCTION**

The growing need of consumers to transact with different forms of stored value, as opposed to physical cash is an important reason for EasyPay's existence. Retailers did not have the expertise in electronic transactions and EasyPay facilitated the integration of the retailers' point of sale into financial institutions; utility companies and companies offering value added electronic services (EasyPay general manager; 2004). EasyPay has made stored value products or services available at payment points whose locations are convenient to the consumer.

Consumers can access stored value and electronic payment services through the company's retail footprint in the food, petroleum, furniture, and clothing industries. Companies offering electronic products and services can integrate into EasyPay and immediately offer their products through the thousands of stores and points of service connected to EasyPay.

The last decade in South Africa has seen an exponential increase in the number and form of electronic payments and products available in the market (EasyPay general manager; 2004). To maintain its position in the industry, EasyPay has had to be creative and continually innovate its offering. The fast-moving creative "deal making" environment of sales and new business development is very different from the rigour required at the operational end of the company. Therefore, the innovation done has been implemented against an exacting environment where control is important, as every transaction needs to be correct and on time twenty four hours a day, seven days a week. The importance of developing an organisational environment where this creativity and control co-exist will be explained in the following sections.

## 1.2 BACKGROUND OF THE RESEARCH

EasyPay is an Information Technology company which performs the switching task that links retail and fuel financial transactions to the major banks, utility companies, municipalities, cellular networks and corporate service providers. It operates in a highly competitive environment where volumes of transactions are essential to offset the high fixed costs of set up.

One of the most significant challenges that EasyPay faces is to reconcile the need for quickly implemented innovative solutions offered in a highly competitive sales environment (agility), with the need for rigour and dependability to deliver on the key service area of daily reliability. This reconciliation requires insight into organisational behaviours at all levels in the organisation and at all stages of projects. Indeed, balancing these two apparently opposing objectives has been a challenge in the past five years.

In the last five years the company has met and exceeded its revenue budget, set by its holding company - Prism Holdings, without exception. The company has exhibited extraordinary growth having grown its turnover from R 23,000,000.00 in June 2001 to R 75,000,000.00 in June 2005 and its profit from approximately R 18,000,000.00 to approximately R 50,000,000.00 respectively. This represents an exceptional average rate growth (Source: EasyPay Financial Manager; 2006).

These healthy growth and revenue figures, however, conceal the issues prevailing in the company for the last four years. Symptoms of these issues include recurring service outages, low employee morale, slow response times and a reduced level of innovation in the service offered to customers. It has to be said that blue-chip customers expect both reliability and agility from service and technology companies but feedback from customers indicated that EasyPay has not delivered consistently on either of these attributes (Source: Petroleum company Digital Marketing Manager, 2005).

In an industry sector which is experiencing major transition, EasyPay, in addition to facing its internal challenges, has had to deal with an increasing number of competitors in the market place. This increasing competition has applied downward pressure to service pricing. The speed of innovation in the industry has also increased significantly and EasyPay felt, and continues to feel, the pressure to innovate its service offering while at the same time stabilise its service and maintain revenue growth. Revenue growth is especially important in the context of the holding company situation. This will be explained in the next paragraph.

Prism Holdings is a company listed on the Johannesburg Stock Exchange (J.S.E.) and has the controlling interest in its subsidiary, EasyPay (Pty) Ltd. The influence of the Prism Holding company management team on the EasyPay subsidiary has been mainly exercised through the setting of financial revenue targets and controlling costs. The holding company experienced acute cash flow problems in 2002/2003 period for a number of reasons, not the least of which was the September 11 attack and the effects of the Dotcom bubble and accompanied collapse of many of these Dotcom companies. The ramifications of these events were felt in a dearth of finance available to information technology companies, and this demanded that the company finance its own operations and growth as far as possible. Prism Holdings in particular had focused on the short term and specifically on cash generation. The focus has been reflected in the Prism management approach to the EasyPay subsidiary – hands-off but responsible for meeting the revenue targets. Thus Prism Holdings has had little involvement, and this has been associated with very little feeling for the impact their decisions have on EasyPay's employees and customers (EasyPay general manager; 2005).

According to Tiwana (2002), the foundation for design, innovation and knowledge enabled customer relationship management lies in the knowledge of employees -



not capital or technology. He believes that this is the only sustainable edge a technology service company in this industry can have over its competitors in the long term. In this context it is disturbing that the company continues to lose some of its most experienced resources.

It is the aim of the research to develop an understanding of the organisational dynamics and behaviours that will enable the company to manage more effectively the tensions inherent in simultaneously delivering on the business imperatives of agility and reliability. It is anticipated that such understanding will enhance the ability of the company to retain its existing customers and acquire new customers. The EasyPay management team and the Prism Holding company management team will have to be convinced of this idea.

The researcher adopted an iterative, qualitative approach to the research, and used observation, interviewing, reflection, systems thinking and action in a cyclical fashion to gather data in the course of his daily involvement in his role as commercial manager of the company. The research methods will be discussed in more detail in the chapter on research methodology.

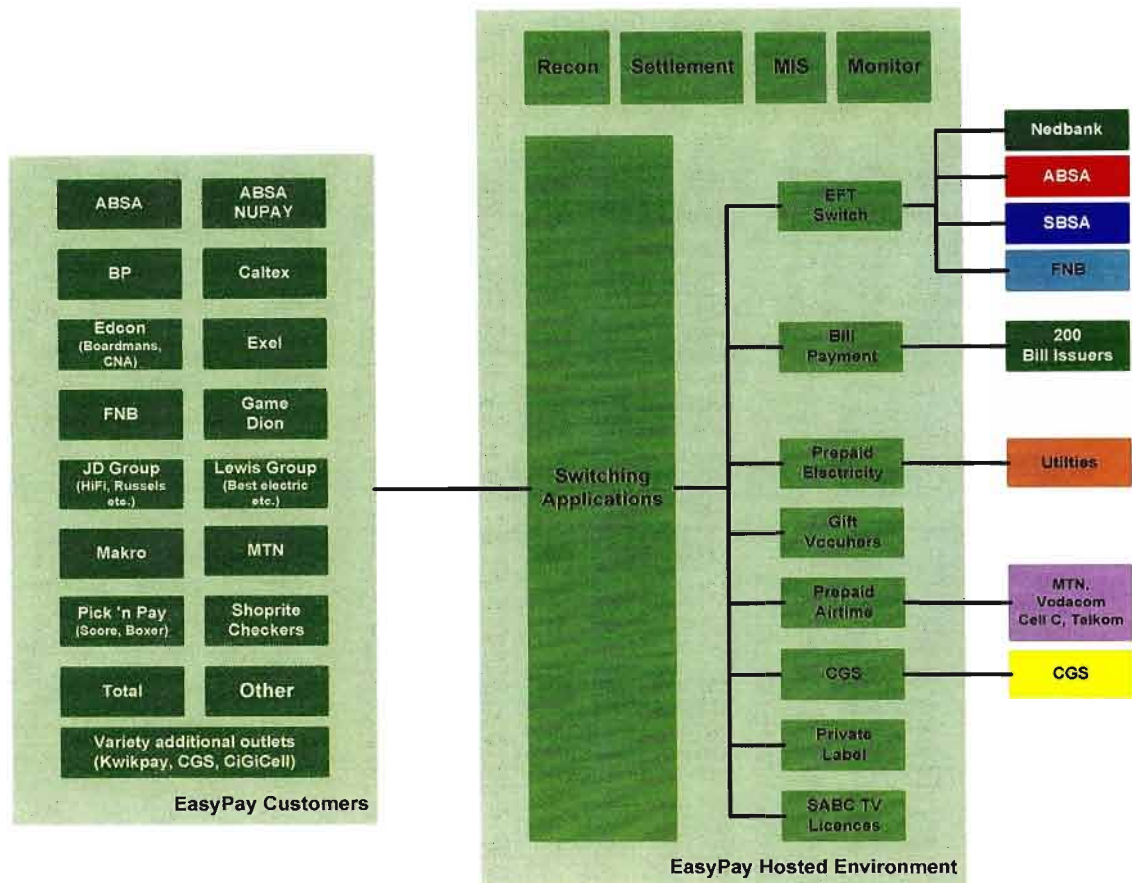
In summary thus far, EasyPay's existence has been explained and the background to the research described. At this point it is appropriate that the reader be given an overview of how the company functions and how these link to their customers.

### **1.3 EASYPAY FUNCTIONS AND CUSTOMER LINKAGES**

The diagram below (Figure 1.1) illustrates these functions and linkages. Moving from left to right, customers are listed on the left, service offerings (i.e. bill payment and Electronic Fund Transfer (EFT)) next, and on the far right are the business partners with whom the company works to offer these services. Access to EasyPay's many services is available to the retailer, while a business partner

can potentially access a large customer base through the EasyPay retail footprint.

**Figure 1.1: EasyPay overview diagram**



**Source:** EasyPay marketing launch presentation (2005)

The activities supporting these services include reconciliation, settlement, management information systems and monitoring. A description of these services is provided in the glossary.

#### 1.4 MOTIVATION FOR THE RESEARCH

Despite its good financial performance service delivery, certain problems have hampered the company for a long period of time with sub-standard customer

service restricting growth and putting the company's long term survival at risk. The chronic delivery issues remain, despite the considerable efforts that have been applied to resolving them.

Turning this situation around to deliver a "good to great" service company calls for a strategy of optimal resource deployment. For this reason, the field of strategic management was chosen as one of the fields of study. In order to select the actions with the highest leverage, participants in the strategy creation process need a good sense of what is actually happening in the business. This takes the study into the field of systems thinking. Indeed, encouraging people to think systemically will enable them to mentally see past the daily symptoms in the form of events and patterns to the systemic structure and mental models that are; it is felt, at the base of the company's service delivery issues.

This dissertation draws from theories in strategic management and systems thinking to explain how the management of EasyPay can operate in meeting customer needs. Strategic management is the dynamic process by which managers create the future. It is the total stream of thought and action that takes them from where they are to where they want to be (Manning, 2001).

It is anticipated that the insight provided by this research will facilitate a more consistent and unified view of the drivers of performance in EasyPay. This consensus view should reduce wasted effort and conflict which can be replaced by the communication and teamwork so important to creating strategies effective in sustainability resolving both current and future service delivery issues.

In conclusion, it is anticipated that the people in EasyPay will create strategies that divert the company from the current collision course with existing customers and onto a path that takes it to the future envisioned by the stakeholders.

## 1.5 VALUE OF THE PROJECT

If EasyPay is to retain its existing customers, and acquire new customers, then the company will have to improve its service. In the paragraph below, it is explained how the position EasyPay finds itself in threatens the longer term survival of the company, in view of the particular industry situation it faces.

Other than the financial institutions with banking licenses there is currently only space for a few big players in the electronic retail services-transaction processing industry. Some elaboration on this point is necessary. The initial investment and fixed costs in an operation of this type are significant. Most corporate customers in this market are billed on a per transaction basis. Consequently, having the transaction volumes and economies of scale to recover these fixed costs is critical. The fact is that fixed costs are a very large portion of the company's cost structure. Moreover, the variable costs of pushing through double the amount of transactions for the same customer are negligible in comparison to the fixed costs of setting up the customers service. The concern here is with market share, as it is key to maintaining economies of scale – essential to remaining the lowest cost processor – and in the end essential to both survival and profitability. (EasyPay new business development director; 2002).

Hence the retention of existing customers and the acquisition of new customers are both necessary for a range of reasons, not the least of which are: maintaining market share; not growing the cost base; and increasing the revenue.

This is a priority for EasyPay's employees, who derive their livelihood from the business. This dependence makes sustainability, closely linked to customer retention, an obvious concern for staff. The vision is to become an impeccable industry leader and people have spoken passionately about those opportunities which they believe arise from creating and working in a world class organisation (Please refer to appendix E). Such an organisation will need to have at its core

the organisational behaviour capabilities that are required to be a world class player in this highly competitive, dynamic, fast moving, innovative but at the same time very exacting industry. This research will give insight into the capabilities that need to be developed in the team which, in turn, will give staff confidence that the energy that they apply above and beyond the call of duty is productive. In an industry that relies upon the intellectual property and product of people's minds, keeping staff motivated and positive is a primary concern. The returns from retaining the best talent and experience are exponential. Indeed, the company has felt the pain of having to rebuild the intellectual property base from the ground up through re-hiring and training more than once.

This study will provide a start to building a shared systemic view on what is happening in the company. It will set out the events and information facing people in the company into a form that is easily comprehensible and will give staff context in which to make decisions. A shared view has a number of benefits not the least of which is improved communication; improved teamwork; better coordination; reduced conflict; a more positive working environment; a better work flow; effective utilisation of resources and the achievement of objectives with relatively less effort. A systemic view will enhance the ability of people in EasyPay to make sense of what is happening and to respond appropriately.

The research will give the management of Prism improved insight into what makes its subsidiary, EasyPay, successful thereby improving the quality of their decisions. The study will also show the EasyPay management team where they can best apply the resources of the company. This optimisation should contribute to improving predictability in EasyPay and should move the company to a point where it delivers reliably on its promises.

Ultimately the question the company needs to answer is the question as to how EasyPay can move from the current reality to the future vision. There is however

some steps in answering this question. This research will be one of the first steps.

The discussion will now move to understanding what question the research aimed to answer.

## **1.6 PROBLEM STATEMENT**

### **The Research Problem**

The dynamic tensions between functions requiring creativity and those requiring control in the information technology company were a key problem. In order to address such a problem a deeper understanding of the nature of the problem and its dynamics was required

### **The Research Question**

The research question is: How does the company manage the dynamic tensions between creativity and control in the information technology financial services company, EasyPay?

In order to manage the dynamic tensions between creativity and control in the company, these tensions need to be understood before they can be managed. This takes the reader to the research objectives.

## **1.7 THE RESEARCH OBJECTIVES**

Based on the research problem, research objectives have been formulated and are listed below.

1. To develop a systemic appreciation of the dynamics of the situation.
2. To analyse the situation in terms of a framework that enhances understanding and highlights key leverage points for resolving complex interactions in the organisation and beyond.

3. To make recommendations for managing the system in a manner that enables the company to progress towards its vision.

Now that the research problem and objectives are understood, the procedures and rules used in answering the research question will be described.

## **1.8 RESEARCH DESIGN**

This project did not begin with a theory to prove. The theory was built from the ground up and derived directly from the evidence collected. Methods were used to identify patterns and to extract order from the mass of disorganised information.

The reader, looking at the steps described in the paragraphs below, may gain the impression that the research was a sequential process instead of the iterative process that actually took place. In trying to extract that order, frequent attempts were made to identify a golden thread or framework that would be supported by the evidence in the cases selected. Many possible frameworks were identified, only to collapse when tested against evidence from the cases or under review from peers. It was a process of moving back and forwards until a framework was identified that was supported by the underlying evidence.

This research was not simply an exercise of collecting quantitative data to support or disprove a hypothesis. Indeed initially the researcher tried to understand what was going on through the analysis of quantitative data from the incident and work request systems. The researcher was frustrated as the quantitative data was not telling the researcher much and he felt no closer to revealing the root causes. The researcher was frustrated as the data did not fit together in a systemic way and did not reveal the causes of the situation at EasyPay. The Action research method was chosen as it has been seen to yield better results than professional expert social research models according to James, Greenwood and Levin (in Pervez, Gronhaug, Kristianslund, 1995). Action

research is social research carried out by a team encompassing a professional action researcher and members of a company seeking to improve their situation. Action research promotes broad participation in the research process and supports action leading to a more satisfying situation for stakeholders. James, Greenwood and Levin (in Pervez, Gronhaug, & Kristianslund, 1995) agree that action research also encourages participants to pool their knowledge. The methodology itself was influenced and guided by reading and discovery, there being no blueprint for exact steps, but rather agreed principles and direction. The discussion below will reveal the eventual structure of the investigation. The methodology below describes the main steps of the research.

To gain a systemic appreciation of the EasyPay dynamic, it was important to capture the diverse views of events from those involved. The Five Why's technique (Senge, Kleiner, Roberts, Ross & Smith, 1994) was applied to the three cases. In many interviews respondents were asked to move down the chain of cause and effect from the event to the root cause. What emerged were multiple symptoms with various causes. Sequential flow field diagrams record each of the symptoms with its different causes, representing an overwhelming amount of loosely connected information (the field (block) diagrams appear in Appendix B, C and D).

The researcher then took a step back and, in trying to make sense of the information, separated events and patterns of behaviour. The behaviour of key variables, important in the delivery of the service, were tracked over time. Although this brought more clarity, there was still too much information to grasp.

In an effort to make sense of this array of information, the hundreds of individual blocks were cut out and laid on a table. Common subjects and themes then emerged through the clustering and re-clustering of the paper blocks into measures of performance. In the subsequent defining of relationships between these measures of performance, the causality and systemic structure emerged.



This, in turn, allowed for the classification of subjects or variables that were either drivers or outcomes of performance. Lastly it was possible to identify points of leverage in the system where effort could be applied.

The mental models underlying the systemic structure, however, were still not apparent. Revealing these demanded improved skills on the part of the researcher in the areas of inquiry, observation and reflection.

The inquiry included, *inter alia*, probing and testing things over time - with colleagues, superiors and subordinates; speaking to people to help clarify thoughts and concepts; asking open-ended questions; experimenting in teams; and extracting individual and group understanding through the drawing of diagrams and models. In conjunction, and as far as possible, objective detachment and complete immersion in the subject matter and situation had to be maintained. This was done together with deep reflection individually and in a group. Only once the researcher himself learnt to relinquish control, learnt to exercise patience to allow people to voice their thoughts, did reflection in a group produce dividends. The experiences of people in EasyPay and the insights from literature reviewed provided a backdrop for the researcher to do the quality reflection which was essential to unearthing the mental models.

This balance between thinking, acting, discussing, observing and reflecting over time produced a fundamental sense of what was happening. It was then possible to draw conclusions and make recommendations for change with a greater degree of confidence.

## **1.9 LIMITATIONS OF THE RESEARCH**

Research of the nature described in this dissertation has many limits in the form of practical consideration and conceptual inadequacies. Understanding of these limitations is important because they reveal the complex and evolutionary nature

of such research and the emergence of insights that guide it (Source: Dissertation supervisor, 2006).

Data obtained in interviews is very often a function of the interpersonal exchange between the interviewer and respondents. In many instances smaller groups were chosen to allow for time to build the trust necessary for sensitive information to be communicated. However, the research project had a limited time span and quality interaction was sometimes traded-off against including information from a wider audience. The information cannot be subjected to statistical analysis to ascertain the extent to which the opinions expressed by participants are representative of the larger company population. Nonetheless, the number of people interviewed, their diversity of roles relative to the cases investigated, allow conclusions on the greater organisation to be drawn with a considerable degree of certainty.

As in most qualitative research, subject matter is reduced to themes that need to be evaluated subjectively. The researcher could only analyse data and interpret findings in the context of his experience gained at that particular stage of the research. The subjective nature of the evaluation might raise questions as to the interpretation of the findings by the reader. The findings were however discussed with work colleagues in an attempt to bring in a level of objectivity. The researcher tried to form formal focus groups to evaluate research findings and bring in a level of objectivity. Unfortunately with the operational demands and pressures of EasyPay it was difficult nigh impossible to get the required people in one place at the same time. The researcher then resorted to walking into individual members' offices and asking them to analyze problem or to give feedback on research findings. Although this was not optimal it was the most practical solution under the circumstances. In the recommendations presented in the conclusion the researcher has recommended that management be formally involved in research projects. In addition the researcher has suggested to

management that focus groups be put together to analyse problems in the company using approaches developed in this research.

In the discussion above the importance of interpersonal relationships and objectivity in collecting and evaluating information respectively has been emphasised. It was indeed a constant battle during the investigation for the researcher to remain emotionally detached and objective. The daily pressures that come with the responsibility of getting product out of the door challenge a person's ability to remain objective and also put stress on the relationships required for deeper inquiry.

The cases thought to be most severe were selected and information from these cases was subjectively considered to be representative of the total population. It was therefore considered possible to generalise findings from the three cases to the larger population. Time constraints on the research made it practical to investigate three cases only, and some risk of error was assumed in extrapolating and applying the findings of these cases to the organisation. Whilst only three cases were 'formally' inquired into the day to day experience and the thousands of interactions of organisational life informed the dissertation.

Notwithstanding these limitations, the investigation built a systemic view of the company in the mind of the researcher. While wider than before, this view will probably not be a complete view of the system in operation. The people in EasyPay will together need to build on this picture, so that a more complete view of the company is shared. This process will highlight areas that require attention, but time does not permit investigation into all of these highlighted areas and they will have to remain subjects for future study.

## **1.10 LAYOUT OF THE STUDY**

Before moving into the following chapter it is necessary to explain how the report is organised. The layout of the study is consequently described below:

The chapter that follows is the literature review and herein the theory that underpins this study is reviewed. This chapter gives the reader the background to the theories and models that were used in the study. In Chapter 3 the reader is informed of the research design and the reasons why such a design was chosen. The manner in which the cases were selected and why is also explained. The chapter concludes with a description of how the data was collected and the method of data analysis used. At the end of chapter 3 the reader will have a good understanding of the theory underpinning the study and the research design. The report then takes the reader through the process with which the findings of the study were arrived at.

The findings were presented in such a way that the reader could logically and systematically work his way through the report.

First, it was necessary to present the mass of information of each case in a structured manner to the reader and this was done next in the fourth Chapter titled: Synopsis of cases. In reading this chapter the reader is asked to refer to the summarised information from the interviews in Appendices B, C and D and to the list of those interviewed in Appendix H. The synopsis and associated appendices were seen as necessary background for the reader to understand the derivation of the systemic structure in the next chapter.

Chapter five deals with the derivation of systemic structure. The study takes the research information yielded from both the interviews and the examination and analysis of company data records and uses that information to derive the structure of the system in operation in EasyPay.

The systemic structure now derived provides a framework for the researcher to explain in more detail to the reader, in chapter six, what is going on in EasyPay and have confidence that the reader will comprehend the situation in the company.

In the final chapter the evaluated information is discussed in relation to the research objectives and research question. Recommendations were also made based on the findings of the research.

As indicated earlier, the chapter that follows deals with the review of literature associated with the research.

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## CHAPTER 2: LITERATURE REVIEW

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### 2.1 INTRODUCTION

The discussion of the literature review that follows tracks the essential path of the research, but, the review does not include many of the wrong turns taken the search for solutions. Consequently many books that were read but did not directly contribute to the research have not been included in this discussion. The review of literature was to an extent also guided and informed by the results observed from actions taken in the working environment of EasyPay.

In attempting to understand the EasyPay environment the researcher, after he had selected the case to focus on, generally followed a process over time of:

- Analyzing existing data from company sources (quantitative and other) relevant to the case i.e. incident system, customer communication and accounting reports
- Interviewing those involved to gain a sense of 'what was going on' relative to the case
- reviewing literature;
- adopting an approach to use in the EasyPay environment;
- discussing the approach with participants;
- mobilising participants;
- taking action; and
- then reflecting on the results.

The researcher must advise the reader at this point that, due to the nature of the study certain concepts have been introduced in the literature review and these will be expanded on in later sections, using the practical examples contained in the cases. In the discussion below it will also become obvious as to how reading and discovery influenced and guided the methodology.

## 2.2 THE INITIAL APPROACH TO REVIEWING LITERATURE

The initial approach taken was based on the approach suggested by the Infrastructure Technology Information Library (ITIL). ITIL was chosen as it addresses service delivery in detail. The researcher found Control Objectives for Information and related Technology (COBIT) more focused on governance and control and although it does address information technology service delivery it does so in less detail. The researcher had training and experience as a software systems analyst and this approach was well understood, as it was similar to the approach that an analyst is trained to take in that it approaches a problem with a reductionist mindset. The approach was to quantitatively analyse the data in the incident system logs i.e. look for re-occurring incidents of the same type and for clustering of related incidents. It was planned with analysis that the cause could then be identified and a recommendation made for permanent resolution. This approach had limited success, as many of the customer service issues reappeared or were recreated in new projects. It was felt on reflection that the resolutions were superficial and that the research thus far had not identified root cause.

The next approach taken was informed by the "Five Why's approach" as suggested by Senge, et al. (1994). The Five Why's technique is a way of doing root cause analysis that breaks down an issue in steps until the final root cause is identified. Apparently its name stems from the Japanese management belief that asking "why" at least five times reaches the root cause of a problem. Indeed, asking why elicits information. Repetitively asking why is believed to increase the possibility of identifying the cause of an issue. This approach to root cause analysis was supplemented by writings from Bellinger (2005).

The researcher used this approach to ascertain the diverse views of the staff involved in the three cases used. This yielded valuable information as to the cause and effect relationships operating in the EasyPay environment. Patterns

emerged showing the cyclical and repetitive nature of many of these relationships. There was a realisation that, although the results of this method yielded valuable information and insights, they did not reach the root cause of the issues being experienced at EasyPay.

## **2.3 SYSTEMS THINKING THEORY**

An article by Bellinger (2005) in which he sought to expand on the theme called “Distinguishing fact from fantasy” introduced Systems Thinking and the unintended consequences of software development project systems. The symptoms were all symptoms that had been observed in EasyPay i.e.:

- overtime;
- undiscovered rework;
- schedule pressure;
- quality pressure;
- morale problems;
- fatigue;
- burnout;
- productivity issues; and
- staff loss.

The research supervisor suggested that a system such as this could be in operation in EasyPay. Indeed the features of the system described by this article corresponded closely with the symptoms observed in the operation of EasyPay. Customers complained consistently about quality, while support resources worked hours of overtime in vain attempts to placate customers. The company regularly lost experienced staff, and leaving staff recited the following factors for their departure: fatigue and burnout from unrealistic project deadlines; continual pressure to get product to market; unrealistic promises made to customers and unreliable systems delivered into the operational environment that they had to



support. The junior staff left behind continued to experience pressure both to respond to customer requests more timeously and to deliver better quality.

The researcher, on reading the Bellinger (2005) article suspected that, because of the similarity of the symptoms, a similar project system could be operating in EasyPay. Bellinger's model focused on project systems and the mental models in the software systems development process. The researcher believed that there could be mental models and allied systems influencing the results in the operations of EasyPay. In following this avenue of thought, the next question was: how does someone see the system in operation as well as the mental models behind it?

In the search for answers, the researcher was recommended to read 'The Fifth Discipline Fieldbook' by Senge et al (1994). The book asserts that organisations are products of the ways that people in them think and interact. If that statement is true, then the people in organisations would be the creators of their own reality. Therefore, the author explains that in order to progress, the internal pictures or mental models of those working in the organisation would need to be unearthed. It is these internal pictures that create the systems in which people work. The researcher continued on the assumption that, if he could identify the system in operation, this would give him insight into the mental models perpetuating the system.

The systemic thinking discipline introduced in this book encouraged the researcher to see interrelationships rather than linear cause and effect relationships. Systemic thinking was described as seeing the whole, rather than focusing on the parts. The tools and guiding ideas in this book helped the researcher to see the bigger interrelated picture and to start making some sense of the situation EasyPay faced. The researcher began to identify a few of the deeper patterns lying behind the seemingly isolated events in the company. In summary then, in reading this book the researcher understood the theory of how

systems worked and the mental models behind them. However, moving from the theory and developing a practical understanding of the system in EasyPay proved more difficult than first thought.

## **2.4 SYSTEMS THINKING TOOLS**

Moving from the real events and patterns identified by staff in the interview process and into the specific system model proved to be problematic for the researcher. After many frustrating attempts an investigation on the internet revealed a technique suggested by Krysack (2005) that the researcher could use to progress from the events and patterns to the underlying system. It revealed a technique that suggested the use of an Affinity Diagram to identify themes or subjects. The technique then proposed the use of an Interrelationship Diagram (ID) to identify relationships between these subjects. The variables most responsible for system performance can be identified. The relationships can then be traced between the subjects revealing the systemic loops in operation. The researcher reviewed a number of sources on the internet for assistance in compiling and validating system diagrams and the references to these sources are listed in the bibliography. Using these techniques, the researcher was able to move beyond the analysis of the cases to the deeper level of systemic structure. Having met the challenge of understanding the system in operation, the researcher was faced with a new challenge. This was to uncover the mental models underlying the systemic structure in EasyPay.

## **2.5 SYSTEMS THINKING AND MENTAL MODELS**

The people in EasyPay think and interact to create a system. The system that they create has a structure. That structure is not the structure as reflected in the organisation chart but rather the structure is reflected by the interrelationships among key components of the system (Senge, 1994). This structure is built on the choices people make, consciously or unconsciously, over time. These choices are

based on, amongst other things, attitudes, perceptions, values and beliefs that are collectively referred to as mental models. In the difficult task of exploring these underlying mental models, the researcher reviewed the individual techniques suggested by Argyris (2005) and Fischer & Sharp (1998) and described by both Senge et al (1994) and Peck (2003). These techniques included refined ways of interviewing, reflecting, inquiring and observing. The conscious and unconscious choices people make are the basis of conversations and these in turn provide a context in which people perform their duties. At the end of this phase, the researcher felt he had a reasonably good understanding of the assumptions and thinking causing the results in EasyPay. The research now needed to step from providing understanding to a brief recommendation concerning some possible actions to improve overall organisation performance.

## **2.6 STRATEGIC MANAGEMENT THEORY**

The research had established what was happening systemically in the organisation and with that the need to change the status quo if EasyPay was to realise the potential business within its grasp. The research had also established some of the opportunities and threats facing the company. The next step was to suggest an effective company strategy for the future. It is also important to begin a study 'with the end in mind' (Covey, 1989). A review of strategic management theory was therefore necessary.

The review of strategic management theory started with reviewing literature with a theoretical bias and moved to theory that was more practical and focused on assisting leaders and management with practical implementation. The review moved from Corporate Strategy by Richard Lynch (2000) to Crafting and Executing Strategy by Thompson and Strickland (2001) to Making sense of strategy by Tony Manning (2001) to operational strategy as described by Pycraft and Singh (1995) in their Operations Management book. This review provided a useful background in making recommendations to the company for the future.

Corporate strategy is concerned with an organizations basic direction for the future: its purpose; its ambitions; its resources and how it interacts with the environment in which it operates (Lynch, 2000). Lynch (2000) emphasizes that strategy can be less than prescriptive and have an element of process where actions are linked timely to interact with changes in the environment. Particularly relevant to EasyPay was the point that managers are generally not prepared to decide on a long-term direction or a strategy until they have a keen understanding of the company's strategic situation. It would seem in the experience of Thompson & Strickland (2001) judgements about what strategy to pursue need to flow directly from solid analysis of a company's external environment and internal situation. These sentiments were supported by the research done by Collins (2001) and reported in his book titled, Good to Great.

Manning (2001) also provides some guidance on how to think practically when contemplating changing a company and creating a strategy. In making strategic decisions both aspects of leadership and organizational change need to be considered. This is supported by some interesting discussion and cameo examples from Senge et al (1999) who suggests strategies and methods for moving beyond the first steps of change in communities such as corporate companies to achieve sustainable results.

Handy (1989) opinions on the changing nature of the relationship between a Holding company and its subsidiary formed the basis of good reflection on the relationship between the Prism Holding Company and its EasyPay subsidiary. Handy has, in his study of many conglomerates, observed a general change in the relationship from one of subservience on the part of the subsidiary to one of federation with the holding company. The events of 2001 and their influence on the strategies on Prism (and indeed other companies in the information technology industry) meant it necessary to understand theory and practice in the areas of sourcing finance and the influence of changes in the company's cost of capital on operations. A review of Corporate Financial Management by Arnold

(1998) and particularly the section on capabilities and capital investment in Corporate Finance by Chew (2001) proved instructive in this regard. The financial situation of the holding company in 2001 had a profound influence on the subsidiary, EasyPay.

In the context of the findings in EasyPay it was necessary to highlight the effect of measurement and reward systems on the results of companies. The Goal by Cox & Goldratt (1992); The Balanced Scorecard by Kaplan & Norton (1996) and the article by Hammer (2005) provided context in which the measurement and reward systems used by Prism to manage EasyPay could be evaluated. The section of reward systems in the book Human Resources Management (Noe; 1997) was also reviewed in this regard.

The Fifth Discipline gives guidance on the initiation of the transformation organizations to become more effective. Senge et al (1999) emphasises the importance of people sensing their future together and acting to create it together. He asserts that no one person has all the answers to organisations problems. The answers will emerge through the collective experience of people and their ability to learn and utilise those learning's to be more effective. Senge et al (1999) highlights the importance of marrying the individual development of every member of staff in an organization with superior economic performance and sustained success. This theory provided context in which the researcher could review the events, practices, attitudes and behaviour found in EasyPay. Collins (2001) conducted qualitative and quantitative analysis on companies that had gone from good to great in order to find out how they did it. The book describes common factors that the research revealed as common to the great companies studied.

The understanding of organizational change is further developed in the review of the book Presence (Senge et al, 2005). The book introduces a wide range of ways of thinking about the subject of organizational change. The authors

describe and think of the organization as a connected human community. The *Dance of Change* by Senge et al (1999) gives guidance on sustaining the momentum of organizational change. Leaders in organizations have found that after initial successes forces in organizations kick in to preserve the status quo. The author assists organizations to anticipate and overcome the challenges that face programs of profound change.

During the course of the study the importance of the knowledge and skills of employees in delivering both the services of EasyPay's and the innovation required by EasyPay customers was realized. The book called *Knowledge Management Toolkit* by Tiwana (2002) provided some valuable insight in resource management in this regard.

The ingredient of leadership is essential in such a programme of change. It is inevitable when a company like EasyPay finds itself in the situation it does that the question of leadership arises. Maxwell (2002), an acknowledged leadership expert, maintains that leadership ability is always the lid on personal and organizational effectiveness. Maxwell (2002), like Senge et al (1999), emphasize the ingredient of learning in the leadership of effective companies. If the leadership is not effective then the organization is limited. He also maintains that by raising the leadership ability of a company without any increase in commitment or dedication the company can become exponentially effective. Fischer & Sharp (1998) complements the research in the book '*Lateral Leadership*' by introducing frameworks for developing effective individual and group leadership. Covey (1989) emphasizes effective personal leadership as a prerequisite to effective group leadership. This literature together with the evidence gathered and the experiences of the researcher had a material influence on the chapter dealing with recommendations.

## 2.7 CONCLUSION

In conclusion, the action research approach was appropriate in understanding the problems that EasyPay faced. A definition of action research is contained in the glossary. There was no predetermined formula that EasyPay could apply to solve the difficulty it was facing. The researcher was attempting to find an answer or model that would explain the unique combination of difficulties that EasyPay were facing. The researcher compared the events experienced in EasyPay with the views found in the literature studied to see if they offered a partial explanation of what was happening. The books selected and discussed above provided some answers and, as the researcher read further, he gained a more complete appreciation of the situation in EasyPay. The process was like building a puzzle – eventually one has enough pieces fitting together and gradually a picture begins to emerge. The process was gradual, as reflection could only be done within the bounds of the researchers' experience. Gradually, the researcher reached new levels of understanding which yielded new sets of questions and this in turn initiated a search for new answers. In each of these searches new literature was reviewed and with reflection on the actual events this eventually yielded a rich appreciation of the situation.

Chapter 2 has dealt with the review of literature. Chapter 3 will give the reader insight into the research method used.

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**CHAPTER 3:**  
**RESEARCH METHODOLOGY**

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### **3.1 INTRODUCTION**

Connecting the focus of the inquiry to the prevailing situation facing the company is the substantive theory guiding that inquiry. The focus of the enquiry was to gain a systemic appreciation of the dynamics of the situation; to answer the question, what is causing the perception of poor service delivery. To answer this question, the context in which the service is delivered would need to be understood.

It is in the context of the company that staff apply their minds and effort. This is often called organisational culture; climate or system. The management of EasyPay is responsible for shaping the context within which the company operates and they do so using strategy. Strategic Management is therefore the substantive theory guiding the enquiry. In the words of Manning (2001) strategy is about “listening to customers, asking some pretty simple questions, making some choices, and getting people to support your decisions” through action. The strategy employed was obviously not working, as it was not delivering the required levels of service to customers.

The investigation is based on the assumption that EasyPay needs a new strategy. Effective strategies begin with asking the right questions. Examples of specific questions one might ask in the formulation of strategy are set out below.

- What do our customers really want?
- What must be changed?
- What must things be changed to?
- How does the organisation change?



The general management question is what do management do and how do they do it? Once the questions above have been answered another set of questions follow:

- Where does EasyPay begin?
- How does EasyPay turn its intentions into results?
- How does it create the right balance between the creativity and control that was discussed in the introduction?
- How can management be confident of taking into account all factors that will impact performance?
- What does management do first?

To answer these questions management needs a systemic view on what is happening in the company.

Senge (1994) explain systems thinking as a way of thinking about, and a language for describing and understanding, the forces and interrelationships that shape the behaviour of systems. Systems thinking is a method that probes what EasyPay does, why and how. This systemic view will enable management to identify the points of leverage and in so doing make them more effective in changing the system.

### **3.2 THE BASIS OF CASE SELECTION**

To understand the system the investigation would have to go into the detail. It was decided the best way to proceed was to investigate the most deviant cases of poor customer service. The time limitations discussed in the introduction did not allow for every such case to be studied. The following three cases were selected for in-depth investigation:

1. the prepaid administration service;

2. the Petroleum Company X electronic funds transfer service; and
3. the Petroleum Company Y RET file service.

The criteria for selection were agreed in a meeting with the general manager of EasyPay and the Sales Manager of EasyPay. The cases were selected on the basis of the criteria suggested by Senge (1994) set out below:

1. The issue represented a chronic customer service issue.
2. The issue had persisted for a long period of time.
3. The problems seem to oscillate endlessly, the same problems recurring in random intervals but were nevertheless cyclical in nature.
4. The problem had a defined scope.
5. These problems had been tackled before with limited success.
6. The issue had effects on other customers and services.
7. People across many departments in the company were involved.
8. There was a great deal of conflict around the case.
9. The resources involved were a shared resource across customers and services.

### **3.3 DATA COLLECTION**

The inquiry followed a number of phases. In the initial phase, people were interviewed and asked to describe specifically why the customer was not satisfied with the service and the factors behind the poor service. The researcher interviewed everybody as many people as possible involved in the case. Selecting whom to interview was quite simple as every case involved the experiential experts in their typical roles as salesperson, project manager, operational manager and developer. Please refer to Appendix H for a list of people interviewed. The researcher avoided using names and instead identified them in by their roles. The interview took the form of an informal conversation and this approach was used to encourage the participants to express themselves freely without the fear of consequences. The Five Why's questioning approach

described by Senge (1994) was used, as this technique allows the interviewer to peel away the layers of symptoms which can lead to the root cause of a problem. Sequential flow block diagramming was used to record the diverse views of those involved in the case. While there were definitely common issues and opinions on the causes given by the interviewees most interview provided a slightly different perspective or angle on the case. After every interview the researcher updated the sequential flow block diagrams with anything new that had been raised. In this way the research began to build a more complete picture of the case.

The researcher then separated events and patterns of behaviour as suggested by Senge (1994). The interviews had given the researcher insight into some of the key variables in operation in each case. The researcher then gathered more information on these variables and recorded their behaviour over time. This included conducting more interviews and requesting appropriate information from the finance and support departments. This was important background for identifying the causal loops.

### **3.4 DERIVING THE SYSTEM**

The original interviews using the Five Why's interview process provided a wealth of information and the researcher returned to the block diagrams. The systemic structure was derived using the process discussed below.

1. Interviews were conducted using the "Five Why's" as suggested by Senge (1994). These views were documented in a block diagram. These views were documented in the diagrams in Appendices B, C and D.
2. Deriving the system
  - The blocks in each diagram were cut out and laid out on a table. The subject matter identified were the result of theme's emerging through the clustering and re-clustering of the paper blocks into

measures of performance. (See Appendix G for pictorial guide of steps 2a and b).

- The subjects are the issues, and the measures of performance are indicators as to the health of that issue i.e. if the subject was job satisfaction, then possibly morale would be one measure of performance. Good morale would indicate high job satisfaction and vice versa.
- The measures of performance and their subject matter were put into an Affinity Diagram (see Glossary for definition). The Affinity Diagram was used as it is effective in capturing different perspectives and grouping ideas (see Appendix G for pictorial guide of steps 2a and b).
- From the Affinity Diagram, an Interrelationship Diagram (See Glossary for definition) was compiled.
  - The ideas or themes were arranged in a circle.
  - The relationships between the ideas were then identified.
  - As many relationships as possible were identified starting with the obvious relationships and then moving onto the less obvious.
  - The direction of influence was drawn from the greater influence to the lesser influence (In finding the relationships there is only one rule and that is the relationships can be in only one direction).
- The blocks representing the subject matter were then identified and colour coded as drivers, links or outcomes (driver block: red; link: black; outcome: green). Drivers were identified as subject matter blocks that had the greatest influence to all other items (many influences going out but few influences going in). Outcomes were identified as subject matter that has the greatest influence by all other items (that had many influences going in but few influences

going out). Links were identified as subject matter blocks that had a more even balance of influences coming in and going out.

- The next action was to identify causal loops. With the combination of categorised subjects and connecting the patterns of behaviour of key variables identified in the cases the researcher was able to identify causal loops in the diagraph. This was illustrated using a colour and a heavier line thickness for influences (arrows) in the loop.
  - The loops were then drawn in a separate diagram called a Causal Loop Diagram (CLD) (See Glossary for definition). In this diagram the causal loops identified earlier are drawn in one diagram. Then the relationships between loops are identified.
3. The system was clearly evident in the Causal Loop Diagram. The system was then described in “bite size” parts. The reasoning underlying the systemic connection was explained.
  4. In the dissertation research the systemic links were identified, understood and described.
  5. The mental models underlying the system were identified where appropriate.
  6. Strategies and high level interventions for improving the health of the system were recommended.
  7. The research was then evaluated in the light of lessons from the investigation.

### **3.5 VALIDITY OF THE SYSTEMIC MODEL**

The data and information was gathered across three cases from many participants. The diverse views allowed information to be corroborated through triangulation. The causal loop links were validated by allowing members of the company to scrutinise and examine the links for validity against their real world experience. The researcher checked the systemic structure emerging from the three cases for consistency and this allowed the researcher to confirm the validity of the model.

Chapter 3 has discussed the methods employed in the research. Chapter 4 will now present the major points of the three cases selected for investigation.

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## CHAPTER 4

### SYNOPSIS OF CASES

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The previous chapter detailed amongst other things the methods used to collect data. In this chapter a synopsis of the events and patterns observable in each of three cases is presented. Senge (1994) describes a method as of sorting data and information into a meaningful order. Senge (1994) suggests that the data be sorted into events and then into patterns and trends. He suggests that such a method will help in identifying systemic links sometimes in seemingly unrelated areas of the business. The synopsis follows this method of Senge and will deal individually with the cases of prepaid administration, Petroleum Co X electronic funds transfer service administration, Petroleum Co X RET file service respectively.

#### **4.1 CASE 1: THE PREPAID AIRTIME ADMINISTRATION**

In the management meeting in November 2001, the sales manager first raised his concerns with regard to the prepaid airtime service. The problem in his opinion was that the service delivered to customers was not reliable. In a sequence of retailer initiated meetings each retailer's management responsible for the prepaid service informed the sales manager of their dissatisfaction. His overall impression was that the major retail customers vending prepaid airtime through EasyPay were increasingly dissatisfied with the service they were receiving. Typical issues plaguing the service included the fact that the online server was unavailable; prepaid airtime stock was not available to vend; and report or data file content was incorrect. Despite having been in existence for four years or more, the chronic prepaid airtime service issues had been tackled with little success. This situation is explained in more detail below by describing key events and patterns observable over time.

The events troubling prepaid airtime are listed below.

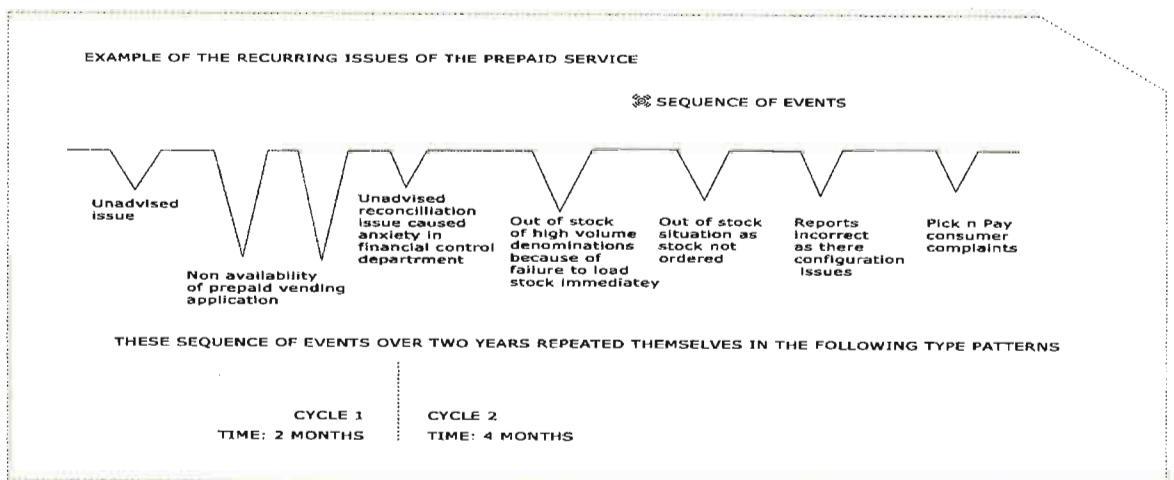
- A:** The company had experienced an increase in customer complaints with regard to the quality of service and the number of operational issues experienced (Interview with Sales Manager)
- B:** The volume of prepaid vouchers sold by EasyPay customers increased substantially (sales per customer). (Source: Interview with Sales Manager)
- C:** In 2001 operational problems increased noticeably (number of operational issues). (Source: Interview with Sales Manager)
- D:** Complaints surfaced from sales people about the state and perception of the operation and the difficulty in selling under these conditions. (Source: Interview with Sales Manager)
- E:** There were complaints from customers about the delay in delivering software enhancements they had requested. (Source: Interview with Sales Manager)
- F:** Complaints from customers about the long response times on operational incidents increased. (Source: Interview with Sales Manager)
- G:** Rewrite projects provided only temporary improvements to the level of service. (Source: Interview with Sales Manager)
- H:** Unhappiness caused by the heavy workload and stress on support resources surfaced and escalated (number of hours worked by support) (Source: Interview with Operations Manager)



- G:** New contracts were not awarded to EasyPay because of the information in the market. Existing customers started giving new services to EasyPay's competitors. (Source: Interview with Sales Manager)
- I:** Customers informed EasyPay that they were receiving better functionality around the prepaid service from the company's competitors. Web reporting and order tracking represented the functionality most often quoted as missing. (Source: Interview with Sales Manager)
- J:** The information in the marketplace was that EasyPay was experiencing frequent operational problems and their service was characterised by slow responses. (Source: Interview with Sales Manager)
- K:** With the growth in volumes, the company started to experience downward price pressure and margins were under continuous pressure. (Source: Interview with Sales Manager)

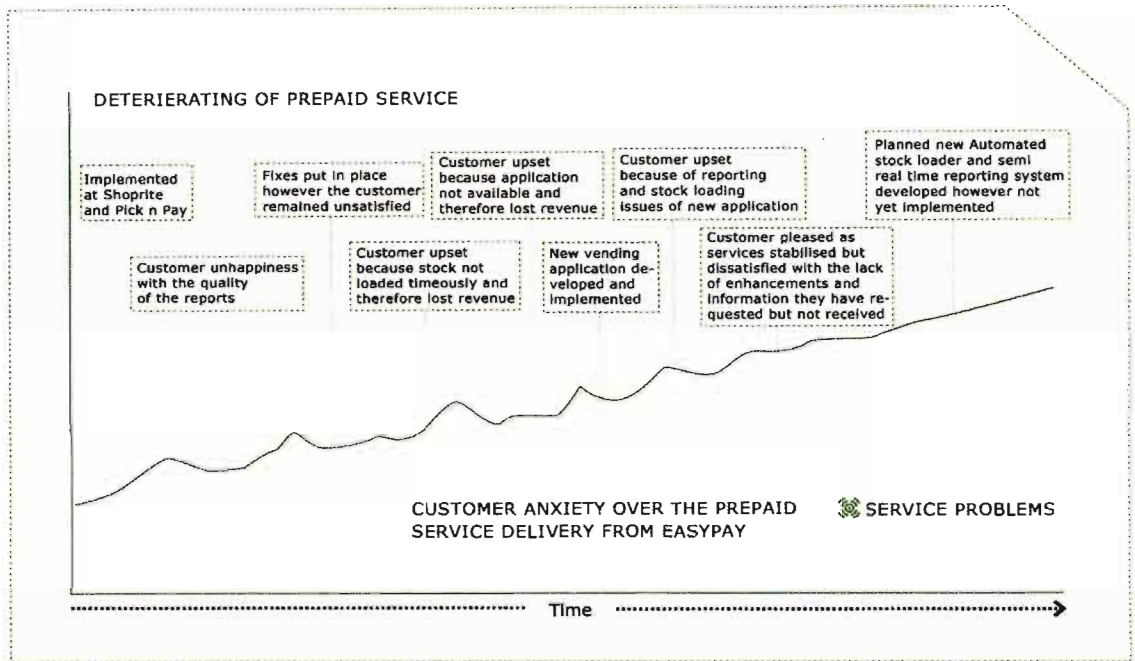
Figures 4.1 and 4.2 will give the reader a sense of the EasyPay customer experience over time.

**Figure 4.1: Example of recurring prepaid service issues**



Source: EasyPay Incident system

Figure 4.2: The cycle of service problems



Source: EasyPay Incident system

The cycle of typical service issues has repeated itself over time. The issues are in different sequences and are experienced in varying magnitudes over different time spans however the typical issues remain the same. The service has been plagued by these same issues for the past four years. The illustration shows that these issues range from technical design issues, configuration issues and human mistakes to reporting issues and non-adherence to established processes.

The prepaid volumes have grown exponentially since inception of the service. Increased volumes of transaction mean a greater demand on the systems in EasyPay.

**Figure 4.3: Prepaid transaction volumes**



Source: EasyPay accounting records

The online servers in EasyPay have to handle higher throughput and this is measured in transactions per second (T.P.S). The batch systems have to process a higher volume of transactions, and this processing must be done in the operational time allowed for batch processing.

The number of prepaid airtime products and distributors has increased from 3 in 2000 to 10 in 2005 (Source: EasyPay accounting records).

Figure 4.4: The number of distributors managed by EasyPay

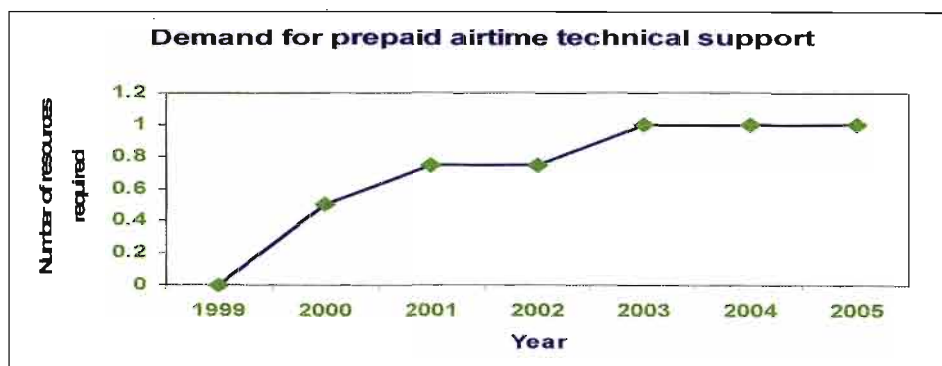


Source: EasyPay accounting records

These distributors and their growing product ranges must be configured on the airtime system and the stock fulfilment process managed. With all the parties involved the service is considerably more complex to manage.

The increasing volumes, number of distributors and number of products combined to create an increasing demand for both technical and business support.

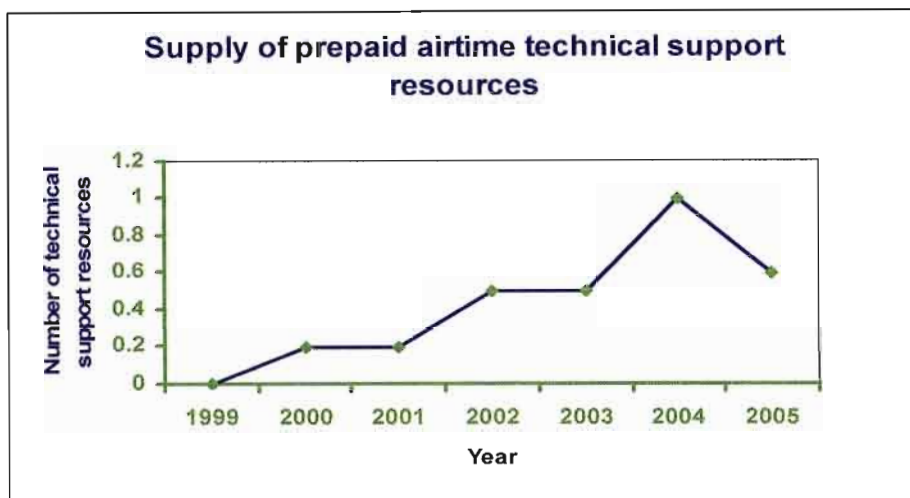
Figure 4.5: Demand for prepaid airtime support



Source: EasyPay Incident system

In the same period, the supply of technical support did not always meet the demand. This caused much frustration with both customers and business support staff who had to wait long periods for the information requested or incidents to be resolved.

**Figure 4.6: Supply of prepaid airtime technical support resources**

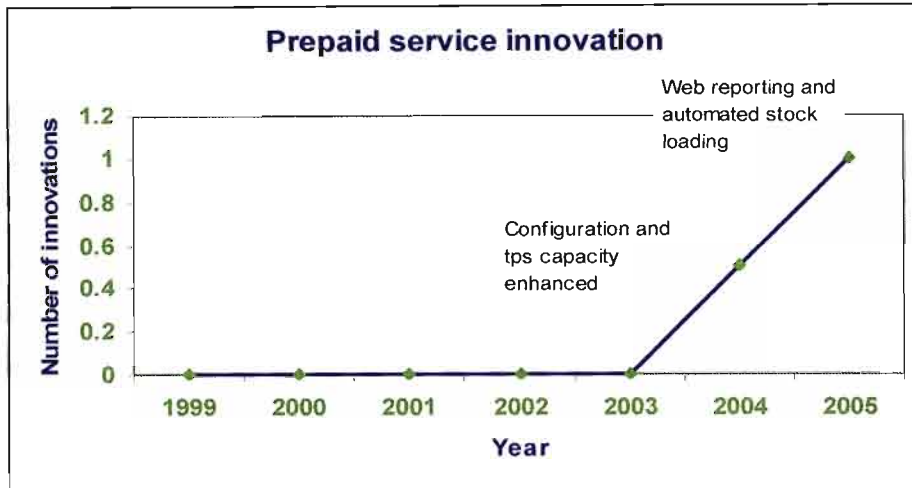


Source: Interview with EasyPay general manager

The prepaid service has suffered from both a lack of technical support staff and a lack of staff who had an understanding of the prepaid service and were familiar with the technology platform in use. There have been periods where, because of cash flow problems, employees' contracts have not been renewed. This and periodic resignations have meant that there has often been no competent resource to support the prepaid application. The quality of technical support available in general is discussed later in this paper on page 77.

Since 2001 there has been a focus on stabilising the prepaid airtime service. The company has started to innovate the service in the last two years. The company trails its competitors in innovating the service and is currently attempting to make up the lost ground.

**Figure 4.7: Product enhancements or features additions made over time**



Source: Interview with EasyPay sales manager

Since 2002 EasyPay competitors have offered web reporting and order tracking over the web. It has been proposed that EasyPay be the first company to achieve successful vending of PINless vouchers into the retail environment. It has also been proposed that EasyPay provide a prepaid credit management solution with their prepaid offering into the retail petroleum industry. There has also been an attempt to innovate the prepaid business models. These attempts included offering consignment stock and moving from just couriating airtime stock to becoming a wholesaler or distributor of airtime. These business models are already offered by some of EasyPay's competitors.

The holding company developed a prepaid airtime product called Virtual Top-Up (VTU) and this technology platform will allow anyone with a Prism Holdings developed Virtual Top-up SIM card to sell airtime. This application also interfaces with a credit management solution which allows the credit distributed in the form of an airtime value to be managed. With this product the informal sector will vend prepaid airtime in competition with established retailers. It is believed that this

innovation will do very little to enhance the EasyPay prepaid airtime offering in its existing retail space.

The prepaid service is an online service only as opposed to services like electronic funds transfer for credit cards where transactions can be completed in-store despite being offline to EasyPay. The transactions are then sent up later from a store and forward queue. In the case of prepaid airtime this means that, if the point-of-sale cannot connect with EasyPay for any reason, the airtime voucher cannot be vended. The consequence of this for the retailer is twofold: firstly the customer buys airtime elsewhere and therefore the retailer loses revenue, and secondly the customer is not pleased with the service he/she has received from the retailer so the retailer's reputation for service suffers. It is not hard to understand why service issues in this space have a significant impact on customer satisfaction.

**Figure 4.8: Customer satisfaction with prepaid service**



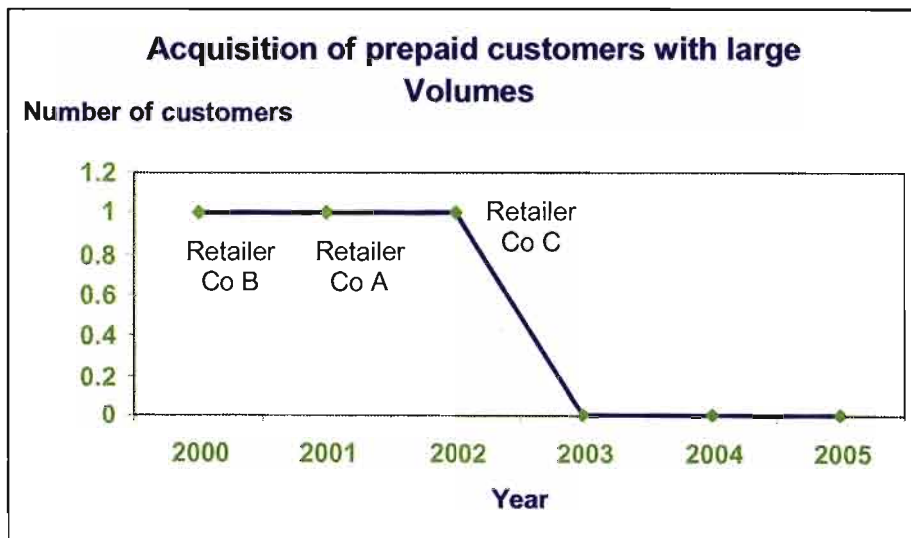
Source: Interview with EasyPay sales manager

The cyclical service issues experienced, the slow response times and an offering perceived as being inferior compared to what has been available from

competitors has seen the customers' satisfaction with the service deteriorate over time. This trend has seen customers deeply dissatisfied at times with system downtime and stock unavailability. It is not surprising that bluechip customers openly state that they are looking at other options to deliver their prepaid airtime service.

The perception of the EasyPay prepaid airtime service in the market is generally poor. EasyPay acquired the Retailer Co B, Retailer Co A and Retailer Co C business between 2000 and 2003. Competition in the prepaid airtime domain has increased considerably and despite the efforts of the sales department, EasyPay has lost amongst others, the Clicks and Petroleum Co Y business to competitors. (Source: EasyPay sales manager)

**Figure 4.9: Acquisition of prepaid customers with substantial volumes (volume of 200000 transactions per month or more)**



Source: EasyPay accounting records

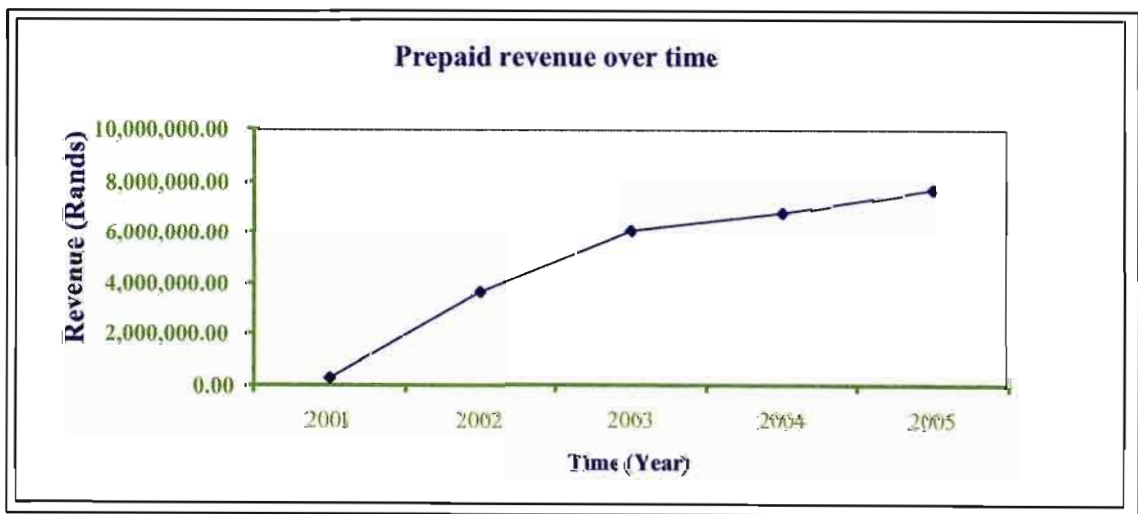
The company has put forward a proposal for the prepaid airtime business in Petroleum Co X and Shell in response to requests for proposals. The sales department has assigned a low probability to the company securing the Petroleum Co X business, as Petroleum Co X is unhappy with the electronic fund



transfer service. EasyPay has acquired some new customers in the form of ATM solutions and Isentials, neither of which has significant prepaid airtime transaction volumes. These small customers have further added to the demand for technical and business support without significantly increasing revenue.

Figure 4.10 shows an increase in prepaid airtime revenue. Higher transaction volumes from existing customers have ensured that prepaid airtime revenue has increased every year, despite the annual decrease in fee per transaction.

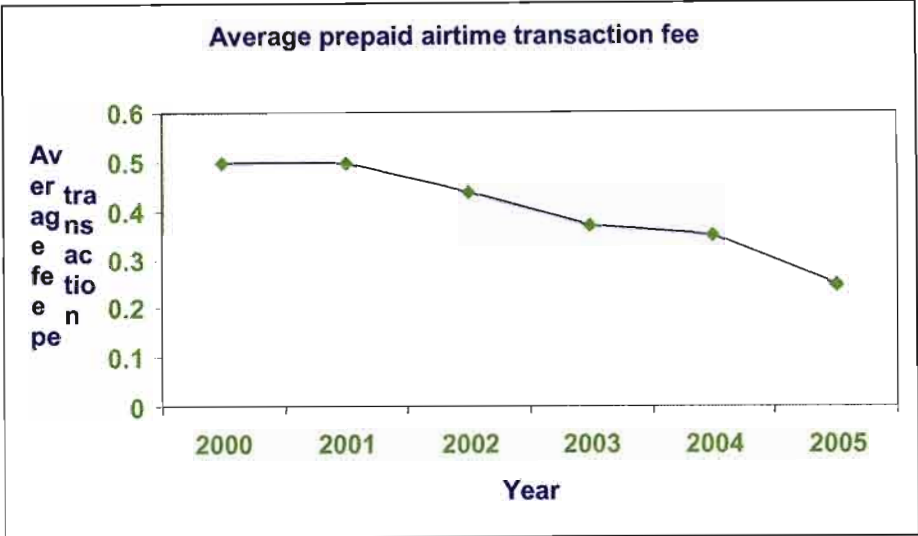
**Figure 4.10: Prepaid airtime revenue per year**



Source: EasyPay accounting records

It is evident that there has been downward pressure on airtime fees for some time. The retailers' demand a large share of the benefit that is received from the increased volumes and economies of scale. The increased competition and aggressive pricing of competitors has seen the retailers bargaining power increase and EasyPay has had to reduce its fee per transaction. Prepaid airtime competitors are working hard at providing a more compelling offering in addition to being price competitive.

**Figure 4.11: Average prepaid airtime fee**



Source: EasyPay accounting records

The prepaid airtime service on the face of it looks healthy if one considers revenue growth. As stated earlier, prepaid airtime revenue growth appears healthy because in the positive economic situation volume growth in existing retail customers has more than compensated for the revenue loss from the fee reductions and penalties from poor service delivery.

**4.2 CASE 2: THE PETROLEUM CO X ADMINISTRATION**

This project was challenging, as this was the first time the company was rolling out terminal software into the petroleum industry, and the terminal management system, reconciliation system and settlement system software were newly developed and untested in the operational environment. In this case, as in the prepaid administration case, the significant events and patterns of behaviour around the implementation of the electronic fund transfer service into the Petroleum Co X petroleum retail base will be discussed.

Significant events in the Petroleum Co X case are listed below.

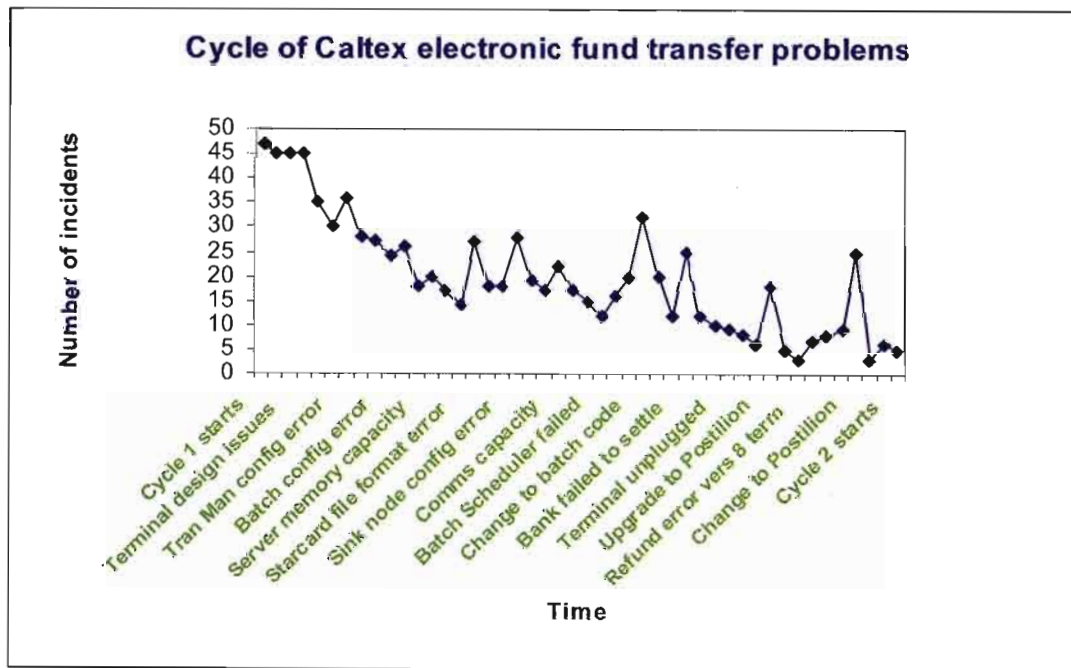
- A:** Delays in development saw the testing time on the project reduced in order to make the customer delivery date. (Source: interview with Project Manager)
- B:** The output of the EasyPay settlement service was not correct so the merchants' settlement was either zero, short-settled or over-settled. (Source: interview with Customer Care Manager)
- C:** The merchants had experienced settlement problems before, but the problems which had been infrequent were now regular. The volume of issues had increased significantly with the implementation of the new system. (Source: meeting with Petroleum Co X merchant support)
- D:** The test manager; online manager; programme manager; project manager; support manager and account manager were seen daily to be personally involved in resolving operational incidents and issues. (Source: researcher observation)
- E:** The merchants had experienced settlement problems before and their resolution had been relatively quick. The resolution time experienced with the implementation of the system was considerably slower. This is despite the fact that EasyPay established an emergency reconciliation and call centre. (Source: meeting with Petroleum Co X merchant support)
- F:** Merchants complained that they could not track amounts into their bank accounts. The totals in their bank accounts did not correspond with the terminal report totals and, to complicate matters further, the payment reference in the bank accounts were for a time incorrect. (Source: EasyPay Incident system)

- G:** It was discovered that transactions were not being delivered to EasyPay because of the store and forward queue design error in the terminal software. In many cases, the offline transactions that the terminal had processed and not sent to EasyPay could not be obtained from the terminal. (Source: interview with Project Manager and EasyPay Incident system)
- H:** It was later discovered that some transactions were not being delivered to EasyPay because there were not enough communication channels available for the terminals to connect to the EasyPay service. (Source: EasyPay Incident system)
- I:** It was even later discovered that, when extract processes were running on the online electronic funds transfer software application, the terminals could not deliver their transactions for settlement, as the EasyPay online application software was not available. (Source: EasyPay Incident system)
- J:** The Petroleum Co X corporate customers did not receive the reports and information they had been promised. This was because reconciliation, activity and settlement reports had either not yet been developed or their content was incorrect. (Source: interview with Customer Care Manager)
- K:** EasyPay management became aware that there were multiple versions of software in the field. Internal staff complained that this made the change control process less effective and also made it more difficult to identify the cause of a problem. (Source: interview with Customer Care Manager)
- L:** The system was implemented late as the roll-out had to be stopped because of the dealers' unhappiness with the system. Petroleum Co X could therefore not remove the system (Tandem) that Prism and EasyPay had planned to replace, as the roll-out was delayed due to the service

issues. This meant that Petroleum Co X had to extend the Tandem contract, and it also meant that the responsible executives of Petroleum Co X South Africa received reduced bonuses. Petroleum Co X enforced penalties in terms of its contract with Prism Holdings and its subsidiary, EasyPay. (Source: interview with Prism Petroleum Co X account manager)

Figure 4.12 illustrates the large volume of issues that had to be dealt with soon after the implementation of the system. The issues can be loosely divided into design issues and technical production service issues.

**Figure 4.12: Cycle of service problems**



Source: EasyPay Incident system

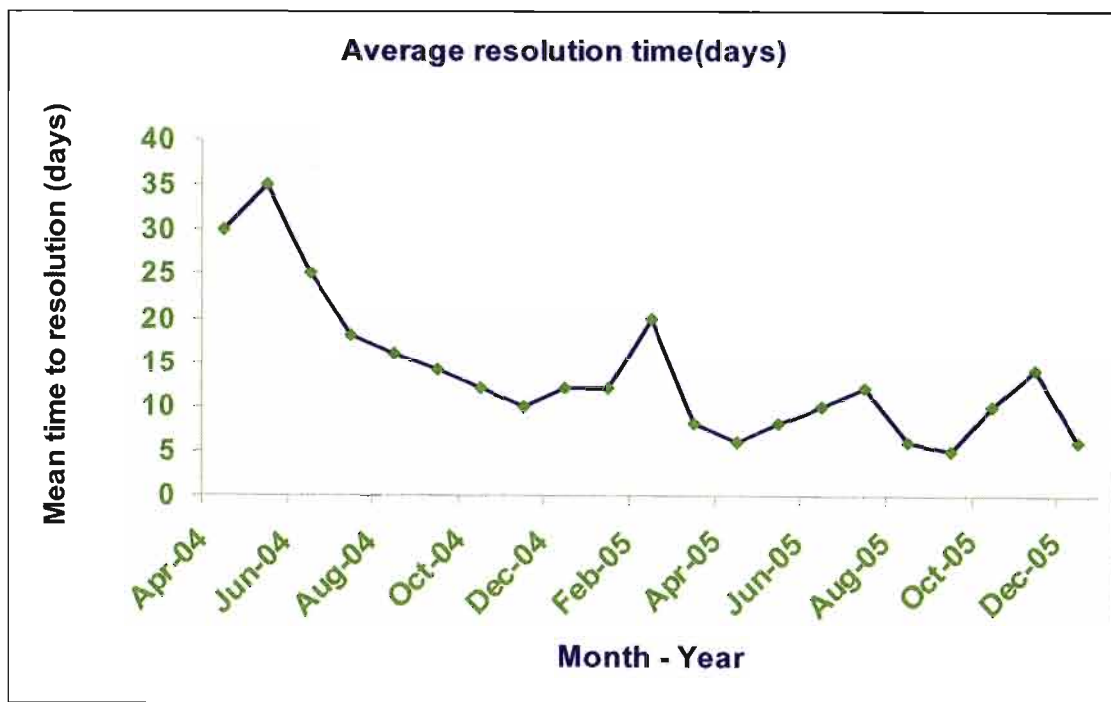
The design issues included the settlement, reconciliation and terminal system design flaws. The technical production service issues included the lack of capacity management; effective software change control; software version control and configuration errors (Source: EasyPay incident system). In the initial

roll-out of the electronic fund transfer service into Petroleum Co X, the defects in the system caused many merchants to be short-settled. There were therefore many incidents in the initial phase of the project. The company established an emergency operations room with a combination of new and experienced staff in attempt to create the capacity to handle the large volume of issues being raised.

The incidents were reduced slowly to a manageable level and thereafter the customers experienced cycles. These cycles saw periods of stability followed by a rapid increase in the number of incidents raised by merchants complaining about non-settlement. Petroleum Co X management then complained and the incidents were then reduced again. Figure 4.12 lists the many causes apparent in each cycle of service and it is noticeable that in these cycles of service the large majority of these causes have been seen before.

With the large number of incidents opened in the beginning of the project, the average resolution time was very long despite the additional staff.

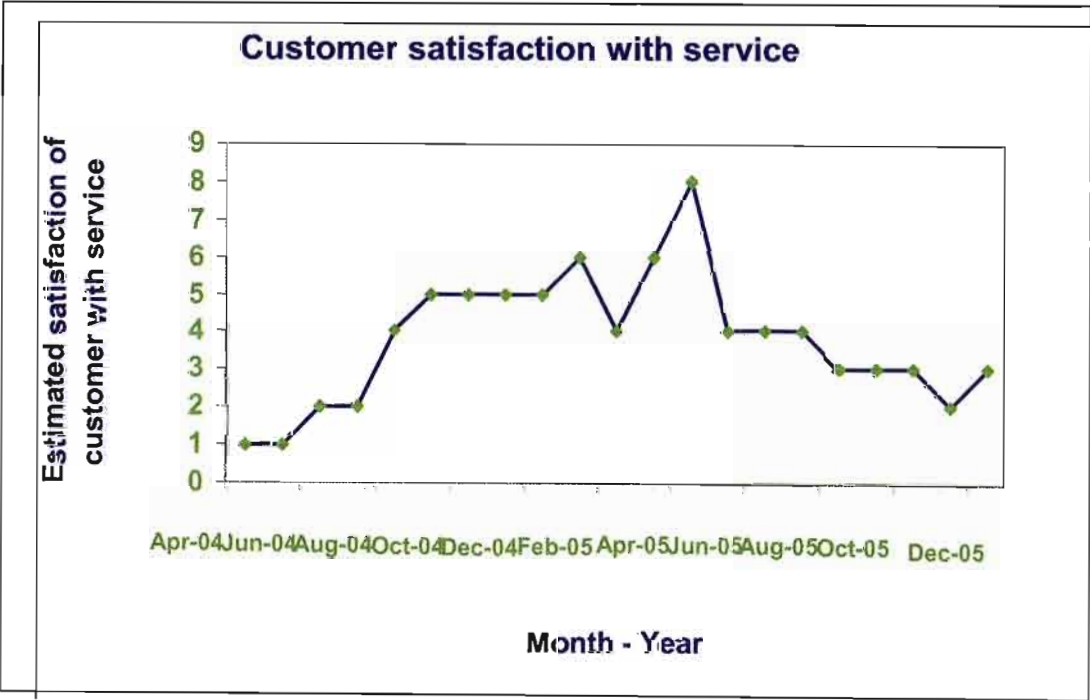
**Figure 4:13: Average time to resolve an incident**



Source: EasyPay Incident system

The technical support resources who understood the system and the EasyPay technical environment were needed to assist in resolving the issues and it took time for these people to be trained and familiarised with the environment. The reliance on these resources was aggravated by the lack of reconciliation tools and reporting for the business support resources. The resolution time depended to a large degree on the demands of the technical support resources schedule. It did not help that incidents open on other services, such as the prepaid service, were often accorded a higher priority and in such cases the Petroleum Co X incidents had to wait for resolution.

Figure 4:14: Customer satisfaction with service



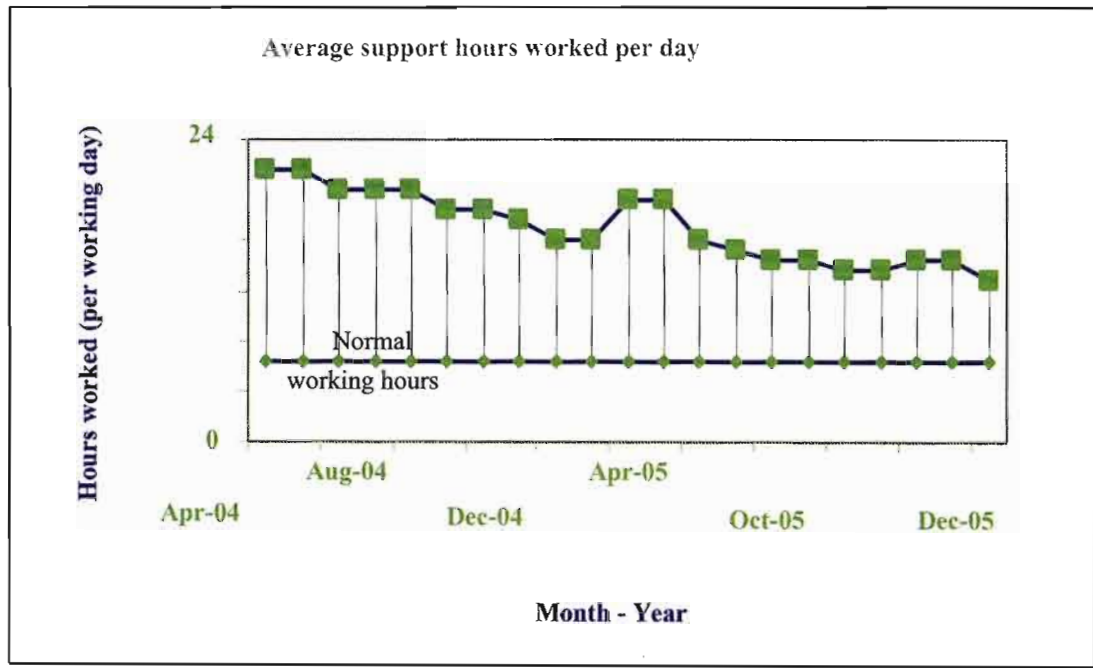
Source: Interview with EasyPay Petroleum Co X account manager

The effort and urgency that both Prism and EasyPay applied to resolving the situation saw a vast improvement in the perception of the service. Since then, however, the intermittent service failures with many of the same previous causes

have seen that perceptions deteriorate. (Source: EasyPay Petroleum Co X account manager)

The technical support staff supporting Petroleum Co X are regularly seen at the office working late at night. During the first two years of the operation two of the technical Petroleum Co X support resources, representing 33% of the total support resources available, resigned citing the long hours and constant pressure as key reasons for their decision (Source: EasyPay operations manager)

**Figure 4.15: Hours worked by staff supporting Petroleum Co X**

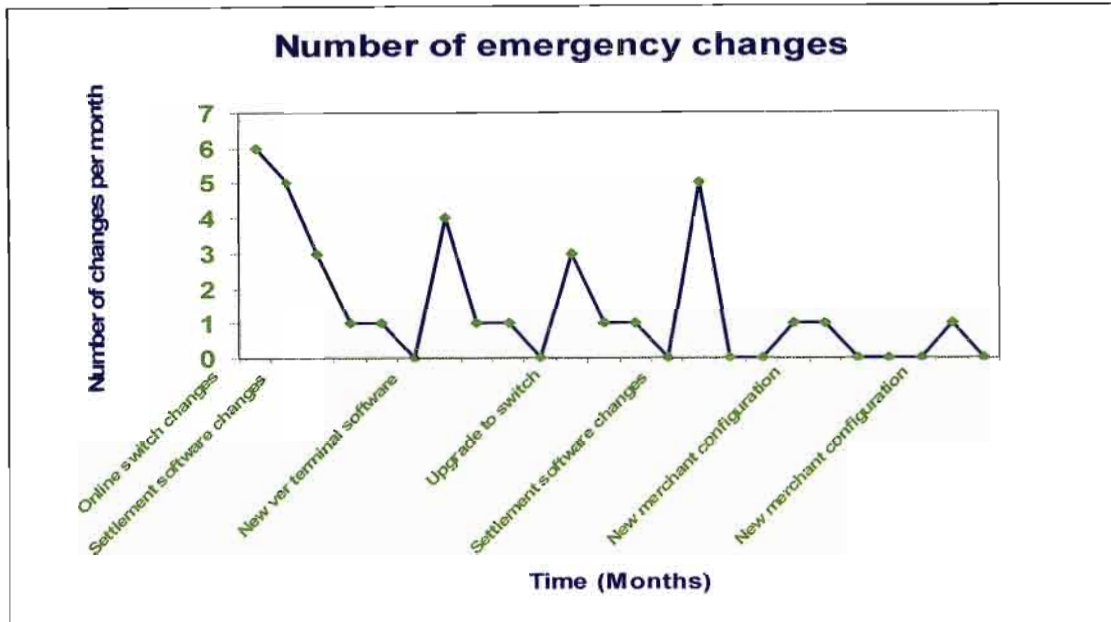


Source: researcher observation

Figure 4.16 illustrates the large number of emergency changes that have been implemented in the Petroleum Co X production service.



**Figure 4.16: Number of emergency implementations into production environment**



Source: EasyPay software systems change management system

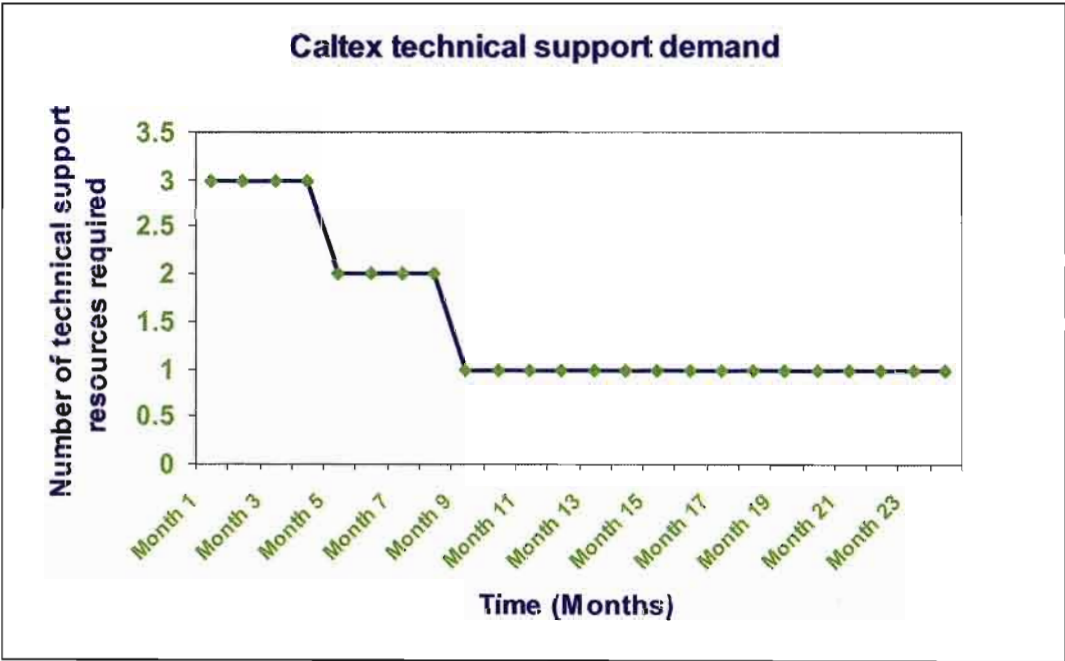
The change control meetings have been regularly asked to approve emergency changes for the Petroleum Co X service. The change control committee has very little choice in approving these changes and the reasons for this will be explained. The changes in the settlement software have been necessary because of defects in the software design. Consequently, many merchants have often not been settled in full. This has had to be rectified immediately, as many of the dealers have limited cash flow and therefore wait for the electronic fund transfer service money to be transferred into their account before purchasing their next tanker of petrol.

In order to approve a software change request, the committee needs to understand the systems that could be affected by such a change. This understanding is in the minds of support resources. The number of configurations and components needed to interact to deliver this service makes the job of approving change controls for the Petroleum Co X system a speculative job at best. To make matters worse there are many components that

comprise the Petroleum Co X electronic fund transfer service. Problems have been caused by a change in one component of the system that has had an impact of one of the other systems. This has also often necessitated emergency changes.

The demand for technical support resources as evidenced by Figure 4.17 has declined since the initial issues have been worked through.

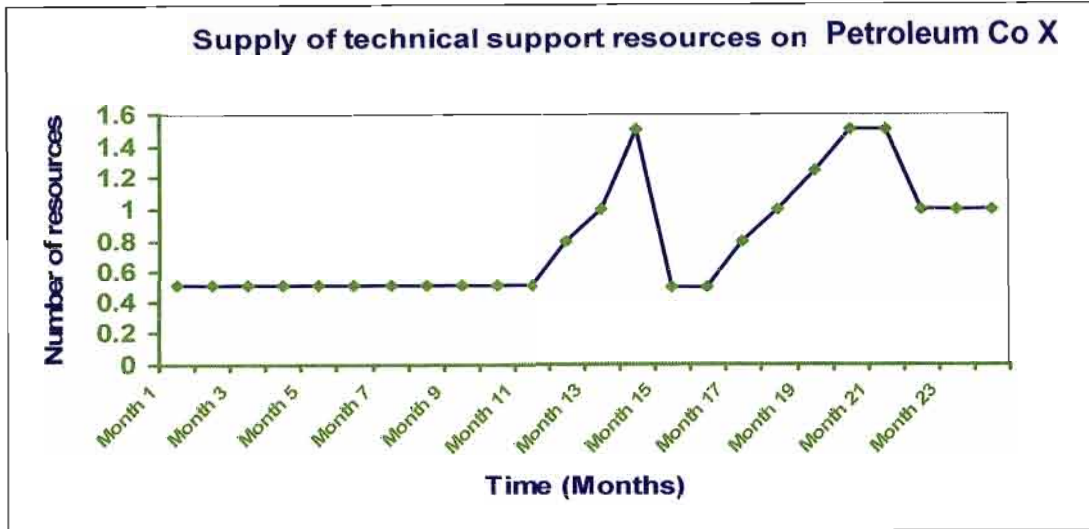
**Figure 4.17: Demand for Petroleum Co X electronic funds transfer service support**



Source: EasyPay Incident system

Management hiring decisions and also many resignations have meant that the level of technical support staff available to work on Petroleum Co X is often insufficient.

**Figure 4:18: Supply of technical staff for the support of the Petroleum Co X electronic funds transfer service**



Source: Interview with EasyPay general manager

EasyPay and Prism Holdings have a history of implementing devices and systems in blue-chip retail environments where there are more reliable communications and local support available. The environment of Petroleum Co X was quite different, as radio pad and dial-up are the communication mechanisms used to deliver transactions to EasyPay and these mechanisms are considerably less robust than those found in Retailer Co C, Retailer Co A or Retailer Co B store. Nor is there any local support available on Petroleum Co X sites. People in the company feel that the company lacked the experience to design applications for this environment and the experience to operate and support the service in this new environment. The people involved in this project feel they have learnt a great deal since first rolling out this service. Certainly they believe the understanding of the peculiarities of the card transaction acquiring financial institutions (ABSA) settlement system has been a significant factor in improving the level of service.

### **4.3 CASE 3: THE PETROLEUM CO Y REMOTE ENCODING OF TAGS (RET) FILE SERVICE**

The events and patterns of behaviour connected to the implementation and delivery of this service will be discussed below. This service is not part of the EasyPay service offering (i.e. prepaid, electricity, gift voucher etc.), however, what is significant is the perceptions of EasyPay's capability that this project created.

Significant events in the Petroleum Co Y RET file case are listed below:

- A:** The EasyPay account manager received repeated complaints from Petroleum Co Y that the RET file was incorrect. (Source: discussion with EasyPay Petroleum Co Y account manager)
  
- B:** The attempts of the EasyPay support staff to resolve the incidents were unsuccessful. (Source: discussion with EasyPay Petroleum Co Y account manager and EasyPay operations manager)
  
- C:** The manager of the Petroleum Co Y digital marketing department initiated a series of meetings with the Managing Director of EasyPay to complain that EasyPay had not discovered the root of the problem in three months and that was unacceptable. (Source: discussion with EasyPay Petroleum Co Y account manager)
  
- D:** The EasyPay support staff insisted that they could see no problem with the RET file. (Source: telephone discussion with EasyPay Petroleum Co Y resource)
  
- E:** The account manager and support staff were very concerned about the situation and arguments occurred on a daily basis. (Source: discussion

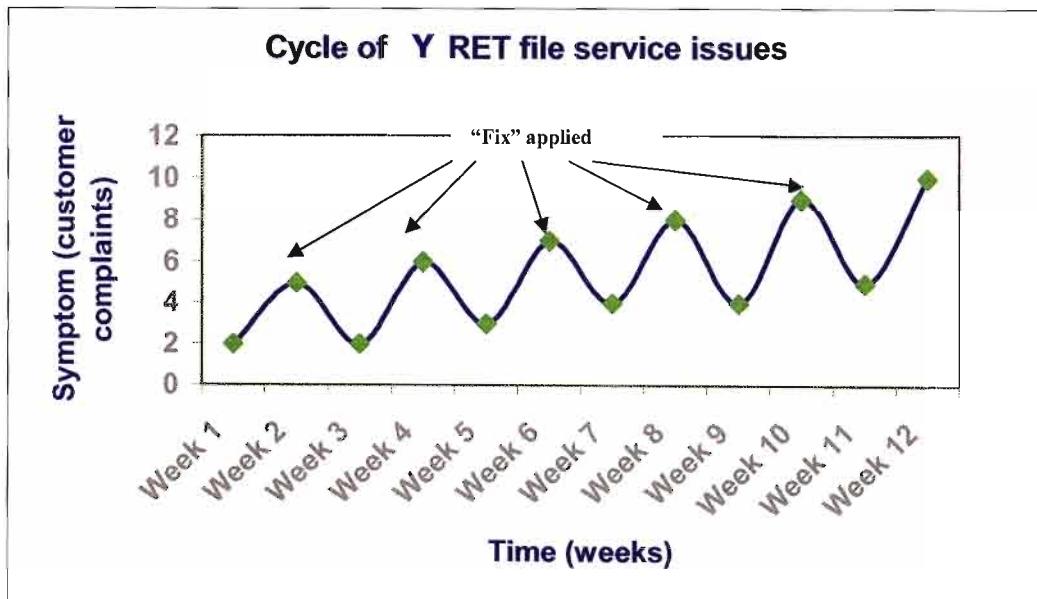
with EasyPay Petroleum Co Y account manager and EasyPay Petroleum Co Y support resource)

F: The analyst investigation revealed basic design flaws in the design of the RET file application. (Source: EasyPay analyst report)

In the discussion that follows the events, cycles, technical issues and actions taken will be discussed relative to this case. The researcher will make observations and emphasise issues. The issues revealed by this case include a lack of necessary process; some incorrect mental models; superficial focus; lack of design skills; inexperienced staff, slow decision-making and resolution of symptoms instead of cause.

The figure below reveals the pattern on this case of fixes being applied only for the problem to reveal itself again.

**Figure 4:19: Cycle of Petroleum Co Y RET file service issues**



Source: EasyPay Incident system

The situation started when a customer complained that the RET file was not working. The explanation was rather vague but the support staff under pressure from the account manager attempted to resolve the issue by initiating a technical process that re-sent the file to all Petroleum Co Y sites. The account manager reported to the relevant people in Petroleum Co Y that the issue was now resolved. After a delay of several days the customer complained again that the issue had still not been resolved. The account manager again urged the support staff to resolve the issue and they again electronically resent the file down to the Petroleum Co Y sites. The cycle repeated itself and in each instance the frustration escalated and the conflict between the account manager and the support staff became personal. The account manager was desperate to solve the issue and calm his customers, and demanded that the operational support manager resolve the situation. The conversation is described below.

PETROLEUM CO Y Account Manager: I am coming to you now because I cannot accept the service from the Petroleum Co Y support resources who report to you. Petroleum Co Y is very dissatisfied with the situation and I have had strong words from them. Your resource promised to resolve this situation on a number of occasions over the past three months and have not done so. I can't work with these guys any more. You are the new operational support manager and you need to sort this out immediately.

Operational support manager: What is the issue?

Petroleum Co Y Account Manager: The files are wrong.

Operational support manager: What is wrong with the files?

Petroleum Co Y Account Manager: I don't know. The support staff developed it.

Operational support manager: To fix the problem I need to understand what it is.

Petroleum Co Y Account Manager: The lady dealing with this issue at Petroleum Co Y explained it to me but I didn't really understand it.

Operational support manager: If I recall you managed that project? Have you got the specifications?

Petroleum Co Y Account Manager: Yes, but it's not my responsibility. The support resources developed it – they should know what is going on. The specification only consisted of a file format anyway.

Operational support manager: (Telephone call to the appropriate support resource). Do you know what the problem with the RET file is that Petroleum Co Y are complaining about?

Petroleum Co Y support resource: (Telephone response). The Petroleum Co Y Account Manager says there is something wrong with the file content but I can not see anything wrong with it.

Telephone call terminated

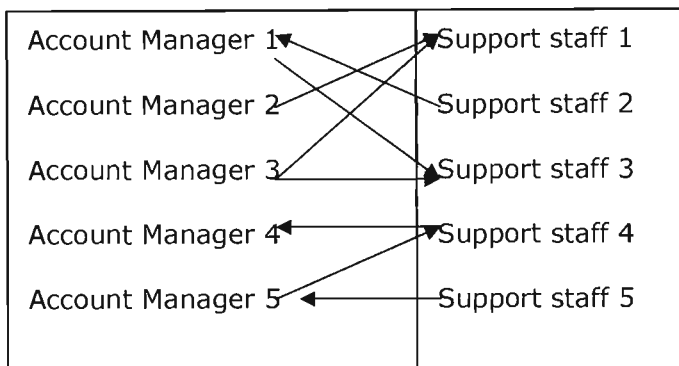
Operational support manager: How can you manage the service if you don't understand on a business level at least the purpose of the Remote Encoding of Tags (RET) file and the business processes associated with it? The support resource should understand it as well. It would however certainly help him to understand if he had received a better quality specification.

The operational support manager asked a systems analyst to investigate the matter as he was busy having just taken over the department. The analyst found that the file transfer application was timing out before the full file had been

transferred causing only half the file to be transferred. A solution was then put in place and the client never complained again about this problem.

The systems analyst working on Petroleum Co Y and the sales manager overheard this conversation and agreed that this exchange had revealed some interesting information that will be illustrated in figure 4.20 and discussed thereafter.

**Figure 4.20: Diagrammatic representation of the current direct link between operations and sales**



Source: researcher observation

Figure 4.20 represents the direct link between account management and operations. The direct link does not allow for effective resource planning, load balancing, skill to task matching, development methodologies, development processes, quality control or task prioritisation. Programme or project management should be the area through which all account management channel all tasks. In this case the account manager followed a path where he could get the job completed in the shortest possible time without understanding the quality implications.

On this project the account manager had interfaced directly with the support staff. There was no involvement from the systems architect, senior system engineer or

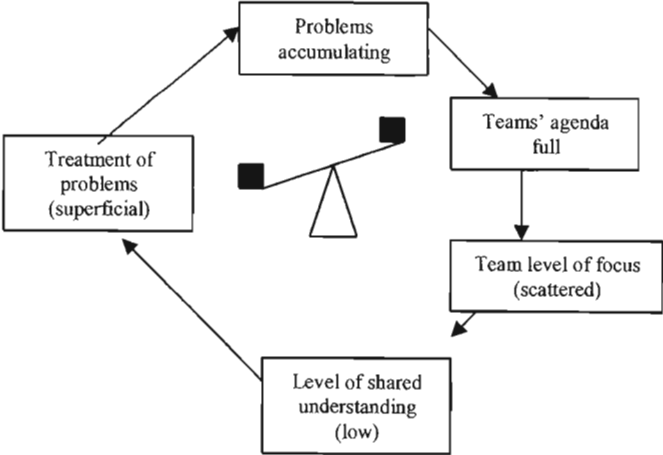


project manager. The account manager followed no process in bringing this project to completion. In defence of the account manager there was no established process at the time for the account manager to follow. There were therefore no boundaries within which the account manager (and the customer organisation) could operate and reconcile the customer organisation's requirement for flexibility with the same customer's organisational requirement for quality and reliability.

In discussing the situation and what had happened with the support staff concerned he explained that he had not been given a complete description of the problem aside from being told the file was incorrect. He also volunteered that he had not investigated the problem as thoroughly as he should have and this was because he had a very busy work schedule and settlement issues across the company's multiple petroleum customers were always given a higher priority.

Figure 4.21 represents the interactions causing the superficial treatment of the problem.

**Figure 4.21: Illustration of the low shared understanding between colleagues involved in resolving this issue**



Source: Senge, 1994

The symbol in the middle of the figure indicates a system out of balance.

The full schedule or agenda of support engineers allowed them very little time to plan, think or consult with their colleagues. They simply focused on plodding through their schedule. Given these facts the low level of shared understanding evident in this case is not surprising. Consequently, neither is the superficial treatment of the problem and the re-occurrence of the symptom. The recurring nature of this symptom added workload to the already full schedule of the support resource.

The analysts' investigation had revealed that the most basic of design principles had not been applied in the design of the RET file application. The support staff who did the design of the application had only recently qualified and had limited work experience and not much practice in designing applications for a production environment such as EasyPay.

Although the underlying technical cause in this case was identified and resolved through the intervention of individuals in EasyPay, Petroleum Co Y management remarked that the application design flaws and the delay in the resolution time left them very concerned about the capability of staff in EasyPay and the maturity of EasyPay's project and development processes.

This then concludes the summary of the three cases under observation in this dissertation and, as discussed in the methodology in the next chapter the systemic structure in operation in EasyPay will be derived.

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## CHAPTER 5: DERIVATION OF SYSTEMIC STRUCTURE

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### 5.1 INTRODUCTION

In Chapter 4 there was a discussion of events and patterns evident in the investigation of the cases selected. In this chapter of the dissertation the systemic structure will be derived from the data collected in the manner described in the methodology.

A brief summary of the steps appear below.

1. The Affinity Diagram will be derived from the Five Why's interview sequential block diagrams. Appendix B, C and D contain the block diagrams for each case from the interviews.

The "Five Why's" technique is explained in the literature review.

2. In the interrelationship diagraph the relationships between the themes that emerged and listed in the Affinity Diagram will be identified.
3. In the next version of the diagraph the variables affecting performance will be identified and highlighted i.e. drivers, links and outcomes.
4. Thereafter following that causal loops will be identified and the system will emerge and be represented in the Causal Loop Diagram (CLD).

### 5.2 THE AFFINITY DIAGRAM

The Affinity Diagram derived from these interviews appears below. The subjects identified in the clustering exercise and included in the Affinity Diagram have been underlined and the measures of performance for the subject listed below.

Customer service

Customer complaints

Time taken to understand and respond to the customer problems  
Understanding the consequences of not focusing on service improvement

#### Resource capability

Difficulty of finding, attracting and retaining enough experienced and knowledgeable resources

Effective skills utilisation and knowledge transfer (e.g. batch support)

Understanding of EasyPay organisational context and industry specifics

#### Prism influence

Prism understanding of EasyPay

Imposition of control (especially headcount and resources)

Prism financial situation

#### Operational incidents

High volume

Time consuming

Impact on operation

#### Workload

Volume of work

Time to do the work properly

Prevalence and impact of unrealistic deadlines

#### Quality of system design

Interpretation of clients needs

Ability to specify business requirements and technical system design

Domain knowledge and business case

#### Management discipline

Lack of project management and systems development methodology

Amount of will, leadership, planning and systems support  
 Prevalence of fire-fighting, adherence to agreed processes

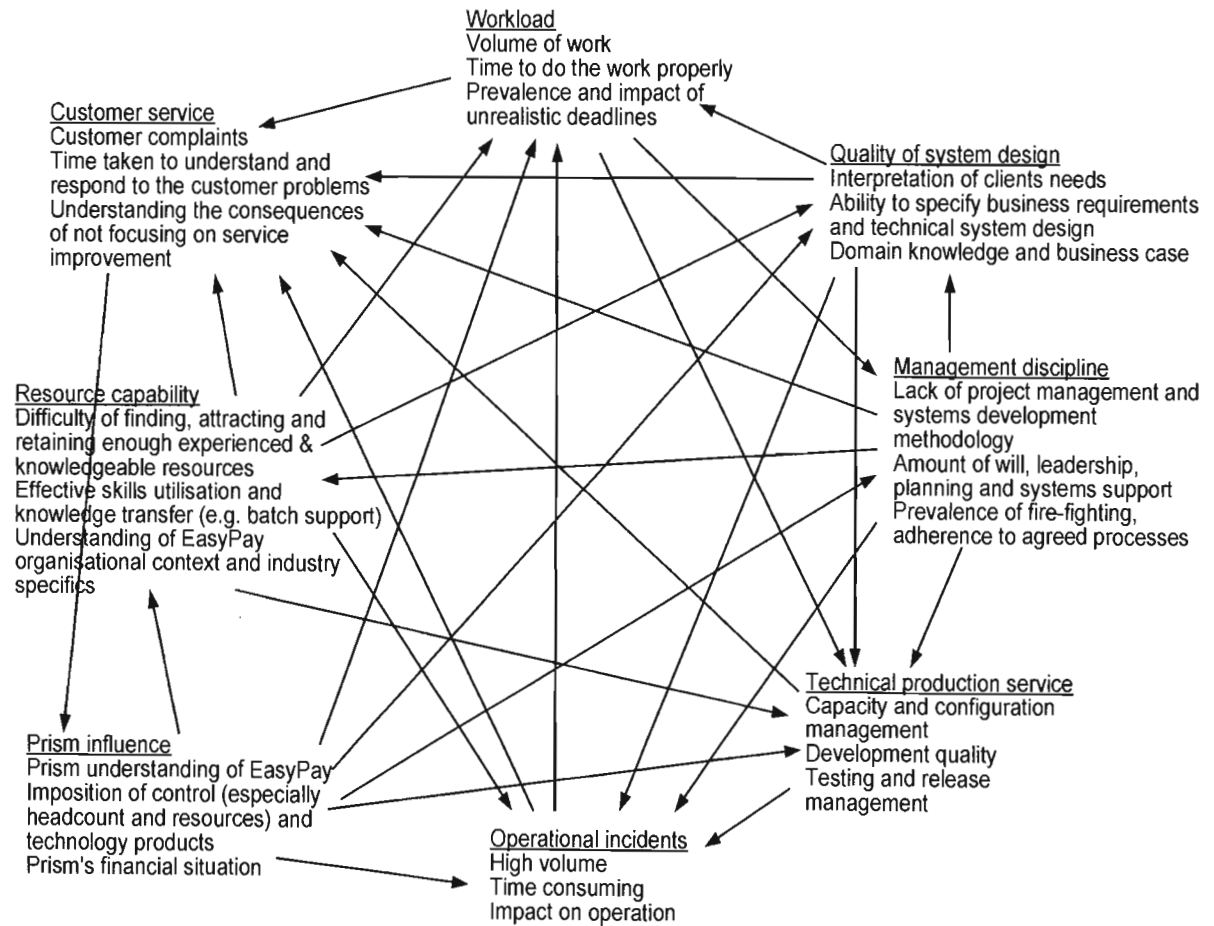
Technical production service

Capacity and configuration management  
 Development quality  
 Testing and release management

In the interrelationship diagram the relationships between the themes that emerged and were listed in the Affinity Diagram will be identified.

**5.3 THE INTERRELATIONSHIP DIAGRAM**

**Figure 5.1: Interrelationship diagram**

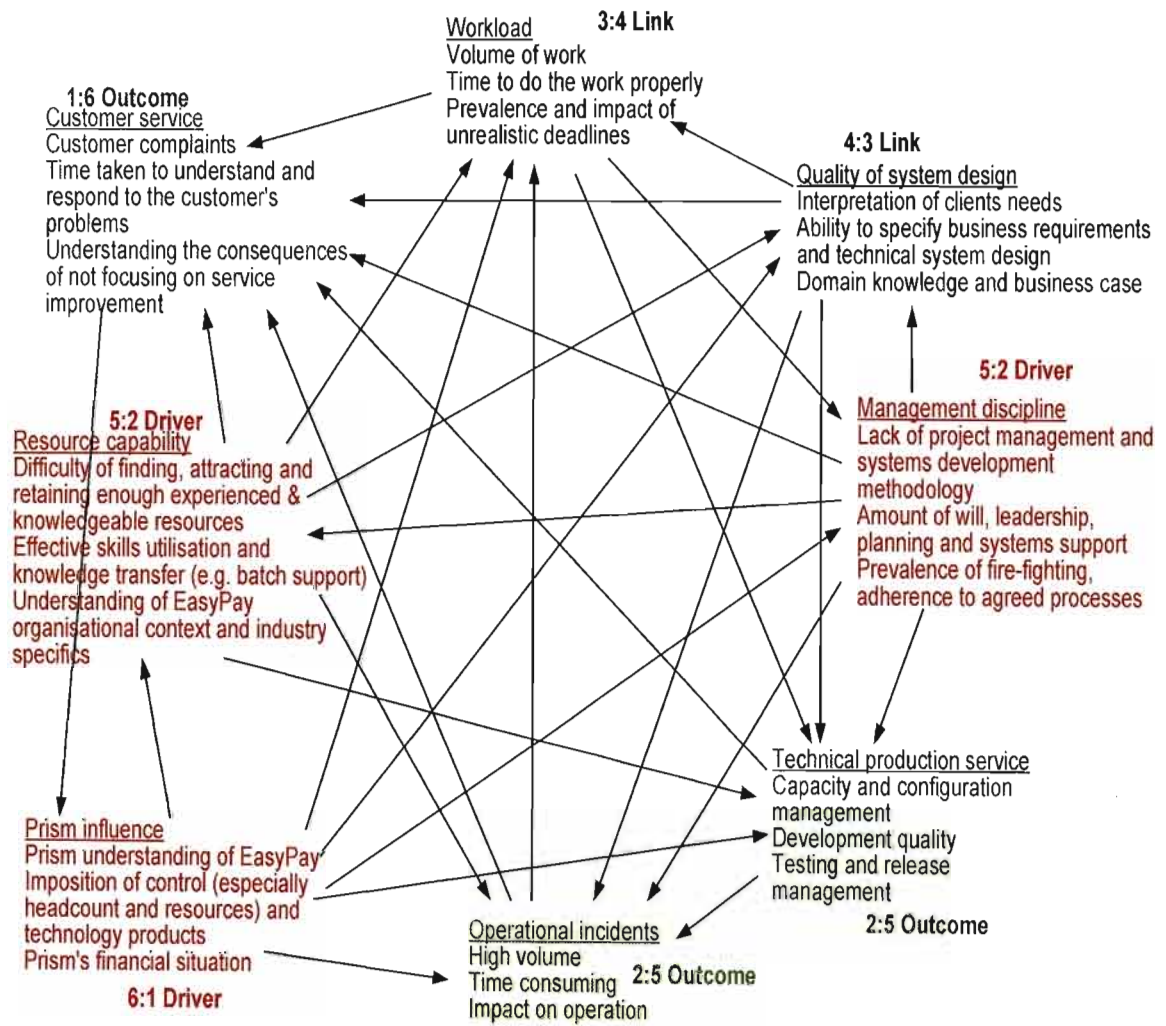


Source: Derived by researcher

The interrelationship diagram is represented above with the arrows indicating the existence of relationships between the subjects. The direction of that influence is also shown. In the next version of the diagram the performance variables will be classified into drivers, links and outcomes.

### 5.4 IDENTIFICATION OF DRIVERS, LINKS AND OUTCOMES

**Figure 5.2: The Interrelationship diagram with the drivers, links and outcomes identified**



Source: Derived by researcher

**Legend**

**Red** subjects – are drivers of performance.

**Black** subjects – are links between the drivers of performance and outcomes.

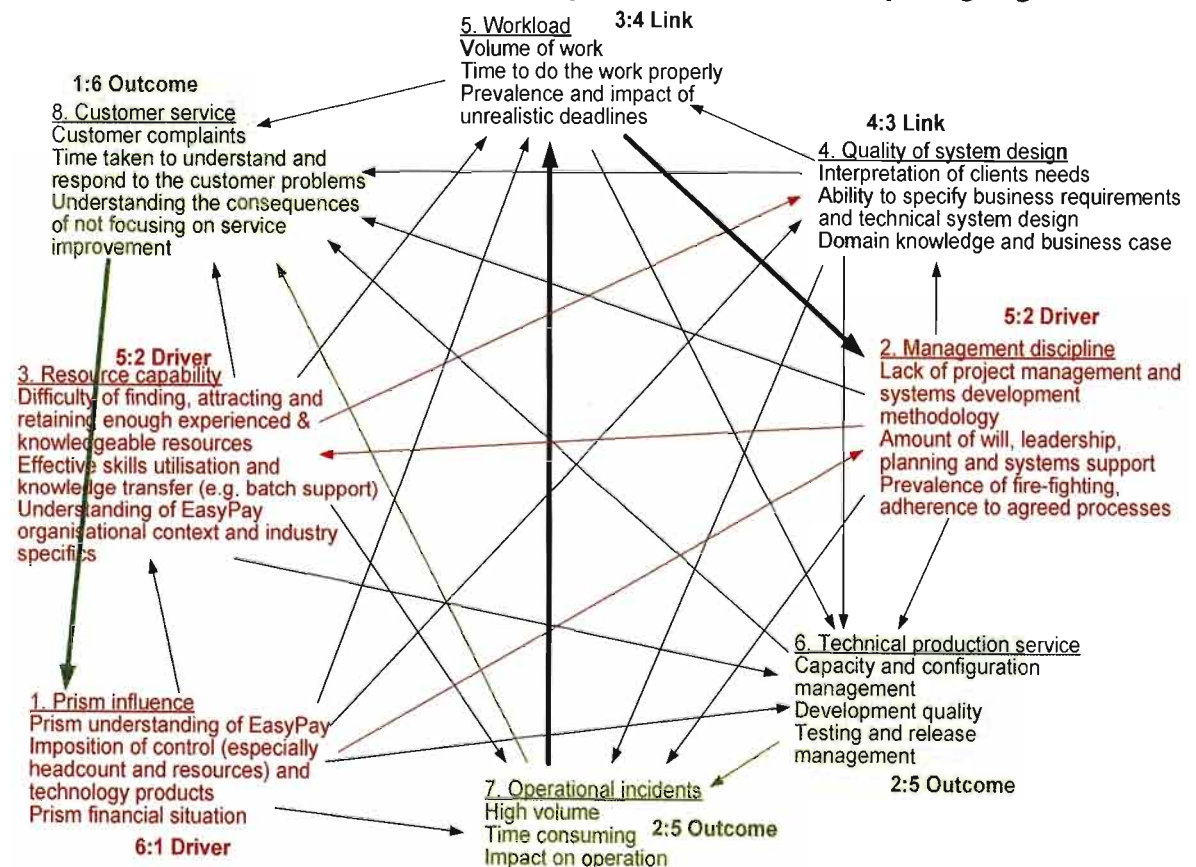
**Green** blocks – are outcomes.

In the diagram above, drivers were identified as subject matter blocks that had the greatest influence to all other items (many influences going out but few influences going in). Outcomes were identified as subject matter that has the greatest influence by all other items (that had many influences going in but few influences going out). Links were identified as subject matter blocks that had a more even balance of influences coming in and going out. Thereafter causal loops will be identified and the system will emerge and be represented in the Causal Loop Diagram (CLD).

### 5.5 IDENTIFICATION OF CAUSAL LOOPS

The thick lines arrows show causal loops which indicate circular causality.

**Figure 5.3: The interrelationship diagram with causal loops highlighted**



Source: Derived by researcher

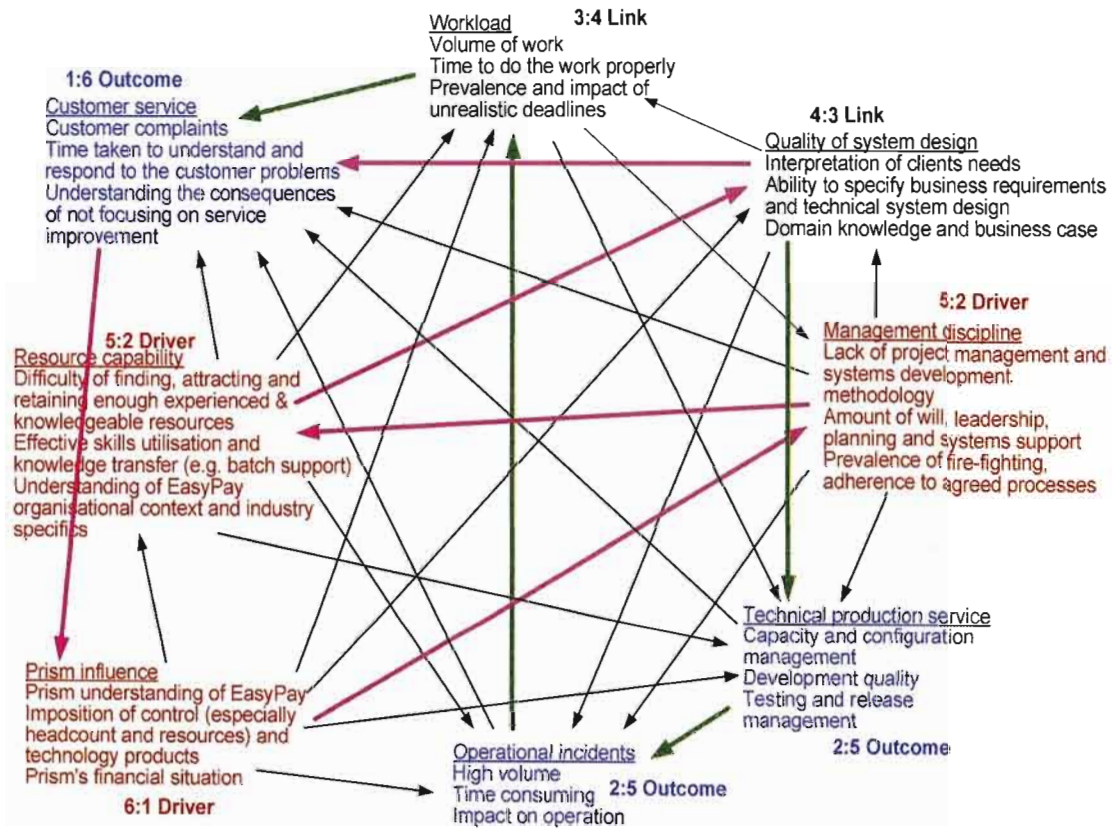
**Legend**

**Red** subjects – are drivers of performance.  
**Black** subjects – are links between the drivers of performance and outcomes.  
**Green** blocks – are outcomes.

The causal loop indicates causal relationships between variables and is found in the vast majority of systems. The causal loops identified will be explained in more detail in the following chapter.

In this phase more causal loops will be identified.

**Figure 5.4: The Interrelationship diagram with more causal loops highlighted**



Source: Derived by researcher

**Legend**

**Red** subjects – are drivers of performance.  
**Black** subjects – are links between the drivers of performance and outcomes.  
**Blue** blocks – are outcomes.

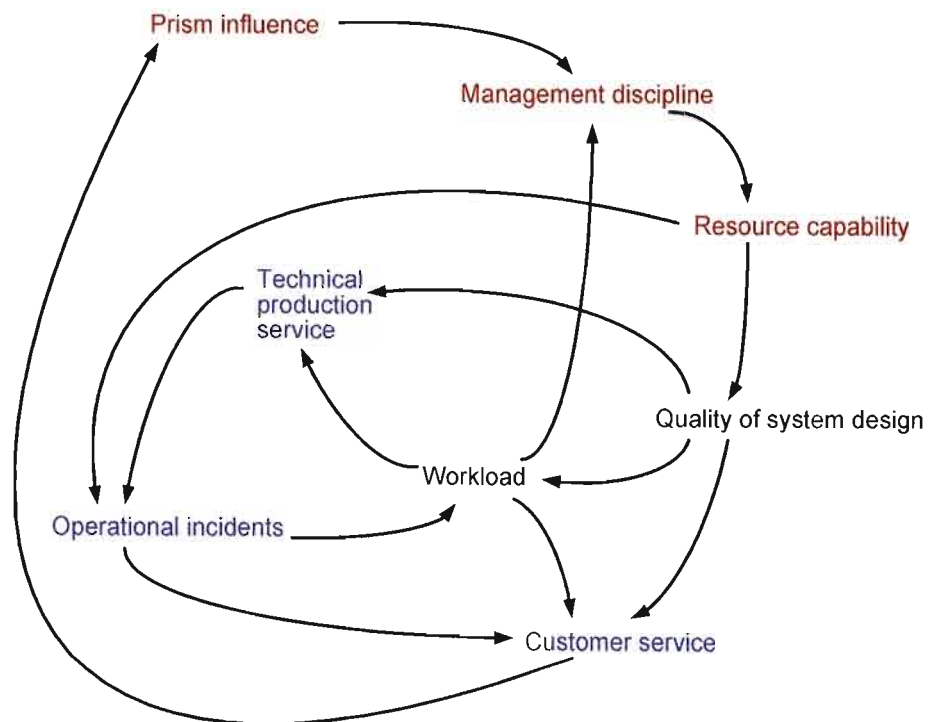


The causal loops assist in generating a combined picture that is called the causal loop diagram and, as explained earlier, this diagram is a representation of the system in operation.

## 5.6 THE CAUSAL LOOP DIAGRAM

**Figure 5.5:** The causal loop diagram representing the system at EasyPay

From tracing the causal loops and connecting the subjects and the different patterns of behaviour the system emerges.



Source: Derived by researcher

In this chapter the system has been derived and is represented in the causal loop diagram above. In the next chapter the systemic links that have emerged will be discussed in more detail.

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**CHAPTER 6:**  
**DISCUSSION ON INDIVIDUAL ELEMENTS OF THE SYSTEMIC STRUCTURE**  
**AND MENTAL MODELS**

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## **6.1 INTRODUCTION**

T.S. Eliot believed that one of the important ways to learn about life is through exploring. Indeed this research was a journey of exploration that can be described by the words below:

*We shall not cease from exploration  
And the end of all our exploring  
Will be to arrive where we started  
And know the place for the first time.*

"Little Gidding" (Eliot, 1943)

This project, both for the researcher and interested parties at EasyPay, has been a journey of exploration. Similarly to the experience of Eliot, the researcher with his new found systemic understanding was now able to reflect on his previous observations or from the journey with new eyes – as if he saw them for the first time. The understanding gained in this journey of exploration was like a new set of lenses.....what was there and not seen before could now, with these new lenses, be seen by the researcher. The more complete picture that emerged as a result yielded meaningful insights into the patterns of events in EasyPay.

The theory derived provides a framework for explaining the mass of data that had previously confused the researcher and the staff of EasyPay. The individual systemic links in the model (Causal Loop Diagram) derived provide a framework for a structured discussion. The section that follows will proceed accordingly on the basis of the steps set out below.

- Each systemic link will be discussed separately.
- The system links will be discussed, as far as possible, in an order that moves generally from variables that are outcomes to variables that are drivers.
- The existence of each variable in the systemic link will be substantiated.
- The relationship between the variables will also be established.
- Examples will be used where appropriate to illustrate the nature of the relationship between the variables.

## 6.2 SYSTEMIC LINKS

### 6.2.1 Systemic link 1: Operational incidents and workload

In the Causal Loop Diagram (CLD) the reader will have seen the systemic link highlighted in blue in figure 26a. This link will be discussed in detail.

#### Figure 6.1: Systemic link 1: Operational incidents and workload

**Operational Incidents** → **Workload**

Source: Derived by researcher

The resolution of incident symptoms and cause take time to resolve and are therefore reflected as workload on the support resources schedule. Appendix F contains typical examples of an incident log relative to a customer and a support staff member.

Through observation over time the researcher noted the existence of the following situations:

- a) a situation where there were few incidents so there was less of a workload;  
and
- b) a situation where there were many incidents so there was a greater workload.

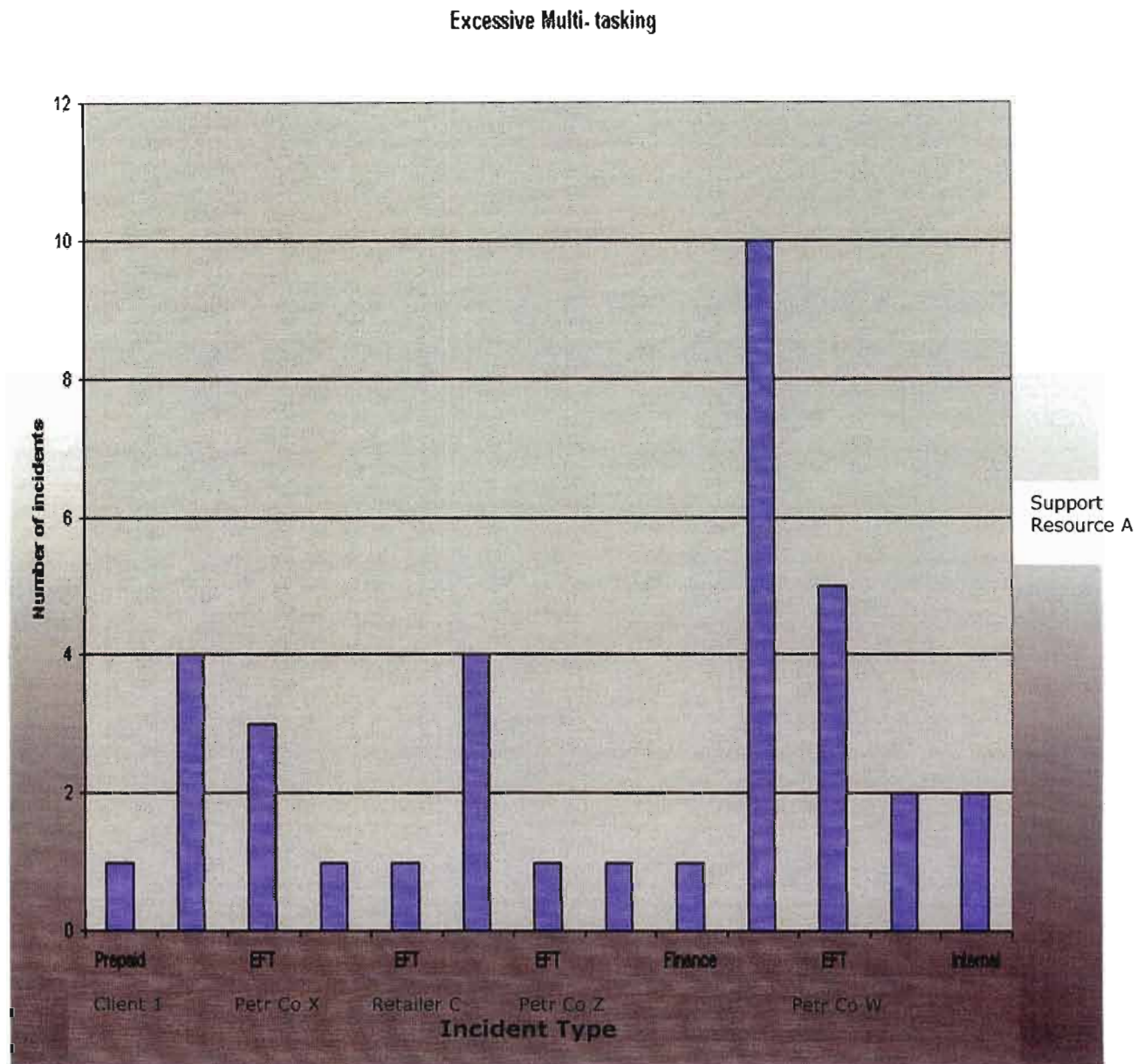
It was apparent that the technical and customer care support staff had a regularly overloaded schedule with the many operational incidents needing resolution. Random inspections of the incident log show that customers regularly have eight to fifteen incidents open with EasyPay at any one time.

Observation also revealed that the relationship between operational incidents and workload was often non-linear. For instance, a small design change to production software that was not successful could cause very little work or a huge amount of work.

The superficial focus of resources as a result of the workload means that, because of the schedule pressure and time constraints, many of the underlying causes of operational incidents remained unsolved. This will be further explained by means of an example.

EasyPay has over eight major customers in the grocery, clothing, petroleum and furniture retail industries, within which the company runs multiple services. These incidents must be dealt with by the support staff. The incident system administrator takes every incident logged and assigns it to a support staff member. Random inspections of the incident system reports show that support staff have been between 5 and 48 incidents assigned to them at any one time. The schedule of Support Resource A is a case in point. He had over 20 open incidents on the week of the 11<sup>th</sup> December to the 16<sup>th</sup> December 2005. He was unable to work on the prepaid incidents as the Retailer Co A settlement and fee issues were his focus (Source: EasyPay incident system). The figure 6.2 illustrates the divided focus of this support resource.

**Figure 6.2: Resource Multitasking**



Source: EasyPay incident system

In Figure 6.2 the prepaid incident for Client 1 could not be attended to in this week and this was poor customer service. The divided and superficial focus illustrated in the preceding discussion and associated diagrammatic representation of a typical support staff schedule ensures that at least some of the incidents will happen again a number of times before the root cause is dealt

with. This creates work for the future and serves to reinforce the workload problem. The schedule pressure, therefore, makes it difficult to break out of the re-active cycle of superficial focus, symptom resolution and incident recurrence.

In this section evidence has been provided to substantiate the existence of the variables of operational incidents and workload, and also to substantiate the existence of the relationship between the two variables. The nature of the relationship has also been discussed. The factors causing operational incidents include:

- the lack of quality operational procedures;
- the lack of adherence to such procedures;
- superficial focus on the operation by support staff; and
- work delegated to staff who did not have the required level of experience demanded by the task.

The superficial focus has been discussed in this section and the balance of the causes listed above will be discussed in more detail in the relevant sections that follow.

### **6.2.2 Systemic link 2: Operational incidents and customer service**

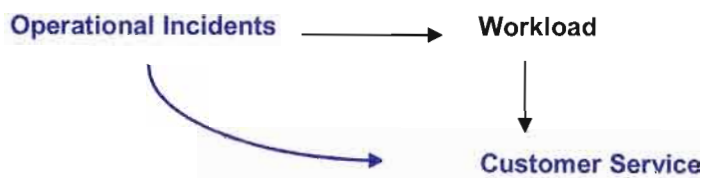
The link in Figure 6.3 represents the following situations at EasyPay.

1. A situation where there are no operational incidents in a time period and the perception by the customer of the service he is receiving is good.
2. A situation where the operational incidents in a time period are of a frequency and nature that is acceptable to the customer and therefore the perception by customer of the service he/she is receiving is good.
3. A situation where operational incidents are of a frequency and nature acceptable to the customer, however the resolution of the incident and its

consequences is either slow or inadequate. In such a situation the perception by the customer service of the service he/she is receiving is poor.

4. A situation where the operational incidents in a time period are of a frequency and nature that is not acceptable to the customer and therefore the perception by customer of the service he/she is receiving is poor.
5. A situation where operational incidents are of a frequency and nature not acceptable to the customer and the resolution of the incident and its effects is either slow or inadequate. In such a situation the perception by the customer service of the service he/she is receiving is very poor.

**Figure 6.3: Operational incidents and customer service**



Source: Derived by researcher

The systemic link highlighted in blue in Figure 6.3 will be discussed in detail.

Incidents are often reported by customers as a result of operational failures. Appendix F provides an example of incidents reported by customers. In the preceding section the existence of operational incidents was substantiated. The perception of customer service has been positively and negatively influenced by the frequency and nature of operational incidents and the company's response to these service outages.

In periods of no or few service outages, the perception of EasyPay's service by customers has been good. In periods of no or few service outages EasyPay rarely hears from its customers, but the opposite is true when there are many



operational incidents or there is an incident with a significant effect on the customers business.

The senior management of all EasyPay's bluechip customers have expressed their unhappiness about the unacceptable level of service they have and continue to receive. In conversations with customers they complain about the frequency of operational outages; the recurring nature of operational failures; the long response times and the inadequate resolution of issues. The situation has progressed to the stage where Petroleum Co X withheld payment to EasyPay for November 2005 until outstanding electronic fund transfer service issues were dealt with. Similarly Retailer Co B withheld payment for November 2005 until its prepaid issues were dealt with. This view is corroborated by feedback received in the marketplace from the representatives of organisations that include banks, financial institutions and prospective customers is that perception of EasyPay's service is poor.

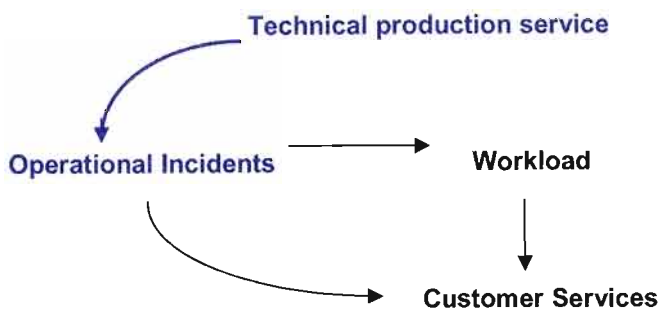
From the evidence it is apparent that, if the management at EasyPay could reduce the number of service outages and the quality of their resolution, they could improve the perception of their service significantly. To achieve this they would need to deal with the causes of operational outages. The sections that follow will look at the systemic links that influence the level of operational incidents.

### **6.2.3 Systemic link 3: The technical production service and operational incidents**

A closer inspection of the incident log revealed that many of the incidents originated in the technical production operational area. This department included networks, online support, offline (batch) support and operational monitoring.

The link between the technical production service and incidents highlighted in blue is discussed below in figure 6.4.

**Figure 6.4 The technical production service and operational incidents**



Source: Derived by researcher

Investigations into individual incidents revealed the regular symptoms behind the majority of incidents were:

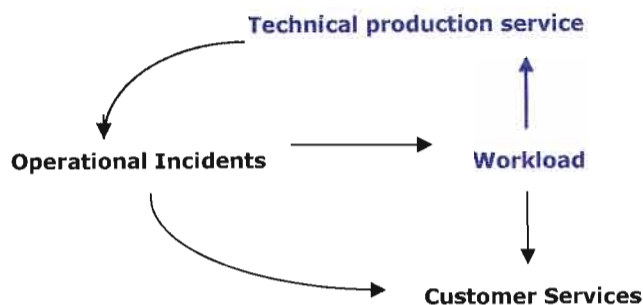
- system software changes;
- incorrect configurations;
- new system implementation;
- installation of incorrect software versions;
- disk space unavailable;
- log space unavailable; and
- application and system performance thresholds exceeded.

The symptoms listed above fall under the technical production service domain of control. They were manifestations of deeper issues in the company and these will be focused on as the discussion moves in a general direction from the outcomes to the drivers of the system in EasyPay.

#### 6.2.4 Systemic link 4: Workload and technical production service

In this section the connection between the occurrence of operational incidents and the existence of causes in the technical production service area were identified. The causes in the technical production service area were themselves symptoms of larger issues in the company. Workload is one of these larger issues. The discussion below will consider the relationship between workload and the functioning of the technical production service.

**Figure 6.5: Workload and technical production service**



Source: Derived by researcher

The researcher will explain by way of example from EasyPay how a reduced workload improved the quality of the technical production service. The prepaid administration was taken away from a staff member with a sustained heavy workload (see notes in systemic link 1) and given to a staff member that had to focus only on the technical prepaid service. A measure of the improvement in the service from this action taken saw the average numbers of prepaid incidents open reduce from between 11 and 13 incidents to between 3 and 5 incidents open. People in the company noticed the quantum improvement within a month of the change. Not only did the quality of the prepaid service improve but also the quality of the retail settlement service. What was visible to those involved at the time was that if the company reduced the workload and gave the support staff members the chance to focus and those staff used that time to focus on the

quality of their work - the quality of the production service improved and the workload overall was reduced.

The more prevalent case was one where support and operational staff had a heavy workload and this meant that they spent the majority of time reacting to operational issues, leaving little time for proactive work such as thinking and planning.

In the exacting operation of EasyPay, small mistakes can cause a massive workload. A high volume and an automated environment often demand a very detailed and cautious approach. With all the workload and pressure from customers such an approach is difficult to implement. The examples below will give the reader some sense of the consequences of work not carried out with the proper care.

- A small fee configuration or fee software changes in EasyPay has often caused months of work for support staff not to mention a large measure of aggravation for the Retailer Co A head office accounting staff.
- A simple routing configuration change has caused approximately two months of work for both business and technical support resources and much anxiety for Petroleum Co X and its franchisees who had not received their money as a result of the change.

Both these situations have been experienced frequently and both could have often been avoided by focusing on the change at the approval stage of the change control process. The operational staff interviewed about these two issues felt that by involving and applying the right minds in the organisation for a maximum of three hours in total to ensure the change was implemented correctly, with a full understanding of the impacts, the support resource's productivity for that year could have improved by two months.

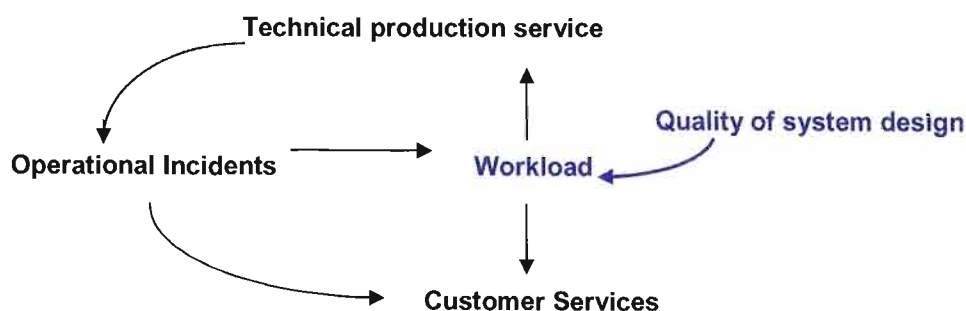
Instead, the workload issues were reinforced and the operations focus was on reactively resolving the settlement and reconciliation symptoms, instead of proactive work such as ensuring no other changes implemented that cause operational impacts.

The examples above illustrate how the presence or absence of an unreasonable workload affected the quality of the technical production service. The examples also show the relationship and the reinforcing loops between workload, effective process implementation and operational incidents.

### 6.2.5 Systemic link 5: The quality of system design and workload

In this section the relationship between the quality of system design and workload will be discussed. Again this will be best articulated by using actual examples from EasyPay.

**Figure 6.6: The quality of system design and workload**



Source: Derived by researcher

Postilion software is supplied by Mosaic. The software handles all electronic funds transfer transactions. There are issues from time to time with the software, however the mean time to failure is very acceptable and the technical production service personnel seem happy with its performance. The Postilion software

rarely causes any workload, above the routine maintenance requirements, in the technical production service area. The design of the Postilion software handles the high volume throughput and enables effective maintenance. This Postilion case is one where well designed software requires lower levels of technical and business support.

In EasyPay there is a history of poorly designed software being delivered into the operation. Some recent examples of software implemented into the technical production service with design issues include:

- the original cellular software version of the credit management system (CDS);
- the Petroleum Co X terminal gateway software; the Petroleum Co X terminal software;
- the gift voucher server software; and
- the vision credit management software.

The responsibility of driving the improvement of these defective systems has rested with the management of the technical production service. Design changes constitute significant changes to software and, in the experience of EasyPay, take between eight months to three years to be implemented. In the meantime, operational and business support resources are under pressure to keep the system running to the satisfaction of the corporate customer and the end user.

The Petroleum Co X terminal design is a case in point. The terminal design produced a significant workload in the form of operational incidents for technical support staff. The volume of incidents raised and calls received as a result of this design issue also meant that EasyPay had to employ an additional five business support staff members over a period of six months. The terminal design was not the only element causing the workload in the case of Petroleum Co X. However, both business and technical staff have identified a large percentage of the incidents with the terminal design issue as the root cause. Experienced staff had

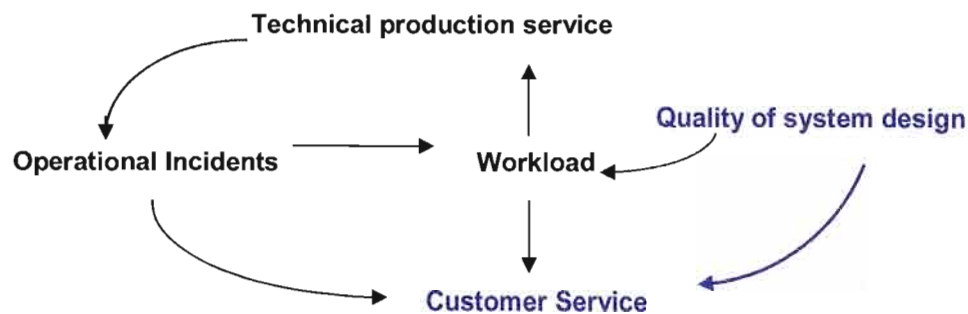
to be taken off other responsibilities to support the new untrained staff in learning to reconcile the individual franchisee settlement and bank accounts.

The lack of system design quality and its relationship with workload have been outlined above. The examples emphasise the significant impact system design can have on the technical support staff and on the delivery of the technical production service.

### 6.2.6 Systemic link 6: The quality of system design and customer service

In this section the direct impact of system design quality on customer service will be explained. Actual case examples will give the reader the clearest understanding of how direct this relationship is.

**Figure 6.7: The quality of system design and customer service**



Source: Derived by researcher

The prepaid airtime service is an online service. If the service is unavailable, then a person wishing to purchase prepaid airtime in an EasyPay retail store cannot do so. This can occur when the credit dispensing system software has a technical design issue that causes it at times to stop responding to purchase requests for prepaid airtime. This situation has two consequences for the retailer. Firstly the retailers' customer has been inconvenienced and therefore his perception of that retailer will be influenced negatively. Secondly that

customer will probably purchase that airtime at another retailer and therefore this is lost revenue for the retailer.

The quality of system design in the example above was a direct cause of the customer service issues experienced. This relationship in this service is very much like electricity - the customer says nothing when the service is running well as he/she expects it to be there like his/her electricity. However when service fails the impact on his/her business is felt and this makes him/her a very unhappy customer.

In the case of Petroleum Co X the design issues meant that for long periods Petroleum Co X-owned sites as well as the franchisee-owned sites did not receive the correct amount of money into their bank accounts. This caused both cash flow and reconciliation problems.

In both cases the relationship between the quality of system design and the perception of the service was apparent.

### **6.2.9 Systemic link 7: The quality of system design and technical production service**

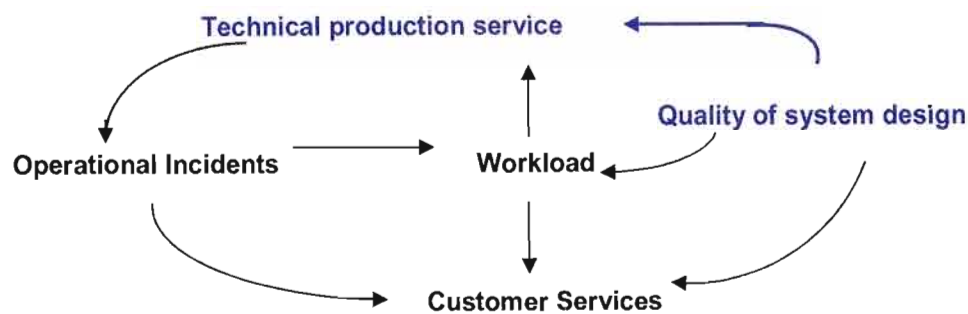
The quality of system design can directly influence the quality of technical production service delivery. The thinking and ultimately the choices made in system design can affect the technical production service in a few ways:

- The first is that the choices made by the development team have operational cost implications i.e. Microsoft licensing as opposed to freeware.
- The second is that the packaged design has implementation considerations i.e. the operational resources can have difficulty implementing the software as there are no configuration screens or installation instructions.



- The third, and by far the most significant, consequence is the transaction processing design and the choices with regard to the inclusion or non-inclusion of administration tools required to operate the service.

**Figure 6.8: The quality of system design and technical production service**



Source: Derived by researcher

The consequences of the system design and their impact on the technical production service will be discussed in more detail below.

The first consequence occurs when development has not been done to EasyPay technology standards. Technology selection has had some serious cost implications. Application software is developed in a programming language and on a particular operating system technology and usually with a particular database technology. These choices all have annual licensing implications. In order for the technical production staff to make sure the service runs smoothly, they need to ensure they have the right support skills for the application language, operating system and database. If they do not have them, then people have to be trained or those with the required skills hired.

The second consequence of system design concerns the quality of the implementation. The ease of implementation can save or waste large amounts of time during installation of systems in production. Interviewing the support staff in EasyPay, the typical experience is one where numerous attempts are necessary

to install the software as software has in most cases been delivered without configuration screens, version control and installation instructions. Although this causes some difficulty, as stated earlier, the third consequence below is by far the most damaging for the company.

In EasyPay systems can be broadly grouped into online and offline systems. The company has in the past had some focus on designing systems that have high availability. This in itself is not surprising, as the online server, and service, must be available for the business to survive. Indeed, the company has experienced disastrous consequences when there has not been the appropriate focus on availability particularly from technology received or supported from the Prism Holdings company technology group. In such situations the operational resources have to add hardware, server memory or change routings in an attempt to keep the service available until the development resources can eliminate the design flaw. The first version of the credit dispensing system required extra hardware, memory, application changes and still the application stopped responding for periods of up to 45 minutes. The ability of the technical production teams to deliver a quality service when they are operating systems with design flaws is limited.

Therefore the focus on availability is warranted. However, the exclusive design focus on “availability” is surprising especially when one considers that the goal of electronic funds transfers is to move money from one party to another. The customer's ability to purchase the goods using his/her card is important. (To do this the customer needs to send his/her card detail through the retailer point of sale to the financial institution for authorisation). It is also important that the card holder be debited correctly and timeously and the retailer receives his/her monetary credit correctly and timeously. When Petroleum Co X went into production the functionality required to reconcile the individual sites was not in place. This made it difficult for the operational staff to deal effectively with cases where parties had not been debited or credited correctly. It seems that online

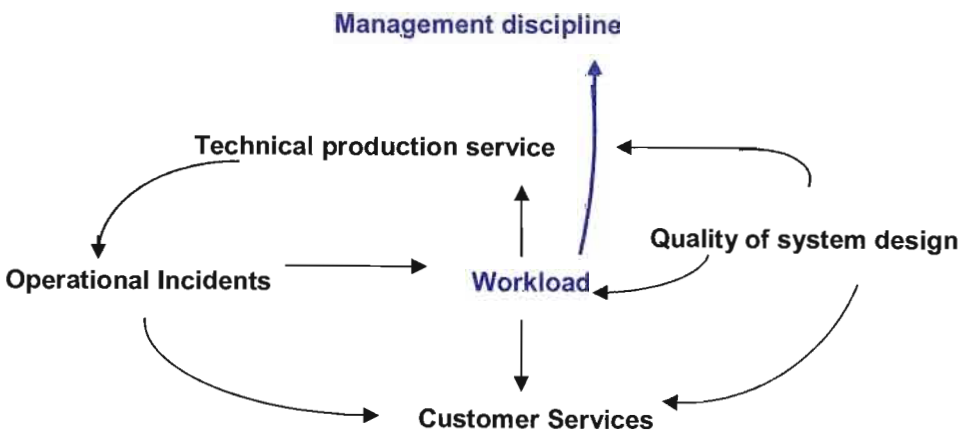
application availability was seen as the sole judge of operational success. EasyPay had not really applied themselves to the systems design around the core and this was the origin of many of EasyPay's technical production service and indeed customer service issues.

The relationship between the quality of system design and the technical production service has many facets. Quality system design would seem to be a prerequisite for the technical production area to deliver an effective service.

### 6.2.8 Systemic link 8: The workload and its relationship with management discipline

In this section the effect of workload on the effectiveness and discipline of management is detailed. Discipline is necessary to focus on activities that will optimise the results of the company. Management in all companies need the discipline to do the right things and to stop doing the wrong things if they are to be effective. Deciding what to do and not to do requires thinking, reflection, conversation and a healthy level of conflict.

Figure 6.9: The workload and its relationship with management discipline



Source: Derived by researcher

It was noticeable that much of the quality thinking and conversation happened between members of the company in the December/January 2005 period when the workload was substantially reduced and everyone including management had more time.

In general however, the increasing volume of work put strain on not only the operational support staff but on all forms of management in the organisation. It was obvious from observation that account managers, project managers and senior management were increasingly involved in operational issues on a daily basis. The amount of time that managers were involved in operational incidents was at unhealthily high levels. All forms of management were acting more like fire-fighters and less like managers.

The reactive involvement of management in operational workload saw the same issues in the company recur over time. Evidence from the incident log supports this view. The following examples of recurring issues will confirm the lack of management discipline in dealing with some of the core issues in the company.

These examples, although particular to the cases studied, are, in the researcher's experience, typical instances of situations in EasyPay. These examples have been taken from the case studies.

The CDS2 prepaid airtime online server was not implemented into production on time and when it was it was discovered that the airtime stock loader was not compatible with the new server software. The situation with the implementation of the Petroleum Co X electronic fund transfer service was much the same. The project was delayed and in an effort to deliver on a date which would satisfy the customer, testing time was reduced. The terminal software was delivered with defects and without the reconciliation functionality required. These examples from the cases are evidence of a loose project management process and a lack

of consistent application of a development methodology. The discipline of good planning was not in evidence in EasyPay.

It is apparent to the researcher, having observed the master project schedule over time, that there is a continual reprioritisation of projects. Priorities are never maintained and the plans are continually changing. Plan changes are often done unilaterally, where the person making the change has not thought a great deal about his/her position or about the effect that the changes will have on others. The most obvious example from the case is the CDS2 automated stock loader and order tracking functionality. This was the top priority in the first half of the financial year and in the second half it had dropped to priority number sixteen. When development was finally completed, the software waited for four months to be tested and another three months to be implemented. The disciplines of planning and co-ordination have been discussed, and in the paragraph below the importance of not only putting processes in place but following them and making them work will be highlighted.

The software and configuration change management process has been in place for the last four years. The purpose of this process is to limit the number of changes made in the production environment that cause operational failures and incidents. The change management process in EasyPay is not working well, as changes are still going into production without going through the change control process, while an unacceptably high number of changes that do go through the process cause problems in production. Indeed unsuccessful routing changes on the Petroleum Co X system caused two weeks of work for the support staff and took focus from management who had to explain to customers what had happened and why. Further progress toward resolution of the issue had to be managed. If the management of EasyPay is to be more effective then it will need to find the time to make processes such as the change control process work. This will have the positive effect of reducing operational failures, and also

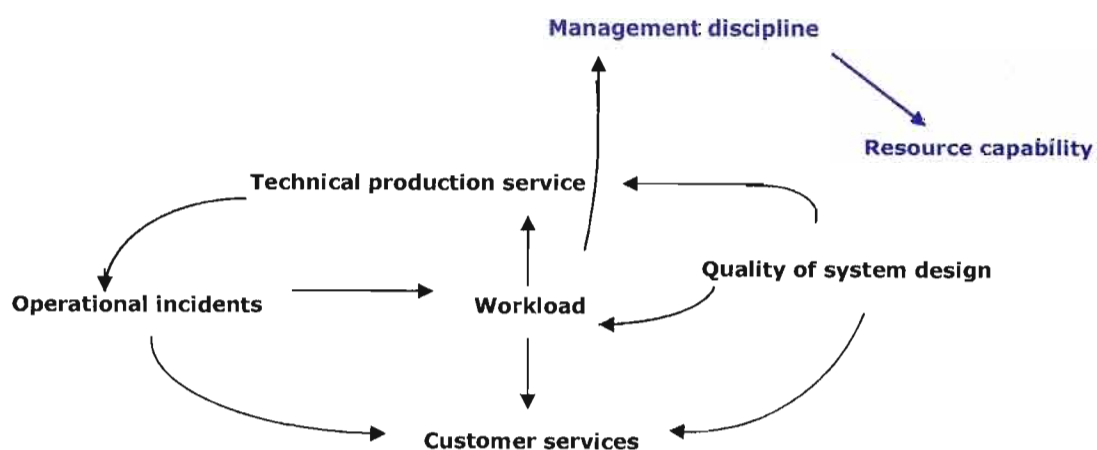
reducing the workload on both operational support resources and all forms of management in the company.

Management discipline is the basic set of tools that management uses to solve organisational problems i.e. the tools include planning, staffing, directing and organising. The evidence emerging from the cases indicates that management focus was largely on correcting unsatisfactory outcomes and that not much time was spent on places where there was higher leverage to influence the company's results.

### 6.2.9 Systemic link 9: The relationship between management discipline and resource capability

The focus in this section, as indicated in figure 6.10 is on the relationship between two variables that have been identified as drivers of performance. This section, therefore, deserves some extra focus and is consequently larger than any other in this chapter.

**Figure 6.10: The relationship between management discipline and resource capability**



Source: Derived by researcher

### **6.2.9.1 Introduction**

Before moving into a discussion of the manifestation of this relationship it is necessary to touch on the importance of resource capability in the industry of which EasyPay is a part.

In an intellectual product business such as EasyPay the company's offering is a product of people's minds. It is the thinking, imagination, knowledge, experience and spirit of the people that drive performance. It is important not only to attract and retain talented staff, but also to create the context in which the thinking, imagination and spirit can be released for the benefit of the company and its customers. In the dynamic industry of EasyPay there is constant change and this often means that, to be competitive, management need to create an environment in which decisions are made in the shortest time possible. In such an environment people in all functions and at all levels need to take responsibility and they need to be able to think and act strategically (Manning, 2001).

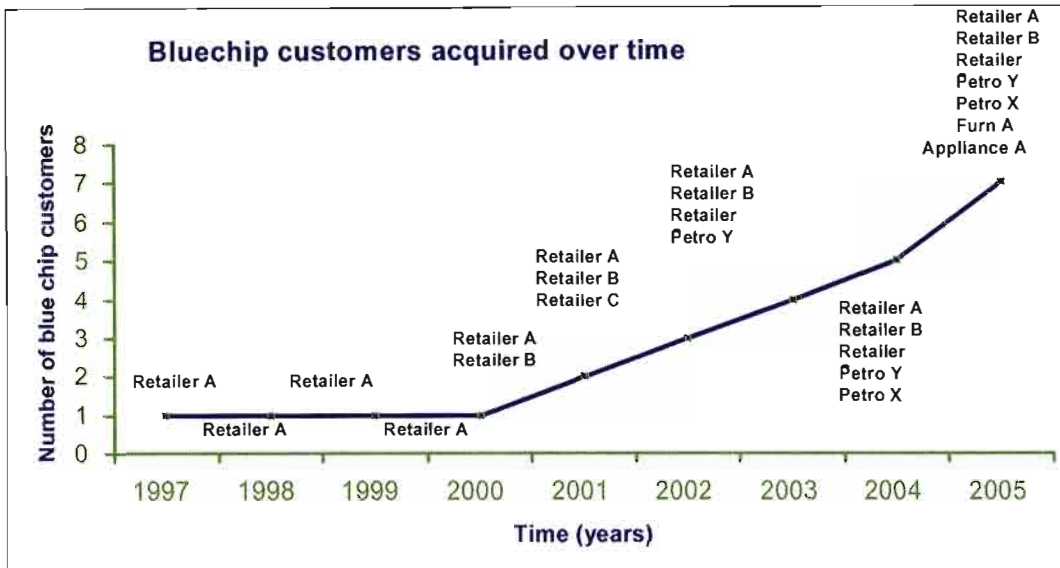
The situation concerning operational support will be detailed as it is a good reflection of the general relationship between management discipline and staff capability. First however trends in evidence in EasyPay will be discussed.

### **6.2.9.2 Background to the operational support issue**

The trends shown in the company below have been observable.

Figure 6.11 reflects the growth in bluechip customers over the company's ten year existence.

**Figure 6.11: Customers acquired over time**



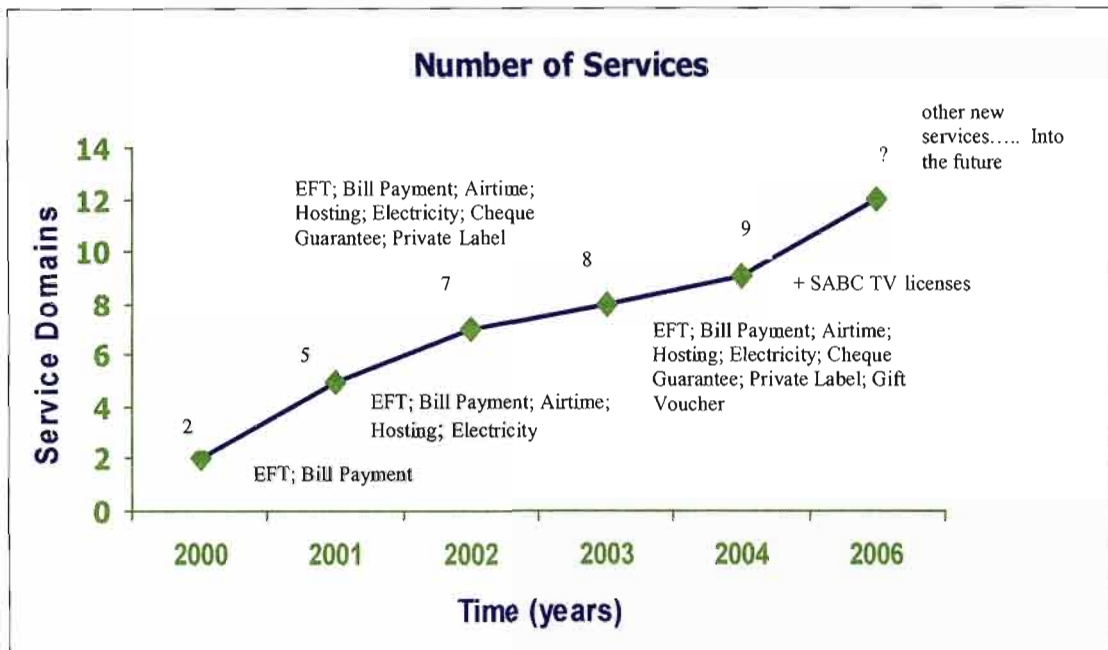
Source: Interview with EasyPay general manager and EasyPay accounts records

The company has grown from a one bluechip customer (Retailer Co A) to a company servicing eight plus bluechip customers in the retail and petroleum industries. The demand for capable staff has increased with the acquisition of each new bluechip customer.

Figure 6.12 reflects the growth in services over the company's ten year existence. The company has grown from a one service business (electronic fund transfer) to a company offering nine core service offerings across the retail and petroleum industries.



**Figure 6.12: Growth in the number of services over time**

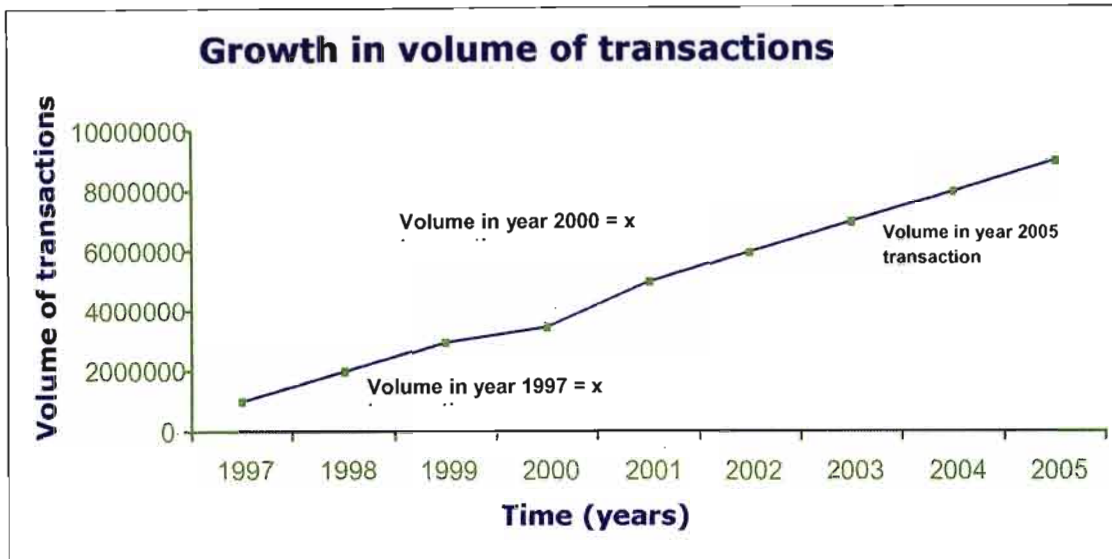


Source: Interview with EasyPay general manager and EasyPay accounts records

The demand for people with both technical, domain and industry knowledge has increased with the addition of each new service.

Figure 6.13 reflects the growth in transaction volumes over time. The increase in transaction volumes has added to the demand for architecture, networking and design skills in particular. These capabilities are vested in knowledgeable experienced people.

Figure 6.13: Transaction volume growth over time

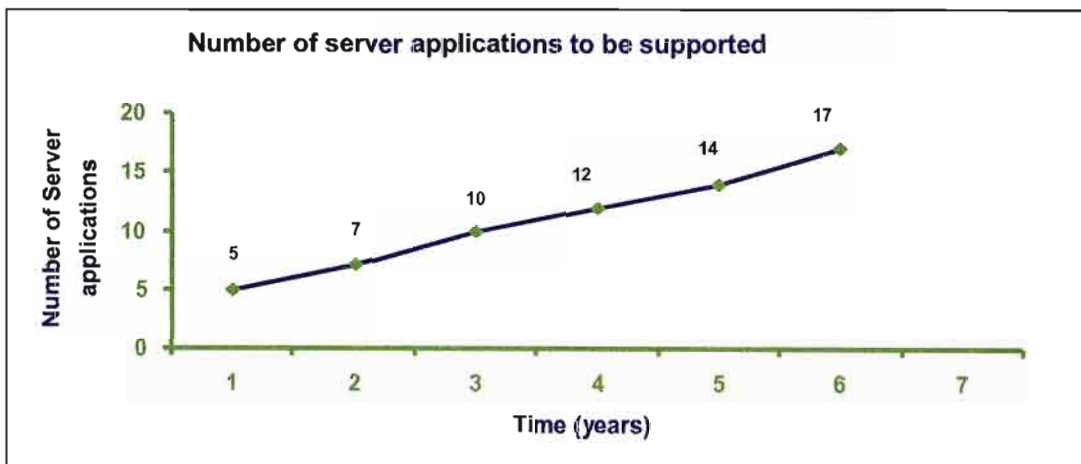


Source: EasyPay accounts records

The knowledge and experience required to design and configure the software, hardware and networking systems that can process the large volumes of transactions have increased the demand for capable people.

Figure 6.14 gives an indication in the growth in the requirement for support over time. In 2000 there were five server applications supported, and by the end of 2005 there are over 17 server applications that require support.

Figure 6.14: The growth in the number of servers to be supported




Source: Interview with EasyPay operations manager and EasyPay general manager

Table 6.1 shows the total average support skill level over time in EasyPay

The researcher has profiled the level of skill in batch support using qualifications, experience, and design skills. The profiling also consisted of a subjective section called general and this was an estimate of a support staff members behaviour to job fit and included skills like communication skills.

**Table 6.1: Total average support skill level over time**

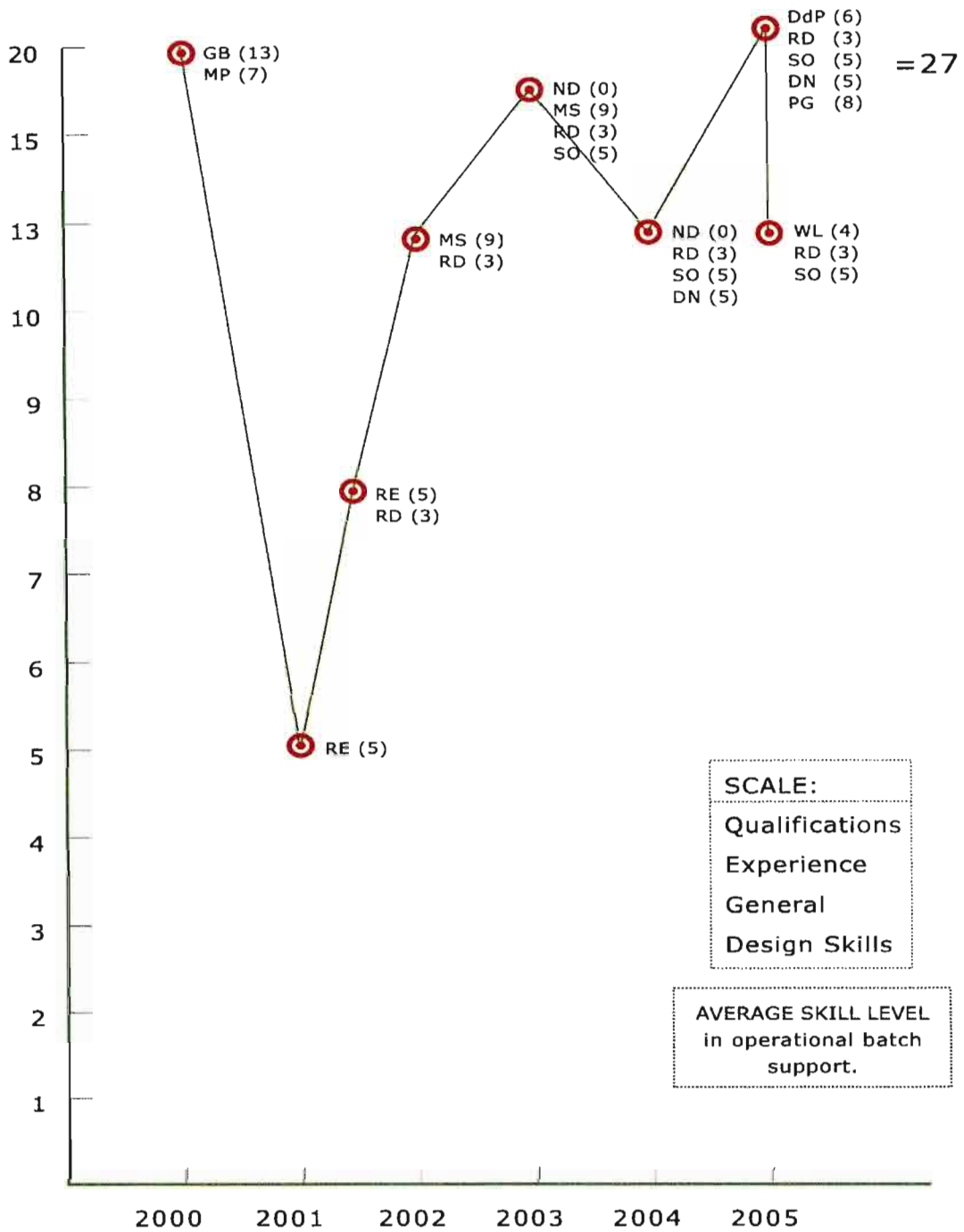
	QUALIFICATIONS	EXPERIENCE	GENERAL	DESIGN SKILLS	TOTAL
GB	4	4	2	3	13
MP	0	4	1	2	7
RE	4	0	1	0	5
RD	0	0	3	0	3
MS	3	2	2	2	9
SO	3	0	2	0	5
ND	0 <small>*(see note)</small>	0	0	0	0
DN	3	1	1	0	5
PG	3	2	2	1	8
DdP	3	0	3	0	6
WL	2	0	2	0	4

Source: Observation by researcher and interview with general manager of EasyPay

Note: ND was given a zero rating throughout as he was sick and never at work and shortly after he returned to work he resigned. It was felt that therefore he could not be included in the average skill level as he never made a contribution.

Figure 6.15 illustrates the general lower capability of support in an environment where the demand for support capability is increasing.

**Figure 6.15: The level of support capability over time**



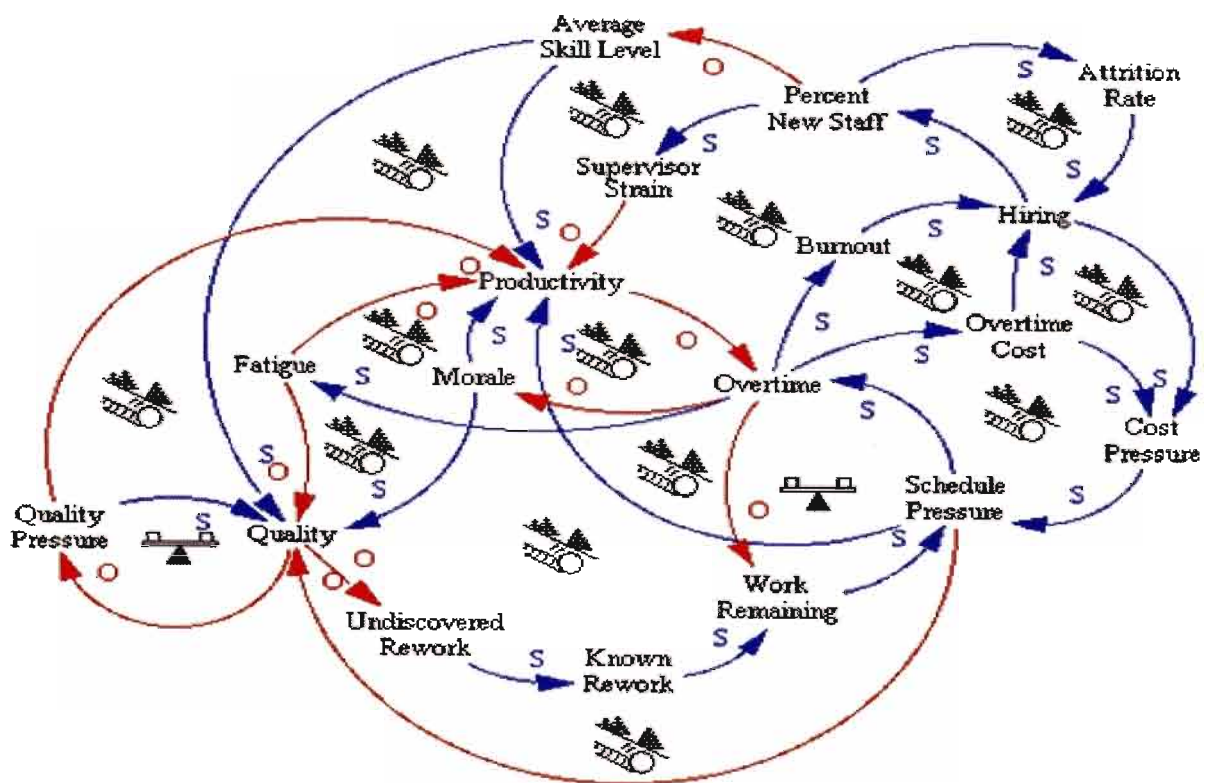
Source: Observation by researcher and interview with general manager of EasyPay

It is not surprising that support staff members are multitasking excessively and working large amounts of overtime for protracted periods. In the paragraphs that follow the reader will see how the situation in operational support affects resource capability.

### 6.2.9.3 The relationship between management discipline and resource capability in the context of the operational support situation

The effects of overtime and schedule pressure are not unique to EasyPay, and the subsystem Bellinger describes and represented in figure 6.16 is remarkably similar to the situation in EasyPay.

Figure 6.16: Project systems (Bellinger)



Source: [www.systems-thinking.org](http://www.systems-thinking.org)

Figure 6.16 describes a system of interactions. These complex interactions will be described in the context of EasyPay's experience, specifically in the area of

operational support. In the descriptions below the researcher has combined observations, factual events and systemic insights to give the reader an understanding of how these systemic interactions have combined to damage the level of support staff capability in EasyPay.

Typical situations facing the support staff are set out below.

- The fee reports need to be corrected before month end so retailers can make payments to the financial institutions.
- The electronic funds transfer file, that is the basis for the automated clearing house transfer of funds between a card holder and a Petroleum Co X site, needs to be corrected as soon as possible as, if the Petroleum Co X dealers do not receive their funds in time many of the dealers will not have the upfront funds required to purchase petroleum from the head office.

In order to meet these types of schedule demands support staff are consistently required to work large amounts of overtime.

This protracted overtime work has depressed morale with the same staff members seen working every evening late for periods of eight months plus. These long hours have also seen support staff making mistakes and their productivity in general decreasing. In discussions with them they have indicated that they see no end to the workload in sight. Their morale has declined over time and the fatigue is observable in their energy levels and attitude. Fatigue has reduced productivity and the support staff no longer attack their schedule with anything like their previous level of enthusiasm. The pressure on the schedule however remains and overtime is necessary to appease customers. So the cycle has continued ... low morale, more fatigue, reduced productivity and more overtime required. There have been additional consequences to this cycle.

In the case of EasyPay the inability of management to deal with the customer service situation has seen staff lose trust in the management team and this has further reduced morale among company staff. The staff in general are not positive about the company's future and listening to conversations they are very concerned about the possibility of losing a bluechip customer and the consequences this will have on the business.

The moral and fatigue have also influenced the quality of work to decline. The support resources in an effort to get through their schedule give incidents superficial focus, often correcting the symptom but not dealing with the cause or incorrectly diagnosing the cause. This means the work has had to be done again or more symptoms from the same cause treated. This situation merely serves to increase the amount of work on a support member's schedule and the overtime required to meet the customer's time expectations for resolution.

The quality of work declines. The first signs of declining quality are visible through customer and account manager complaints i.e. support resource "A" does not check his work. Pressure has been brought to bear on the support staff member concerned to improve quality but, while the quality improved temporarily productivity has declined. To meet the growing schedule pressure, overtime has increased which increases fatigue and further diminishes morale. This in the end causes quality to decline again.

With the consistent overtime work there has been a demand for overtime pay. The more significant cost is, however, a structural employment cost. The design issues that are often found late in projects cannot often be rectified easily after implementation and this means that support engineers have had to be employed to intervene manually in order that the systems continue to operate and to keep customers satisfied with the service. This has brought cost pressures that have been felt in the rest of the company indirectly. The company has no choice but to employ support staff in the interim. This cost pressure from hiring support people

means that people required in other departments cannot be employed. This in turn leaves EasyPay with an organisational structure that is focused on the present but with few staff focused on the future.

The more noticeable effect of the protracted overtime worked has seen some resources feel the effects of burn-out. This burn-out has seen these people become disillusioned with the company. This has manifested in a withdrawal of commitment and has been observable in an attitude that the customer can wait, and in many cases has ended in resignation from the company. New people have been hired to replace the support person leaving. While new staff have been learning, they needed support by their manager and colleagues and this further reduces productivity. The reduced productivity has then increased the overtime work requirement.

The departure of experienced staff has decreased the average skill level in the operation. Inexperienced support resources generally produce a lower quality of work which means that rework is often required. This places additional pressure on the support schedule and consequently more overtime needs to be worked and so the cycle perpetuates itself. In addition to the effects that Bellinger (2006) describes the situation has been aggravated by poor hiring decisions and recruitment practices. Management has on occasion hired or promoted individuals who have a poor behaviour or experience match, to the requirements of the position. Leaving an individual in, or promoting an individual into, a position where he/she is not suited has a damaging effect on performance. Having a warm body in a seat without the spirit, imagination or competence has not driven performance.

It is appropriate to make the point here that management had failed to intervene effectively in this situation, despite knowing about the excessive overtime being worked for more than two years. The lack of effective intervention is in the researcher's opinion due to a combination of the reasons listed below.



1. Management has not understood the system at work in the company.
2. Management focus has been on the short-term revenue targets.
3. When the understanding of the system came and the will was present, management were not effective in removing the overtime demands on support resources.

This example has illustrated how the lack of management discipline has seen experienced capable staff either leaving the company or becoming fatigued from overwork. This has eroded the staff capability in EasyPay.

#### **6.2.9.4 Human resource capability in other areas**

Similarly, the over-commitment of existing operational resources due to unplanned project demands has caused many instances of poor quality software and system delivery (EasyPay project department manager, 2002). Time constraints do not always allow for an employee's focus to shift unexpectedly from operational responsibilities to project emergencies, and the delivery, in both the project and operational spheres, has been compromised. Quality testing seems to be the activity most often compromised by poor planning. As witnessed in the implementation of the Petroleum Co X EFT service, this raises both immediate implementation issues in production and longer term system issues, as detailed in previous sections.

#### **6.2.9.5 Conclusion**

The above example illustrates that the problem of the decreasing skill level was not only felt in the area of operational support but throughout the company as a whole. The same type of issue is found in the product and business management areas where there is a need for industry-specific domain knowledge in the company. Having a deeper understanding means that staff who

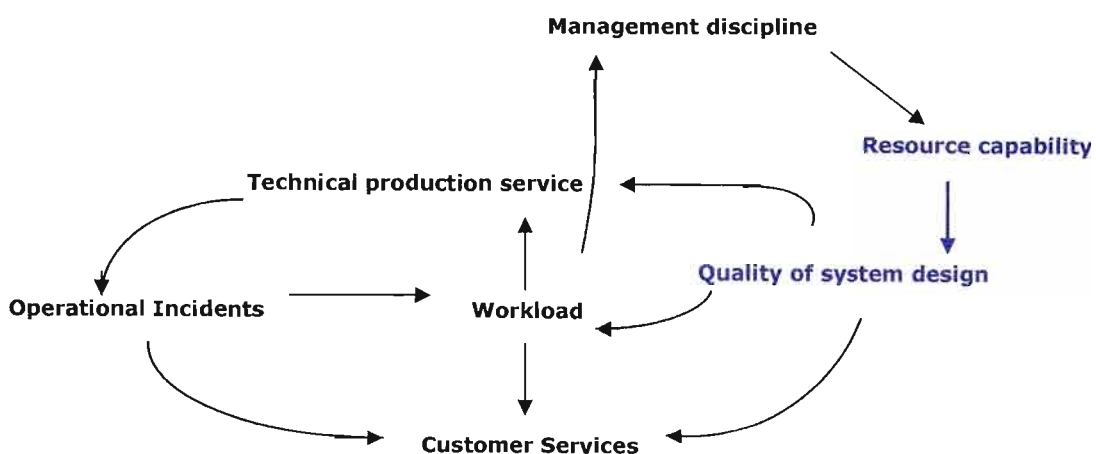


understand that domain also understand the unfolding dynamics in the industry and EasyPay's current and potential role in that industry. The business has lost ground in many of its service domains as the company has not understood the unfolding dynamics and the changes or innovations required to position the company in the forefront of the industry.

### 6.2.10 Systemic link 10: The relationship between the variables of human resource capability and the quality of system design

The systemic link between resource capability and the quality of system design is discussed below.

**Figure 6.17: The relationship between the variables of resource capability and the quality of system design**



Source: Derived by researcher

Earlier the Postilion software was described as a well designed system. Mosaic, the company who developed the Postilion software, has a number of highly qualified software engineers, many with substantial experience and many years service with the company.

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EasyPay has consistently lost people with engineering and design capability and experience. The staff, in general, who have remained either, have had very little experience or they have some experience with no formal training. These remaining technical staff members were asked to make the technical decisions as to how new customers, services and systems should be implemented into the EasyPay operational environment. Despite the lack of engineering or design competence, these staff members became in essence the architect, engineer and manager. The management of EasyPay had presumed that staff who understood the current systems possessed the understanding, skill and appropriate experience to do the systems design and engineering. Having inexperienced and under qualified staff designing systems for the company has had serious consequences.

In the last five years systems have regularly been delivered into the EasyPay production environment with design flaws. Some examples are listed below.

- The CDS1 online server application would not respond to requests under periods of high demand.
- The Petroleum Co X terminal software did not send many offline transactions to EasyPay for processing because of a software processing error by the store and forward function.
- The Petroleum Co Y RET application did not update the files with the correct content to be sent to the Petroleum Co Y sites.
- The batch prepaid archiving applications and the Petroleum Co X settlement applications had to be rewritten while in production.

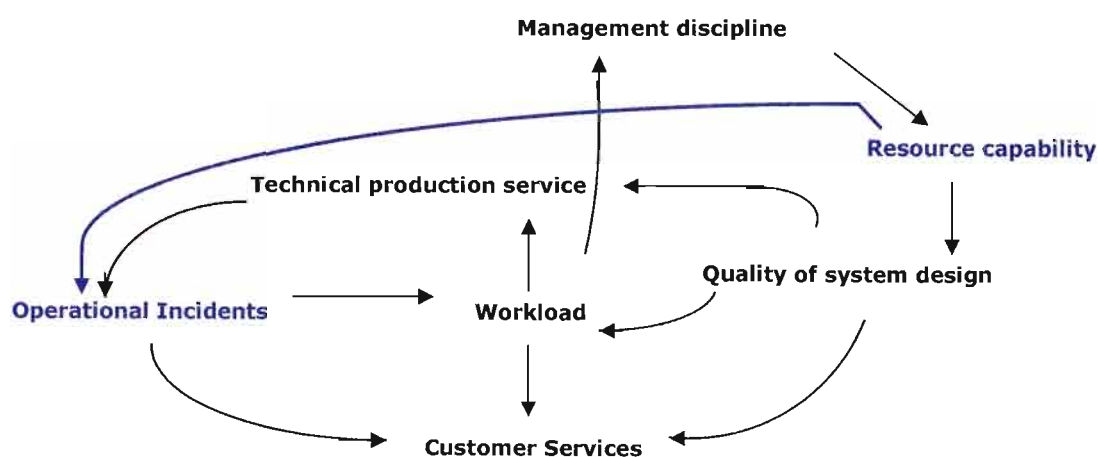
Efforts by inexperienced staff members to improve systems have often failed. The efforts have often been focused on more efficient code instead of the underlying design. One could speculate that experienced staff with an understanding of design would probably not have made these same mistakes.

In a company that operates applications that need to process high volumes of transactions, the input of experienced and capable staff in the design of systems is very important (Source: EasyPay Operations Manager, 2005).

### 6.2.11 Systemic link 11: The relationship between human resource capability and operational incidents

The ability to resolve operational incidents properly and timeously depends very much on the availability of capable resources to attend to it.

**Figure 6.18: The relationship between staff capability and operational incidents**



Source: Derived by researcher

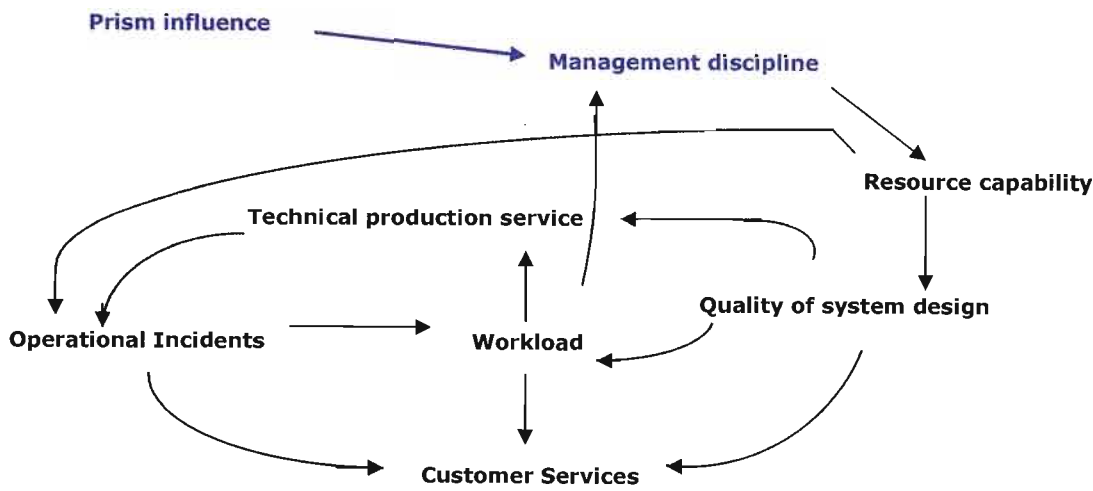
Customers have complained that some incidents take an inordinate amount of time to be resolved. The prepaid reporting incidents are a case in point. The stock balances on the report were incorrect. The prepaid support staff member had been in the job only three weeks and with his level of understanding it took him four days to identify that a batch process was failing, and another two days to rerun the processes to update the stock balance.

When the resource schedule allowed, the experienced staff member would be asked to assist on an incident of this type that had remained unresolved for long periods of time. With this intervention, an incident open for five days would be resolved in one day. The limited number of experienced staff often meant that there were several such incidents and this intervention was most frequently not available. Nevertheless operational incident symptom and cause resolution has been observed to improve with the application of more experienced staff.

**6.2.12 Systemic link 12: The relationship between the Prism Holding company influence and management discipline**

In this section the focus is on the relationship between Prism’s influence and the discipline of management in EasyPay. In the derivation of the system, the two variables under consideration here were identified as drivers of performance in the system.

**Figure 6.19: The relationship between the Prism Holding company influence and management discipline**



Source: Derived by researcher

The Prism board holds the EasyPay management team accountable for reaching the revenue target agreed in the yearly budget cycle. The discipline of attaining revenue targets is emphasised by Prism and consequently, albeit in a strong high growth retailing environment, one that EasyPay has consistently reached.

EasyPay has reaped the benefits of high transaction volume growth in existing customers and it has been necessary to add only a few new customers and services to sustain the exponential revenue growth. In fact, in the years when the target has been under threat, management has been able to use a cost cutting strategy very successfully. The Prism influence in EasyPay is felt predominantly in the form of the annual revenue target. This is however the only formal target for what Prism holds EasyPay management accountable.

To describe the problem of such a measurement system Hammer (2002) cites an often used cliché in this regard: using financial measures to manage your company is like driving while looking in the rearview mirror. Indeed, in the case of EasyPay this one-dimensional indication of the health of the business is misleading. If a measurement was taken of the customer satisfaction with the service that they received from the company, then that measurement would definitely reveal the poor health of the company.

The EasyPay management team are not held accountable for targets like market share, sales closure ratio or employee satisfaction. The company's customers have for a long time been demanding an improvement in the service to them. It is therefore disturbing that although the company's objective is to improve customer service and customer satisfaction, there is no connection between these goals and the work the people in the company were doing.

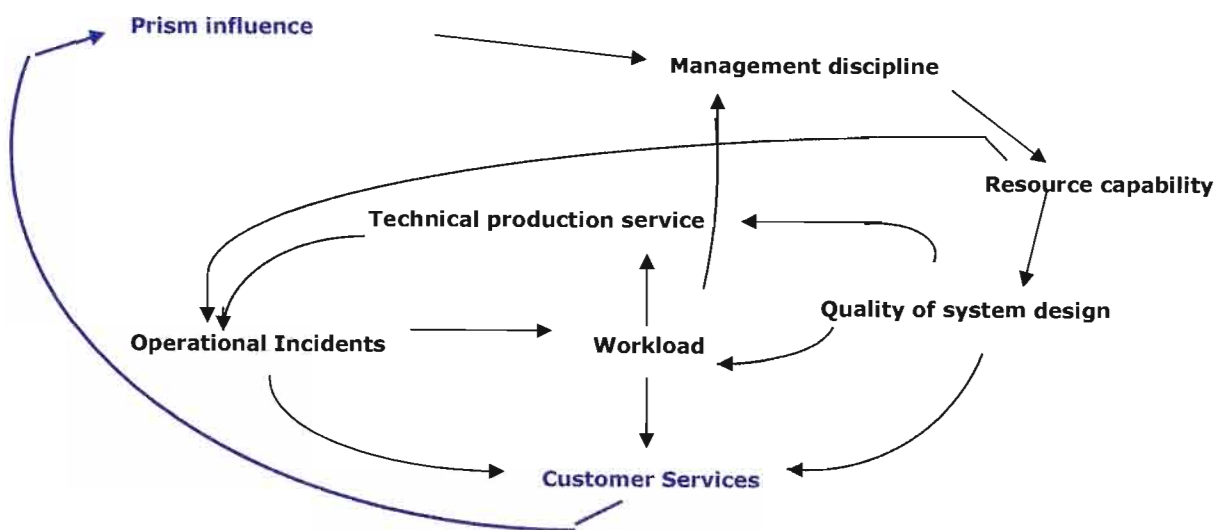
Prism has exerted influence primarily by setting revenue targets. It is therefore not altogether surprising that the management of EasyPay has been disciplined in its achievement of short-term revenue and rather undisciplined in ensuring that

the company reaches its longer term goals like customer retention and sustainability. This phenomenon is commonly called "quarter-itis" and can be described as an inability to see past the next quarter's earning statement to grasp the longer term consequences of the way the business is being run. The discussion around this concept will be developed further in the section around mental models.

### 6.2.13 Systemic link 13: The relationship between EasyPay's customer service and Prism Holding company

The relationship illustrated in figure 6.20 between customer service and Prism is the last to be probed in this section.

**Figure 6.20: The relationship between EasyPay's customer service and Prism Holding company**



Source: Derived by researcher

The feedback received from all customers is that they are not receiving a good service from EasyPay and they want it to improve. In response to the sustained poor service Retailer Co B has received, Retailer Co B have gone as far as to

move the vending of prepaid airtime for two networks from EasyPay to an EasyPay competitor. EasyPay no longer processes those transactions and consequently does not receive the revenue. Petroleum Co X have enforced penalties on both Prism and EasyPay for the poor service they have received. Retailer Co A, Retailer Co B and Petroleum Co X periodically hold back payments to EasyPay because of poor service. Retailer Co B have openly stated that if they were not integrated to EasyPay, they would have taken away their business long ago. There can be no argument that poor service is hurting EasyPay's short-term profits. Perhaps more concerning is the decisions concerning their long-term relationship with EasyPay that customers are taking today.

The poor perception of service from EasyPay has also seen the company lose potential new business. The Retailer D group believed that they would receive a better service from a competitor. The poor service that EasyPay has given to Petroleum Co Z petroleum stations has damaged the chances of both EasyPay and Prism obtaining that new business.

The foregoing examples support the view that the poor service delivered by EasyPay has negative effects on the revenue of the holding company and damages both EasyPay and the holding company's chances of securing new business.

#### **6.2.14 Conclusion**

The research study started with collecting data. The result was a mass of data from which order had to be extracted. The next move was to find methods of categorising data and to derive a theory. If the research study had been concluded at that point the reader might not have had an in-depth appreciation of the system that was in fact operating in EasyPay.



In this chapter the theory provided an intelligible and structured framework for the researcher to discuss events in EasyPay. The relationship between variables in the system was discussed and practical examples were cited to illustrate the manifested workings of such relationships to the reader. Having the discussion after the derivation allowed the researcher to use the systemic insights gained from the research up to that point to set out a more effective discussion about the system in operation with the reader. In the preceding discussion, it had perhaps already become apparent that certain mental models underpinned the system and its interactions. These mental models will be discussed in the next section.

## **6.3 MENTAL MODELS**

### **6.3.1 Introduction**

The mental models section is essentially an evaluation of the deep underlying cause of events. Although nothing with mental models can ever be proved in the sense of mathematical proof, they can offer more plausible or less plausible explanations for the existence of the system described. This chapter will then proceed with firstly a definition of mental models and next a discussion of some of the more significant mental models identified.

Mental models shape how people act because they shape the how they see or how they perceive. They can be defined or described as:

- ways of seeing;
- hidden assumptions;
- thinking that is below the level of awareness;
- unexamined assumptions;
- deeply held images of the way the world works;
- short term perceptions people build as part of their everyday reasoning process that gradually change into long term subconscious beliefs; and

- ways of thinking that can be accurate or misleading.

(Senge, 1994).

### **6.3.2 Mental models identified**

In the paragraphs that follow the researcher will provide evidence in support of the mental models identified.

#### **6.3.2.1 Accountability, responsibility and ownership and why decisions are not made**

In the cases studied what has become apparent in many situations is there is a lack of will to make decisions. The mental model is “if I make decisions there could be negative consequences and I should avoid that”. In order to give the reader a better understanding of the situation, the researcher has selected some examples from the cases researched.

It is apparent that there is an unresolved problem causing the online prepaid airtime vending application for periods of between 15 minutes and +45 minutes to stop responding to airtime requests from retailers. This situation raises interesting questions: Why was the issue not investigated and resolved? When the issue was investigated why was it not resolved? When it was not resolved why was a decision not taken to contract more senior experienced staff to analyse the issue?

Internally it was known that the company did not have enough technical support for prepaid. The customers were complaining about the long resolution times however no decision was made to employ the necessary prepaid support staff.

The researcher having observed many situations of this nature, sensed that people were reluctant to take decisions as this placed firm responsibility in their

hands as the decision-maker. The culture of EasyPay is a very cautious risk-averse culture (EasyPay company culture assessment, 2005) and taking decisions implies taking on a measure of risk. It is therefore not surprising that there is lack of decision-making in the company.

Decision-making requires decisiveness and confidence. When managers do not feel this confidence, they perhaps feel most comfortable knowing that no decision will do, as their necks will not be on the line. The lack of progress on this issue and the subsequent poor customer service was, as has been shown above, a result of a lack of will to make decisions. There was this lack of will because of a reluctance to take ownership and responsibility and to be accountable for the decision taken.

#### **6.3.2.2 Quarteritis! Prism Holdings cares only about meeting the quarterly targets**

The mental models listed above are closely related with the mental model listed below and is consequently discussed together below.

#### **6.3.2.3 If EasyPay produce the budget target then the business is healthy**

The two mental models listed above are closely related and are as a result be discussed together.

There is a feeling in EasyPay that Prism Holdings cares only about money and far less about the company's customers and its employees. The events of September 2001 and the Dotcom crash had a devastating affect on the share prices of information technology companies. The cost of capital has increased for companies like Prism Holdings in particular, and the investors now look for a lower debt to equity ratio for companies in this industry. This has meant that information technology companies have to generate cash to keep the business

operating and to maintain a debt to equity ratio that is acceptable to investors, shareholders and other stakeholders.

The focus of Prism, therefore, on cash and profit growth targets is not surprising, given the situation in the company and industry. However, a company's focus cannot only be on cash and profits if it is to be successful – it needs to look after customers and employees as these are a significant part of generating profits. There should be some focus on delivering reliability and innovation into existing customers. Prism Holdings make decisions that affect the customers and the employees of the company. The staff at EasyPay have often expressed their feeling that Prism Holdings has not taken the time to understand the company's customers or its employees. They believe that Prism Holdings manage the EasyPay subsidiary on the assumption that if the EasyPay business produces this year's budgeted numbers, it is a healthy business.

The measurement system of the company is based on annual revenue targets. There are no other targets set for the company to achieve. This leaves people interacting with the company with the impression that Prism management has a short-term view and this reinforces the notion that the holding company really only cares about the positive cash flow that the business generates and not about the customers of the business and the people working in the business. Perhaps the company needs to look at how to attain a more balanced focus.

In summary, the single-minded focus on quarterly, semi-annual and annual earnings has seen a culture of building and reaping rewards in EasyPay be displaced by a culture of chasing the quick reward. This has in turn seen little innovation in the company's product offering or in its service delivery, as the company's focus is almost exclusively on taking services in their existing form across to new customers, where an immediate return can be earned.

#### **6.3.2.4 The managers are responsible for managing activities and not for achieving results**

It is apparent that many of the senior management team feel that they are responsible for managing activities and not results. It assumed that their job is to fill job roles and then to react to problems and issues that arise. Unfortunately, putting a warm body in a seat has not always brought the productivity, quality and results the company and customers require. This is especially evident in situations where the company is paying an individual a large salary in a position that to which a person is not suited. When this has been realised there has been a reluctance to move him/her to a job which he/she is suited but which pays a lower salary. Instead of dealing with the situation, the individuals concerned have been moved into another unsuitable position that is more in line with the salary they earn. There have been occasions where people have been moved into positions more suited to their behaviour, experience and knowledge, and the company has benefited from the consequent leaps in their quality and productivity in that area.

This mindset is visible in the results of the company. Increases in the number of staff in the development, project and operational departments have not seen an improvement in the delivery from these areas.

#### **6.3.2.5 Dependency: The organisation has to care for me**

There is a feeling that some members of staff encourage the organisation to be dependent on them. This need is driven by a lack of inner security. In the words of Peck (2003) the motive of these passive dependent people in doing things for others is to cement the attachment of the others to them so as to assure their own care. In EasyPay's case an example of this behaviour is a resistance to transferring knowledge to colleagues. This means that the person with the issue will have to come back for help next time the issue occurs as he/she does not

have the knowledge to solve it himself/herself. The identity of these individuals is therefore defined solely through these dependent relationships. This ultimately retards the growth of the people around them in the company and the capacity of a group of people to deliver service effectively.

There is internally an absolute and acknowledged dependency on a few individuals in the company for technical and business support. Despite these staff members working long overtime with overloaded schedules, they do not transfer knowledge easily to their colleagues. They, over time, have become a bottleneck to service delivery.

#### **6.3.2.6 People are machines**

In conversations in the company, the term resource is used to refer to existing staff and people who will potentially fill a position in the company i.e. "we need a Java resource - these resources should focus on this task..." In the incident system the researcher observed the term resource to refer to people constantly. The language, the researcher believes, has encouraged management to think of people as machines. It has influenced the thinking of some members of management in that one senses that a manager feels if he/she puts a warm body in the position then the job will get done.

Managers with this frame of mind have filled positions and thereafter they have done very little management of individuals in their team. Accordingly it is not altogether surprising that these same teams have had both productivity and quality problems.

### **6.4 CONCLUSION**

In this section on Mental Models we have identified the mental models most responsible for creating the system in operation in EasyPay today. In chapter 7

the researcher makes recommendations for interventions that are anticipated to assist the system in functioning more optimally.

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## CHAPTER 7

### RECOMMENDATIONS, LEARNING REFLECTIONS AND CONCLUSIONS

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#### 7.1 INTRODUCTION

It was stated earlier in the methodology discussion that the investigation was done under the assumption that EasyPay needs a new strategy. Manning (2001) suggests that strategy is about listening to customers, asking some simple questions and making some choices and getting people to support those decisions. The customers of EasyPay demanded change however the question of change is a broad one and the question in itself opens up more questions:

- Where is EasyPay now?
- Where do they want to be?
  - What should EasyPay change to?
- How does EasyPay get there?
  - What should EasyPay change?
  - How should EasyPay change?
  - What should EasyPay change first?

Before answering the above questions of 'how' management need to understand where the company was presently and in particular what was at the bedrock of the service issues the company was experiencing.

The researcher anticipates the systemic view in this dissertation will give them that understanding. The researcher has suggested some courses of action but ultimately, these are the choices of the management team and not one individual. Nevertheless, in the paragraphs below some high level courses of action have been suggested as well as specific areas where some further investigation is required.



## 7.2 GENERAL RECOMMENDATIONS

The researcher would suggest that the management team at EasyPay intervene with the drivers in the system, as it at those points where there is most leverage for change in a system. These efforts will probably not be successful if the mental models underlying them are not challenged and changed. The company has consistently managed in the past few years to achieve budget and generate cash and they should not abandon that focus. They should instead widen their focus from cash and profit to target higher levels of customer and employee satisfaction. The management team should hold managers in the business accountable for achieving these objectives. In holding people accountable, measurements should have as direct a link as possible with the company's objectives.

There is one aspect of management discipline, a driver, which the researcher would like to emphasise and that is the discipline of planning. In EasyPay doing the planning is important, however, it is evident that re-planning, revising and re-scheduling plans are vital competencies that need attention in an organisation like EasyPay that operates in an uncertain and dynamic climate. Priorities never stay put. There are constant pressures from financial institutions, customers and business partners to do enhancements and developments. Internal staff working with these individual external entities are constantly trying to advance their priority. If company members are unilaterally allowed to change plans constantly then it is very difficult for the operational and development teams to organize themselves and complete tasks and projects. However that is not to say that plans are inflexible and cannot change to the current commercial realities.

It is therefore necessary from time to time to reconsider plans in the light of new prospects and then perhaps it is confirmed that the new issue is worth or not worth causing a plan change. The planning processes need to be robust in that they provide a level of certainty that allows the organization necessary to achieve

but at the same time provide the flexibility necessary for the company to take advantage of opportunities that present themselves.

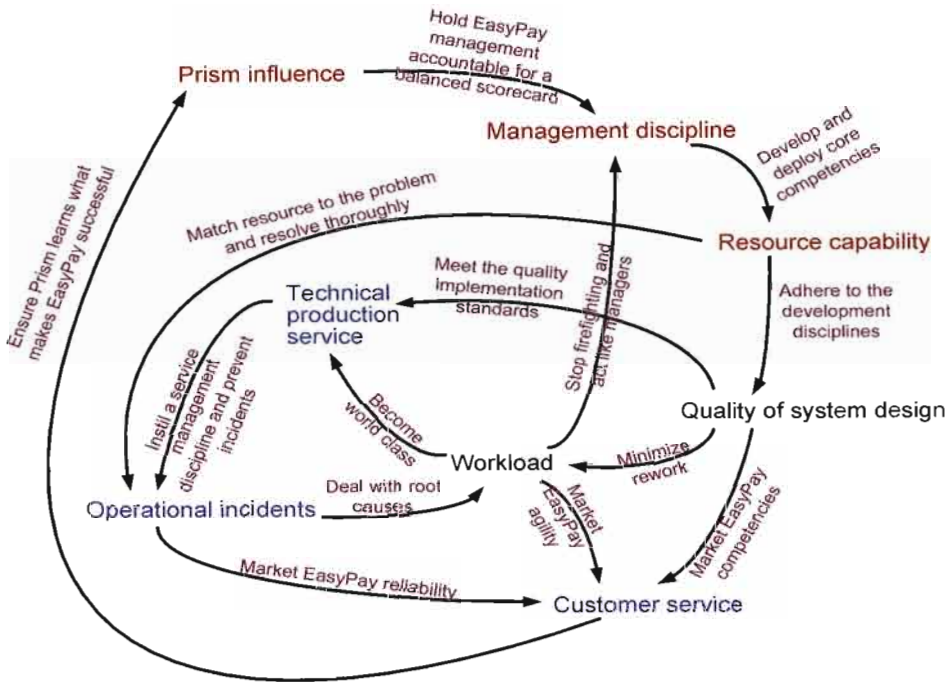
This process ensures that when a change is proposed the change is looked at calmly and rationally by the planning forum and the existing plan may or may not be found to be the best. This will ensure that the proposer of changes has to think a great deal not only about his/her position, but also about the effect that the changes will have on others before calling everyone together to review the plans. If this process is handled well, people will soon learn when to bring forward a proposal and engage other people's time and when to remain silent.

### **7.3 SPECIFIC RECOMMENDATIONS**

In the figure 7.2, the researcher has taken the causal loop diagram and in purple has suggested possible courses of action. These will need to be discussed by the EasyPay management team. Some of the recommendations could form the basis of further research. Specifically the researcher is of the view that an investigation should be done into the leadership capacity and teamwork dynamics in the EasyPay management team. Thereafter the team should review the EasyPay value proposition, business model and the core competencies that are required. Indications in the company are that the company could benefit from some further research into system design and a methodology for both service delivery and development.

The casual loop diagram represents the system and it is therefore appropriate to use the same representation to briefly suggest some specific recommendations.

**Figure 7.1: The causal loop diagram with recommendations in purple**



Source: Derived by researcher

## 7.4 LEARNING REFLECTIONS

### 7.4.1 Introduction

The researcher found the dissertation an extremely difficult assignment. The type of research required by the topic was action research and this type of research is challenging to carry-out for the reasons described in the introduction chapter. Nevertheless it was a quantum growth experience and below some of the more valuable lessons learnt are discussed very briefly.

#### **7.4.2 Specific lessons**

The first and most obvious lesson learnt from the type of research done was learning to think more deeply about issues and take into account a wider set of elements. The researcher feels that instead of thinking one layer down he is now inclined to think more systemically and his actions are consequently better chosen.

Taking in a wider set of elements brings the new problem of information overload. In this study there was a great deal of information flowing into the researcher's head. Some of the information seemed conflicting, paradoxical and multi-dimensional and this made the situation very hard to grasp. The researcher learnt to structure his thinking and now feels his thinking is much clearer and his picture of what is happening in the company is more complete. In short, the researcher has learnt to make order out of large masses of information.

Once one has organised the information one needs to analyse it to draw conclusions and decide on actions. In the process of analysing the information the researcher became aware of the need to think critically. This includes an awareness of the importance of thinking on different levels when analysing what action needs to be taken i.e. events, patterns of behaviour, systemic structure, and mental models. There is a heightened consciousness of the need to check facts, data, assumptions, experiences, concepts and theories when thinking for a purpose like solving systemic problems. There is thus a consciousness of the need by the researcher to question his own thinking.

There were many lessons for the researcher in managing himself in situations. The researcher learnt that in certain situations the need to control had to be given up. Sometimes one has to let go and suspend beliefs about people or a situation and let a new emerging understanding surface. In addition the researcher learnt that in some situations there is a dilemma that has no correct answer. There is a

need to form a complex view of the situation in order that multi-valued choices can be made. The researcher learnt that in many of these situations a degree of patience is necessary before results will become visible and objectives reached. There are very few experts who can solve complex social problems. It was found that a useful way to achieve objectivity is to absorb as many subjective perspectives as possible.

In understanding information individually and in a group, the researcher learnt the importance of representing complex problems in a manner that a wider audience could share and also challenge understanding of a phenomenon, and in the end contribute their commitment to the solution. Indeed, through many diagrams and views the researcher was able to reflect on his thinking alone and out loud with others. It has been valuable to unfold his thoughts onto paper and then to observe his own and others thinking.

These lessons were essential in allowing the researcher to progress and complete the project.

## **7.5 CONCLUSION**

In the conclusion the findings relative to the research objectives will be summarised and thereafter the answers to the research question will be discussed.

It was not only important to develop a systemic appreciation of the situation in the researcher's mind but also in the minds of the EasyPay team, if the value of the research was to be realised. In an environment where stakeholders have diverse views, intentions, perspectives, emotions, beliefs, mental models and vocabularies, an intelligent workspace is necessary for colleagues to understand the content of each others minds. The representations in this study have assisted people in the company by mapping the complexity of the organisation system into

easily understandable and user-friendly formats. These representations have already facilitated more sharing and resulted in better structured and intelligent conversations by facilitating a tighter intersection of the minds. The researcher anticipates that the research and associated representations will continue to provide an environment for group thinking and an active place to make commitments. More intelligent conversations will, in the words of Manning (2001), raise the strategic IQ of the company. In summary, the EasyPay team and the researcher have developed a better systemic appreciation of the current situation.

At this point it must be said that the study could have yielded better understanding and raised the group strategic IQ in the organisation if there had been group participation (that starts with the management team) in deriving the system and identifying the mental models. Such joint efforts might have seen more commitment from the team to implementing recommendations.

Nevertheless, the systemic structure and the interdependency of the elements in the system will no doubt be better understood, and as individuals and as a group they have become more aware of the trade-offs involved in the system. This will empower them in future to find a better balance between the need for innovative solutions (creativity) and the need for dependability (control) to deliver on the key service area of daily reliability. It is hoped that this understanding will be used to find key leverage points in the system and adopt organisational behaviours that enhance the capacity of the organisation to allow greater creativity and more effective control.

It is anticipated that members of management will realise the need to identify the principles or framework on which the business must be run, given the situation in the company and industry and where EasyPay wants to be. These are principles that, if violated, cause chaos and this is where the controls should be implemented. The research has shown that when principles like quality system

design, for instance, are violated, chaos has ensued. The controls should be at points in the framework and of such a nature that they are not restrictive and do allow for huge amounts of creativity but within the framework.

This section is particularly pertinent to answering the research question so some the explanation will be further detailed. In the words of Manning (2001) perhaps the most difficult thing for any leader to accept is the tension between freedom (creativity) and control. Disregarded it causes awful problems. Embraced, it brings remarkable results. Strategy demands discipline. Leaders need to be firm and clear about what they expect (Manning, 2001). For EasyPay's leadership to be firm and clear about what they expect they would need to know 'where they are now' and 'where they want to be' and thereafter they can make decisions about 'how they will get there'.

These clear expectations will provide a basis for managers and employees to make decisions. This guidance must not however be strangling. The context the leadership creates will either give the people in the company the courage and confidence to build the necessary competencies or it will convince them that ordinary is all right. Similarly it will either empower people to do roughly the best thing most of the time, or it will ensure that they under perform constantly (Manning, 2001).

This point is perhaps better explained by way of the example that follows: The operations department is given guidance by leadership that they expect better quality implementations and quicker implementations.

Perhaps it would be exercising too much control and simultaneously discouraging (strangling) creativity if the leadership prescribed how it is to be done.

Perhaps a better balance would be one where they were firm about what they expected but allowed the manager concerned to implement the solution he sees

fit. Therefore moving forward in this example it is assumed that this path is chosen and that the leadership do not prescribe how it is to be done. The manager could then come up with a solution that he needs more people or people with a particular skill set or an automated software testing tool. The assumption will be made that the automated software testing tool is chosen as this enables his department to test multiple conditions on different versions of the software at the press of a button thereby solving his quality issues and enabling software to be tested and therefore implemented quicker. The leadership has also not had to waste effort on exercising micro-management and micro-control. Manning (2001) suggests that such positive outcomes are often a consequence of leadership maintaining a healthy balance between creativity and control.

Manning implies that for a company to achieve this balance between creativity and control relies heavily on having effective leadership. The last recommendation is therefore for Prism and EasyPay to have a very close look at the leadership capabilities of their respective management teams and take action if it is deemed necessary to enhance these capabilities.



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## APPENDIX A: GLOSSARY

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### **Action research**

Action research has been defined as a form of research that generates knowledge claims for the express purpose of taking action to promote social change and social analysis. It is research that:

- (a) involves broad participation in the research process; and
- (b) generates action leading to significant social change for stakeholders.

Action research can be qualitative drawing upon diverse techniques as surveys, interviews, focus groups, ethnographies (Pervez, Gronhaug & Kristianslund, 1995).

### **Affinity diagram**

The affinity diagram is a way of grouping responses to an issue under observation. The individuals use Post-It notes to describe the issue and what they believe the causes of the issue are. The responses are then collected by the group and grouped into themes or similar subjects that emerge. The technique is used to balance the responses of the participants and their involvement in resolving the issue at hand. These ideas generated then form the basis of the interrelationship diagram (Krysack, 2005).

### **Agility**

In the context of EasyPay, agility refers to the length of time taken by EasyPay in accommodating customer requests for enhancements, changes and/or new services. (EasyPay marketing collateral; 2005)

### **Bill payment**

EasyPay supports many collection points at retail outlets via integrated tills, stand-alone terminals and channel partners. The transaction data gathered from



the EasyPay bill payment service depicts consumer payment behaviour, high and low payment areas and time-based statistics which can be useful to bill issuers. (EasyPay marketing collateral; 2005)

### **“Bluechip” customer**

This is a customer whose shares sell at a high price because of public confidence in its long record of steady earnings. These types of customers are normally large corporations with a strong brand and significant market capitalisation. (EasyPay marketing collateral; 2005)

### **Business continuity services**

In the event of a disaster, EasyPay have a fully operational business continuity site situated at a different geographical location to the primary site. State of the art data replication systems are used to synchronise the primary site with the backup site. The system uses a Network level replication strategy to ensure data integrity. Clients can switch to the backup site in a controlled manner, ensuring high levels of uptime. (EasyPay marketing collateral; 2005)

### **Causal loop diagram (CLD)**

Causal loop diagrams (CLD's) are a kind of systems thinking tool. These diagrams consist of arrows connecting variables (things that change over time) in a way that shows how one variable affects another. Causal loop diagrams provide a language for articulating an understanding of the dynamic, interconnected nature of the world. One can think of them as sentences which are constructed by linking together key variables and indicating the causal relationships between them. By stringing together several loops, one can create a coherent story about a particular problem or issue (Kim, 2005).

### **Chaos theory**

The name "chaos theory" comes from the fact that the systems that the theory describes are apparently disordered, but chaos theory is really about finding the

underlying order in apparently random data. Chaos theory has changed the direction of science: in the eyes of the general public, physics is no longer simply the study of subatomic particles in a billion-dollar particle accelerator, but the study of chaotic systems and how they work (Rae, 2006).

## **Cybernetics**

Cybernetics, deriving from the Greek word for steersman (*kybernetes*), was first introduced by the mathematician Wiener, as the science of communication and control in the animal and the machine (to which one now might add: in society and in individual human beings). It grew out of Shannon's information theory, which was designed to optimise the transmission of information through communication channels, and the feedback concept used in engineering control systems. In its present incarnation of "second-order cybernetics", its emphasis is on how observers construct models of the systems with which they interact (see complex systems to maintain, adapt, and self-organise). Such circularity or self-reference makes it possible to make precise, scientific models of *purposeful* activity, that is, behaviour that is orientated towards a goal or preferred condition. In that sense, cybernetics proposes a revolution with respect to the linear, mechanistic models of traditional Newtonian science. In classical science, every process is determined solely by its cause, that is, a factor residing in the past. However, the behaviour of living organisms is typically teleonomic, that is, orientated towards a future state, which does not exist as yet.

## **Data**

### ***External data***

EasyPay provides external entities with the ability to import data into its systems for the dual purposes of transaction verification and data sanitisation. This includes meter number information from electricity providers, traffic fine data and television license data. Transactions received by the EasyPay systems from points-of-service are verified against this data online, providing the point-of-service with real-time

feedback on the data quality of the transaction. Update files containing new information received from points-of-service can be generated and returned to the data originator for the purposes of maintaining and validating their database. (EasyPay marketing collateral; 2005)

### ***Other data***

Through its other services; EasyPay can offer customers information on loyalty cards, credit management, cheque guarantee services and fleet data. (EasyPay marketing collateral; 2005)

### ***Diagnostic data***

EasyPay captures and maintains low-level network data and information pertaining to messaging between parties and across all services. This data is useful in problem detection and resolution of online failures. The post-settlement transaction reconciliation facility provided by EasyPay will provide further evidence of message or settlement failure. (EasyPay marketing collateral; 2005)

## **EFT (Electronic Funds Transfer)**

The EasyPay service links POS (Point of Service) terminals via a centralised switching environment to the merchant's acquiring financial institution. The electronic funds transfer service ensures that the correct result of transactions done are effected on customers, merchants, corporate and third party bank accounts. The correct result may be flow of funds or authorisations by different acquiring institutions. EasyPay EFT supports the following:

- credit, debit, EMV, ATM, fleet and petrol cards;
- a range of transaction types including authorisation, reversal, cash withdrawal and balance enquiry;
- BIN tables;
- Fraud prevention using floor limits, hot card tracking and reporting, EMV and 3rd party service providers;

- settlement, reconciliation and monitoring services;
- business continuity services;
- links to all major financial institutions, allowing merchants increased flexibility when choosing acquiring partners; and
- compliance with international standards including ISO and EMV (Europe, MasterCard and Visa).

(EasyPay marketing collateral; 2005)

As the link between retailers and financial institutions in the EFT service, EasyPay can accumulate transaction statistics of both successful and unsuccessful transactions. Response codes can be analysed and graphed to indicate areas of service degradation. Vital financial data can be stored on various media according to the requirements for its availability. EasyPay provides centralised Hotcard and BIN data management. (EasyPay marketing collateral; 2005)

### **Emergence**

Associated with the idea of system is a principle called emergence. From the mutual interaction of the parts of a system there arise characteristics which can not be observed as being characteristic of any of the individual parts (Bellinger, 2005).

### **Exacting**

The term “exacting” used in this context means that every transaction needs to be correct and on time twenty four hours a day and seven days a week. It is not an industry where one can get away with glib assurances. Inside the computer code every comma, configuration, character and full stop must be in exactly the right place. (Dissertation supervisor, 2005)

### **The Five 'Why's**

The Five Why's typically refers to the practice of asking, five times, why the failure has occurred in order to get to the root cause/causes of the problem. There can be more than one cause of a problem as well (Anon, 2005).

### **Gestalt theory**

The theory of Gestalt theory takes as its central theme two ideas. The first is that the proper focus of psychology is the experiential present moment. In contrast to approaches which look at the unknown and even unknowable, the perspective is the here and now of living. The second idea is that people are inextricably caught in a web of relationship with all things. It is only truly possible for people to know themselves as they exist in relation to other things. These twin lenses, here-and-now awareness and the interactive field, define the subject matter of Gestalt therapy (Latner, 2005).

### ***Gift voucher***

EasyPay supports both paper and card based, rechargeable vouchers and therefore retains information online for individual vouchers for the lifespan of the voucher as determined by the voucher Issuer. Details of stock levels and voucher status are also available to users of the system. EasyPay can also provide statistical and historical information relating to the issuing and redemption of vouchers and individual voucher history. (EasyPay marketing collateral; 2005)

### **Innovation**

In the context of EasyPay, innovation refers to the frequency with which EasyPay offers new functionality, enhancements and services that EasyPay provides to existing customers. (EasyPay marketing collateral; 2005)

### **Interrelationship diagram (ID)**

The interrelationship diagram is a tool used to focus the efforts of the team or organisation on one or two priorities. Additionally, it has been found to be helpful in identifying the cause and effect relationships between various issues. Often the ideas are generated from an affinity diagram exercise (Krysack, 2005).

### **Management information**

Due to the number and variety of services offered to its clients, EasyPay is in a position to accumulate a wealth of data which is beneficial to clients for marketing, auditability, trend analysis and budget predictions. (EasyPay marketing collateral; 2005)

### **Mental models**

Mental models shape how people act because they shape the how they see or how they perceive. They can be described as:

- ways of seeing;
- hidden assumptions;
- below the level of awareness;
- unexamined assumptions;
- deeply held images of the way the world works;
- occasionally inaccurate and misleading; and
- short-term perceptions people build as part of their everyday reasoning process that gradually change into long-term subconscious beliefs

(Senge, 1994).

### **Monitoring**

Monitoring is defined by the 24/7 monitoring services and it includes:

- the monitoring and management of the transaction data quality;
- transaction time monitoring, backed up by real-time event/trigger driven alarms;
- validation of PIN (Personal identification Numbers) from the POS channel;

- tracking store uptime; and
- monitoring, reporting and escalation of financial institution uptime to all relevant parties.

(EasyPay marketing collateral; 2005)

### **Operational incident**

An operational incident is a definite and separate occurrence that interrupts the normal service expected by a customer. (EasyPay marketing collateral; 2005)

### ***Pre-paid airtime***

Stock levels and voucher sales trends, store and regional sale volumes and denomination trends are vital information which EasyPay provides to buyers and retailers. (EasyPay marketing collateral; 2005)

### ***Pre-paid electricity***

Details of consumer purchases passed on to electricity providers can be used to determine vendor concentration, point-of-service availability and utilisation and consumer trends which assists in determining the issuing of licenses to vend. (EasyPay marketing collateral; 2005)

### **Reconciliation**

The reconciliation processes highlights exception transactions. These transactions or value not accounted for in a particular settlement period will be highlighted (to be actioned) on the exception report. Such exception conditions are detected in a file as a result of the reconciliation (automatic cross tick) process. Transaction records in a source file (usually POS or switch log) are compared electronically against transaction records in a file provided by the settlement entity (the bank). Transaction records for which there is no matching resource in either file are reported (viz: "Not in Source" or "Not in Bank mark-up"). The exceptions are investigated and their cause determined. Remedial action is taken to ensure that the exception transaction is processed or/and the value is

moved correctly. If it is necessary, then action is taken to remove the cause of the incident. (EasyPay marketing collateral; 2005)

For optimum reconciliation EasyPay are primarily concerned with the detection and correction of errors and ensuring that the amounts contained in financial reports are correct and can support the auditing assertions of occurrence, completeness, existence and authority. EasyPay would like to have the ability to reconcile every transaction EasyPay processes to the record at the point of service and to ensure that the merchant organization; merchant and the merchant customer are debited or credited correctly. It is the goal of reconciliation to minimise the business risk for EasyPay and its customers as well as to make sure that customers are satisfied with the service they receive (EasyPay marketing collateral; 2005).

### **Reductionism**

An attempt or tendency to explain a complex set of facts, entities, phenomena, or structures by another, simpler set: "For the last 400 years science has advanced by reductionism ... The idea is that you could understand the world, all of nature, by examining smaller and smaller pieces of it. When assembled, the small pieces would explain the whole" (Holland, 2005).

### **Reductionist approach**

Reductionism is an approach to building descriptions of systems out of the descriptions of the subsystems that a system is composed of, and ignoring the relationships between them (Bar-Yam, 2005).

### **Reliability**

In the context of EasyPay's lack of reliability, this term means either a lack of consistent quality in the service delivered and/or a lack of continuity in the service being delivered. (EasyPay marketing collateral; 2005)



## **Retailers**

When the term retailers is used it should be taken to include food retailers, petroleum /convenience store retailers, clothing retailers, furniture retailers and electronic appliance retailers. (EasyPay marketing collateral; 2005)

## **Settlement**

EasyPay (Pty) Limited provides a settlement service where such a service is required by clients. Transactions concluded in the course of a business (trading day) are processed and aggregated to create settlement files. The interface to the Automated Clearing Bureau (ACB - the payment clearing house which is utilised by the SA Banks) - is via EasyPay's own bankers, although this interface is operated through any bank of the client's choice. The movement of funds is strictly governed by the Reserve Bank under the auspices of the National Payments Association. All users are required to adhere strictly to the payment rules and guidelines. EasyPay's settlement service operates in accordance with these rules and guidelines. EasyPay's reconciliation service which resolves money movement (one-to-many and many-to-one) account transfers, operates in conjunction with the settlement outcome. (EasyPay marketing collateral; 2005)

## **System**

A system is a collection of parts which interact with each other to function as a whole. Senge (1994) defines a system as a perceived whole whose elements "hang together" because they continually affect each other over time and operate toward a common purpose.

## **Systems thinking**

Two definitions are presented. Systems thinking focuses on how the thing being studied interacts with other elements of the system – a set of elements that interact to produce behaviour - of which it is a part. As opposed to analysis which breaks things down into smaller parts, systems thinking works by

expanding its view to take into account a larger numbers of interactions. This definition is based on the definition in the paper by Daniel Aronson (2005).

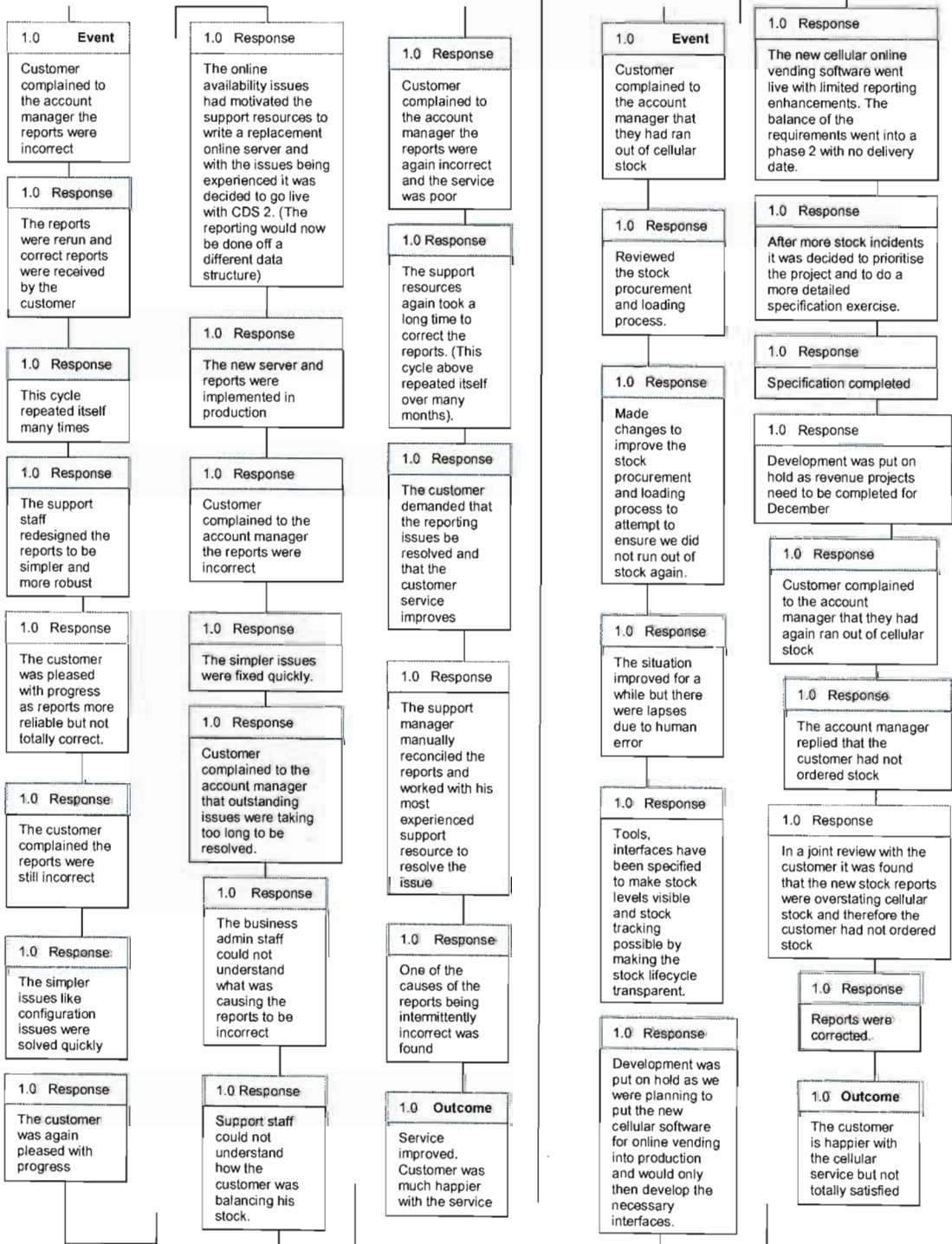
The fifth discipline fieldbook (Senge, 1994) defines systems thinking as “a way of thinking about, and a language for describing and understanding, the forces and interrelationships that shape the behaviour of systems. This discipline helps us to see how to change systems more effectively”. The field includes *inter alia*, according to Senge (1994), cybernetics, chaos theory, Gestalt therapy, process flow mapping and numerous other approaches. These approaches have a guiding idea in common: that the behaviour of all systems follows certain common principles, which are being discovered and articulated.

Bellinger (2005) describes systems thinking as an approach for developing models to promote an understanding of events, patterns of behaviour resulting in events, and even more importantly, the underlying structure responsible for the patterns of behaviour. If one is interested in addressing a particular situation it is only through an understanding of the underlying structure that one will be able to identify the most appropriate leverage points to effect change within a system.

### **Value-Added Services (VAS)**

The term Value-Added Services is used to describe any service which is not an Electronic Fund Transfer service. These services include, but are not limited to, electronic bill payment, electronic prepaid airtime distribution, electronic prepaid electricity distribution and electronic gift voucher distribution. (EasyPay marketing collateral; 2005)

## APPENDIX B: PREPAID AIRTIME ADMINISTRATION CASE - FIVE WHYS' INTERVIEWS



2.0a Event  
Customer complaint

Response:  
Slow

2.1 Outcome  
Poor customer service

Why?

2.2  
Lack of focus:  
High volume of customer complaints to deal with

Why?

2.3a1 ?  
Few resources with the knowledge to do batch support

2.0b Event  
PTSS was growing with more customers and services

Response:  
Slow

Why?

2.3a2 ?  
Experienced staff had left the company

Why?

2.3b1 ?  
Prism moved all the skilled developers into a technology group

Why?

2.3b1 ?  
PTSS had not re-employed or employed with the expansion in services

Why?

2.2a3 ?  
They were unhappy with the decisions and direction of Prism holdings:  
1. They felt that Prism did not understand the requirements of PTSS  
2. They disagreed with the technical standards laid down by Prism

Why?

2.2a3 ?  
Prism saw PTSS as an operation that did not need skilled developers with an in-depth understanding of what was required at PTSS

Why?

2.3b1 ?  
There was a profit target required by the holding that were difficult to achieve through new business alone and the easiest way to achieve that is to cut costs.

Response:  
Slow  
(Even after headcount freeze)

Why?

2.3b1 ?  
Did not understand the work load was of permanent nature. Saw the workload as a temporary peak

Response: Slow  
(Even after understood work load demands)

Why?

2.3b1 ?  
Difficulty finding the right skills in the marketplace.

Response: Slow  
(Even after understood work load demands)

Why?

2.3b1 ?  
PTSS staff found change difficult

Why?

2.3b1 ?  
Mental Model: Prism owned EasyPay and would tell us what to do

2.3b2 ?

Prism Holdings had cash flow issues and there was a headcount freeze

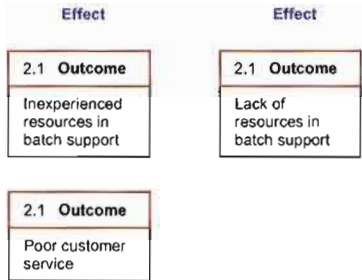
Why?

2.3b1 ?  
Did not understand why there was so much work

Why?

2.3b1 ?  
The combination of C; Java; Unix and Linux difficult to find in the marketplace

2.3b1 ?  
Difficulty finding the right staff



**Why?**

2.3b1	?
No planning processes in place as a business	

**Why?**

2.3b1	?
Had not developed the systems and tools to deal with the volume of events in the organisation	

**Effect**

<b>2.1 Outcome</b>
Lack of resources in batch support

<b>2.1 Outcome</b>
Poor customer service

**Why?**

2.3b1	?
Combinations of Java; C; Unix & SQL with the right personality type required for the job are hard to find	

2.0a **Event**  
Customer complaint

**Response**  
Slow

2.1 **Outcome**  
Poor customer service

2.2 ?  
Lack of focus:  
High volume of  
operational  
incidents to  
deal with

2.2 ?  
Problems with  
reporting

Why?  
2.2 ?  
Time  
consuming  
incidents  
because of  
capacity  
problems

Why?  
2.2 ?  
Performance  
issues on the  
online server  
that affects  
availability

Why?  
2.2 ?  
Time  
consuming  
incidents  
because of  
configuration  
issues

Why?  
2.2 ?  
Time  
consuming  
incidents  
because of  
changes made

Why?  
2.2 ?  
There was a  
lack of capacity  
management in  
the operation

Why?  
2.2 ?  
No  
performance  
benchmarking  
done on  
servers

Why?  
2.2 ?  
Application  
development  
not done to a  
quality standard

Why?  
2.2 ?  
Co-ordination  
of  
configurations  
on different  
systems is  
problematic.

Why?  
2.2 ?  
Wrong version  
implemented in  
production

Why?  
2.2 ?  
Lack of quality  
testing in PTSS

Why?  
2.2 ?  
Lack of quality  
processes on  
development

Why?  
2.2 ?  
The  
configuration  
processes set  
up between  
account  
management  
and customers  
are not robust

Why?  
2.2 ?  
Incomplete  
understanding  
of the impacts

Why?  
2.2 ?  
Lack of  
Leadership

Why?  
2.2 ?  
Change control  
process not  
followed

Why?  
2.2 ?  
We could use a  
central  
configuration  
tool to improve  
co-ordination

Why?  
2.2 ?  
Change and  
release  
management  
disciplines not  
installed by  
Leadership

2.0a Event  
Customer complaint

Response: Slow

2.1 Outcome  
Poor customer service

2.2 ?  
Lack of focus:  
High volume of  
Customer  
complaints to deal  
with

Why?

2.3a1 ?  
Few resources  
with the  
knowledge to do  
batch support

Why?

2.3a1 ?  
We were not  
utilising some  
batch support  
resources

Why?

Why?

Why?

Why?

2.3a1 ?  
They were / are  
difficult to  
manage so we  
did not manage  
them to make a  
difference

Why?

2.3a1 ?  
They are not  
reliable and the  
batch  
resources are  
so busy they  
are to scared to  
handover  
control because  
the staff  
will make a  
mistake and  
they will then  
have to handle  
the  
consequences

Why?

2.3a1 ?  
People were getting  
service out of the  
existing staff.  
They trusted that  
resource to do it  
properly and kept  
going to that  
resource (Tragedy of  
the commons)

Why?

2.3a1 ?  
Knowledge  
transfer was  
slow to  
existing  
resources

Why?

Why?

2.3a1 ?  
Managers to  
busy firefighting  
volume of  
incidents

2.3a1 ?  
Managers have  
given up on the  
resource.

Why?

2.3a1 ?  
They have the  
theory skills but  
they somehow  
do not have the  
context, framed  
experience,  
intuition (PTSS  
systems  
intuition)

2.3a1 ?  
The resource got  
overloaded and  
stopped giving  
good service. The  
staff then wanted  
the new resource  
to help but he can  
only do the  
simpler tasks as  
he needs time to  
learn. He  
therefore cannot  
help immediately

2.3a1 ?  
Few  
individuals  
did not enjoy  
sharing

Why?

2.3a1 ?  
Existing  
resources  
did not have  
time.

Why?

2.3a1 ?  
Manager  
doesn't think  
the staff  
has what it  
takes and they  
unsure on how  
to proceed from  
there (Limited  
understanding  
or will to do  
performance  
management)

2.3a1 ?  
???  
Job Security  
or enjoyed  
the attention

2.3a1 ?  
Volume of  
incidents

2.0a Event  
Customer complaint

Response  
Slow

2.1 Outcome  
Poor customer service

Why?

2.2 ?  
We were balancing on our side but we did not understand why the customer was not balancing on his side

Why?

2.2 ?  
Why did we take so long to understand?

Why?

2.2 ?  
The account manager informed us the reports were wrong but we needed more detail than that. We eventually got it

Why?

2.2 ?  
The client was in Jhb so we could not see the reports he was looking at his communication was clear

Why?

2.2 ?  
Poor knowledge transfer

Why?

2.2 ?  
The right minds were not applied to the design

Why?

2.2 ?  
No specifications i.e. business requirements

Why?

2.2 ?  
There was no development methodology in PTSS

Why?

2.2 ?  
Developers did not understand or care about the consequences of no documentation

Why?

2.2 ?  
Lack of systems thinking

Why?

2.2 ?  
Lack of leadership in the company

Why?

2.2 ?  
They do not understand the time required on the project. They do not understand the organisational commitment on resources with the large amount of projects in PTSS

Why?

2.2 ?  
If PTSS cannot meet the deadline then they will go to the opposition

Why?

2.2 ?  
We could not afford to employ resources as we were concerned about making our revenue budget

2.2 Event  
Reports incorrect regularly

Why?

2.2 ?  
Application not robustly designed

Responsibility

2.2 ?  
Management was unsure on the question of redevelopment as they were not sure it was a software issue

Why?

2.2 ?  
We didn't have an independent technical opinion we could trust

Why?

2.2 ?  
We had lost our technical resources that possibly could have helped i.e. Aart Rebel due to headcount freeze

Why?

2.2 ?  
No time on project to do the project properly

2.2 ?  
Lack of planning by project manager

Why?

2.2 ?  
Account Managers commit to unrealistic deadlines

Why?

2.2 ?  
Customers insist on unrealistic deadlines

2.2 ?  
Lack of skilled staff to do Documentation



2.0a Event  
Customer complaint

Response:  
Slow

2.1 Outcome  
Poor customer service

Why?

2.1 Response  
Incidents occurred that were due to human error or could have been prevented

Why?

2.1 Response  
We don't have the visibility of the process or the tools to prevent incidents

Why?

2.1 Response  
PTSS people specifying the systems did not have experience in the cellular industry

2.1 Response  
Despite lack of experience we should have worked out what would be required just by doing client analysis and scenario analysis

Why?

2.1 Response  
No development methodology

See above

Why?  
2.1 Response  
There was a feeling that if we employed a product manager then we would not make our revenue targets and there were other staff that needed to be put in place before this appointment.

2.2  
Lack of focus on developing the service:

Why?

2.1 Response  
No product manager focusing on driving the improvements in the service

Why?  
2.1 Response  
Management did not understand the consequences of not having this focus

2.1 Response  
Reports missing

2.1 Response  
Reports incorrect with many issues

Why?

2.1 Response  
In the specification stage and in the time thereafter we did not interpret what our clients and we would need to run the cellular service and manage stock

2.1 Response  
Delivery of project not done to required quality

2.1 Response  
Phases skipped in the project i.e. report testing

2.1 Response  
No project, development methodology

2.1 Response  
Lack of systems thinking

Why?  
2.1 Response  
There was a feeling that we would be in the cellular value chain for a short period of time and therefore we should not invest in this service

2.1 Response  
Lack of leadership

## APPENDIX C: PETROLEUM Co X ELECTRONIC FUNDS TRANSFER CASE - FIVE WHY'S INTERVIEWS

### The "five why's" of the PetroX Case

1. Identify the evident high level symptom of the current problem state of your organization.
2. Identify the cause(s) in detail of each of the high level symptoms
3. Identify the effect(s)

#### Symptoms:

Symptom 1
The PetroX corporate Customer was dissatisfied with the service that EasyPay was delivering.

#### Why:

Symptom 1a
The PetroX dealers who managed the PetroX sites/outlets complained about the service output.

Symptom 1b
The PetroX corporate customer did not receive the reports and information they had been promised

Symptom 1c
The system was implemented late as the roll-out had to be stopped because of the dealers' unhappiness with the system

#### Why:

Symptom 1a i
The output of the EasyPay settlement service was not correct so the merchants' settlement was either zero, short settled or oversettled.

Symptom 1a ii
The Merchants had experienced settlement problems before but the problems had been infrequent were now regular. The volume of issues had increased significantly.

Symptom 1a iii
The Merchants had experienced settlement problems before and their resolution had been relatively quick. The resolution time experienced with the implementation of the system was considerably slower.

#### Continued:

Symptom 1a iv
The amounts involved in the short or no settlement situations were significant compared to situations experienced on the previous system.

Symptom 1a v
The way the system aggregated the amounts into the merchants' bank account made reconciliation difficult. The batch total amount from their terminal reports did not correspond to the totals amount for that batch in the bank account

Symptom 1a vi
The references in the PetroX merchant bank account did not correspond to the references that were on their bank statement even when the totals were correct. With timing issues and a number of terminals this made reconciliation even more difficult

#### Continued:

Symptom 1a vii
The end of day processes on the terminal took a long time and when these processes were run - the PetroX merchant could not use the terminal. The customer had to wait or another terminal had to be used to process payment.

Symptom 1a viii
Some of the terminals froze and could not be used. The merchant had to wait for a support person before he could get a working terminal again. The merchant was therefore without a terminal for long periods of time.

**Identify the causes in detail of each of the high level symptoms identified.**

**Symptom 1a**  
**The PetroX dealers who managed the PetroX sites/outlets complained about the**

**Symptom 1a i**  
**The output of the EasyPay settlement service was not correct so the merchants' settlement was either zero, short settled or oversettled.**

**Causes:**

**Cause a1a**  
**PetroX merchants had been configured on the Postilion online server (switch) incorrectly**

**Cause a1b**  
 The transactions that came from merchants incorrectly configured were not extracted from the online server and their data was therefore not put into the settlement system

**Cause a1c**  
 There was a lack of understanding by the online resources on the importance of the configuration and its effect on settlement

**Cause a1d**  
 There was a lack of co-ordination on the project

**Cause a2a**  
**PetroX merchants processing Starcard transactions were configured on the Terminal Gateway server. The table was updated however the settlement system did not receive the update as there was no automated process to fetch such updates.**

**Cause a2b**  
 The transactions that came from newly configured merchants were not extracted from the online server and their data was therefore not put into the settlement system

**Cause a2c**  
 There was no specification that explained how settlement and recon were going to work.

**Cause a2d**  
 There had been problems on the project. The online and terminal testing had taken longer then expected and there had not been the time to go through a detailed settlement specification procedure

**Cause a3a**  
**Injected transactions were not extracted from the Postilion online server.**

**Cause a3b**  
 The node were injected transactions were placed for processing on the Postilion online server was not configured to carry the embedded XML fields necessary for Starcard transactions to be settled

**Cause a3c**  
 There was no specification that explained how settlement and recon were going to work.

**Cause a3d**  
 The need to do injects although well known had been an oversight on the project

**Cause a1e**

There was no complete specification that explained how settlement and recon were going to work.

**Cause a1f**

There had been problems on the project. The online and terminal testing had taken longer than expected and there had not been the time to go through a detailed settlement specification procedure

**Cause a1g**

Settlement testing had not been tested thoroughly. There was not a focus from a resource in Customer Care that understood settlement doing the testing.

**Cause a1h**

There were not test cases ready that represented the different scenarios

**Cause a2e**

There was not an experienced resource had understood the system end to end and designed the settlement and reconciliation system

**Cause a2f**

The deliver this system to PetroX Prism Holdings built a terminal management system from scratch and developed terminal software from scratch. Both EasyPay and Prism Holdings did not have deep experience in running such a system.

**Cause a2g**

There was a not a great level of co-ordination and communication with the designers of the terminal gateway system.

**Cause a2h**

Prism Technology and EasyPay development and operations had differences in the past and the two groups were not particularly fond of each other

**Cause a2i**

EasyPay resources were overloaded and could not always focus and give the time to the Prism development guys.

**Cause a2j**

The managers of the groups interfaced in meetings. They had some knowledge however it was limited – the developers of the systems rarely got together.

**Cause a3e**

There had been problems on the project. The online and terminal testing had taken longer than expected and there had not been the time to go through a detailed settlement specification procedure

**Cause a3f**

Settlement testing had not been tested thoroughly. There was not a focus from a resource in Customer Care that understood settlement doing the testing. There was not a test cases ready that represented the different scenarios

**Cause a3g**

There were not test cases ready that represented the different scenarios

**Effect:**

**Effect 1**

Effect Merchants were not settled for PetroX Starcard transactions

**Effect:**

**Effect 2**

Effect Merchants were not settled for PetroX Starcard transactions

**Effect:**

**Effect 3**

Effect Merchants were not settled on time for PetroX Starcard transactions

**Cause a4a**

The validation of the Starcard settlement file was incorrect as the trailer record had the incorrect value and one of the records for settlement had a control character.

**Cause a5a**

The settlement application aborted and when it was restarted it was too late to make the cut-off at Starcard for settlement.

**Cause a6a**

The reversals were not applied as they should have been as the data in the record going to the bank from EasyPay was incorrect

**Cause a4b**

There was an inexperienced resource doing the development of the settlement system for EasyPay

**Cause a2b**

The batch scheduler had a Sybase library issue that caused the scheduler to stop running. The scheduler would look like it was running but was not processing the tasks. The scheduler was found to often ignore error codes. When operations realized the problem there was not enough time to make the Starcard settlement cut-off

**Cause a6b**

The formats of the transaction reversals were incorrect and this caused the bank to ignore them.

**Cause a4c**

EasyPay had lost experienced resources in the batch department.

**Cause a6c**

The terminal developers had incorrectly programmed the reversals.

**Cause a4d**

EasyPay had restructured and moved experienced resources into the services development department. Because of capacity constraints they did not do the development - the batch support department did the development.

**Cause a2c**

Management had not been informed of the problem. The support resources had been restarting the application manually. When management had asked why settlement was late or didn't happen they were told there was a problem with the job and no more.

**Cause a6d**

The problem had not been picked up in testing

**Cause a6e**

There had been problems on the project. The online and terminal testing had taken longer than expected and there had not been the time to go through a detailed settlement specification procedure

**Effect:**

**Effect 4**

Changes had to be made when the system was in production. The iteration of changes were many times not successful causing delayed settlement and non-settlement.

**Cause a2d**

The batch scheduler application was home grown and the support and development resources had limited understanding of the code. They therefore had not fixed it. It worked on 4 out of 5 occasions and when it didn't work they just hoped they would be escalated in time to run settlement

**Cause a6f**

Settlement testing had not been tested thoroughly. There was not a focus from a resource in Customer Care that understood settlement doing the testing.

**Effect:**

**Effect 5**

This caused delayed settlement and non-settlement.

**Cause a6g**

There were not test cases ready that represented the different

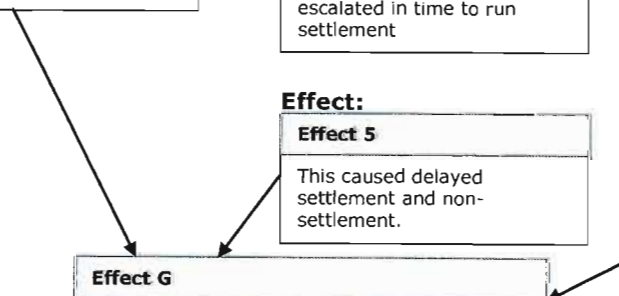
**Effect:**

**Effect 6**

This caused over - settlement. Through double debiting of card holders

**Effect G**

The settlement issues that accompanied this problem meant large amounts of time had to be spent by both admin and technical resources on extracting data, reconciling and inserting transactions



**Symptom 1a**  
The PetroX dealers who managed the PetroX sites/outlets complained about the service output.

**Symptom 1a ii**  
The Merchants had experienced settlement problems before but the problems had been infrequent were now regular. The volume of issues had increased significantly.

**Symptom 1a iii**  
The Merchants had experienced settlement problems before and their resolution had been relatively quick. The resolution time experienced with the implementation of the system was considerably slower.

**Symptom 1a iv**  
The amounts involved in the short or no settlement situations were significant compared to situations experienced on the previous system.

**Causes:**

**Cause b1a**  
The terminal; terminal gateway, settlement and reconciliation systems had all produced settlement issues.

**Cause b1b**  
The terminal; terminal gateway, settlement and reconciliation systems had all produced settlement issues.

**Cause b1b**  
The people in Prism and EasyPay had limited experience in running terminal systems

**Cause b1c**  
The system design had some serious flaws.

**Cause b1d**  
The systems involved in delivering the service were almost all new or had required substantial modification for PetroX purposes.

**Cause b2a**  
The volume of issues experienced meant that despite establishing a call centre with reconciliation staff the response times was slow as the resources were overloaded

**Cause b2b**  
The reconciliation staff had to be trained.

**Cause b2c**  
The terminal software developers took time to resolve the issue.

**Cause b2d**  
The terminal had to be tested thoroughly as the company did not want to roll-out a terminal that had more problems.

**Cause b2e**  
Rolling out approximately new terminal software to 1400 terminals on 600 sites takes time.

**Cause b3a**  
In the previous system the dealer knew he had not been settled and he then forced uploaded his settlement. The new terminal operated in a way that when the terminal had not uploaded transactions for settlement it was not apparent to the dealer. Often the dealer was not settled for many days amounting to large sums

**Cause b3b**  
The design of the system was not complete

**Cause b3c**  
The people in Prism and EasyPay had limited experience in running terminal systems

**Effect:**

**Effect 10**  
Dealers remained unsettled for long periods of time for large amounts of money

**Effect G**  
The settlement issues that accompanied this problem meant large amounts of time had to be spent by both admin and technical resources on extracting data, reconciling and injecting transactions

**Cause b1e**

The testing had not picked up the issues. Issues in the field had not been experienced in the laboratory.

**Cause b1f**

The settlement issues had not been picked up

**Cause b1g**

The pilot had been very short and had then been followed with an aggressive roll-out.

**Cause b1h**

The volume of settlement issues that had been picked on pilot had not been seen as manageable. The number of PetroX dealers rolled-out in a short space of time multiplied these issues to volumes that had not been anticipated.

**Effect:**

**Effect 7**

Large volumes of incidents of incorrect

**Effect 8**

EasyPay had to put in a call centre that handled reconciliation to sort the issues out.

**Effect G**

The settlement issues that accompanied this problem meant large amounts of time had to be spent by both admin and technical resources on extracting data, reconciling and injecting transactions

**Cause b2f**

The batch resources had limited understanding of the whole system and took time to resolve the issues

**Cause b2g**

The batch resources were inexperienced and so took time to resolve issues and put in fixes. Fixes often backfired causing more issues.

**Cause b2g**

Different versions of the terminal with different issues were rolled out in the field. This served to confuse the issue

**Cause b2h**

The right people or minds in EasyPay were not focused on the issues i.e. the cause of Timeouts and Communications issues were identified very late only after they had caused significant issues.

**Effect:**

**Effect 9**

The customer experienced long resolution times.

**Effect G**

The settlement issues that accompanied this problem meant large amounts of time had to be spent by both admin and technical resources on extracting data, reconciling and injecting transactions

**Symptom 1a**

The PetroX dealers who managed the PetroX sites/outlets complained about the service output.

**Symptom 1a v**

The way the system aggregated the amounts into the merchants' bank account made reconciliation difficult. The batch total amount from their terminal reports did not correspond to the totals amount for that batch in the bank

**Symptom 1a vi**

The references in the PetroX merchant bank account did not correspond to the references that were on their bank statement even when the totals were correct. With timing issues and a number of terminals this made reconciliation even more difficult

**Symptom 1a v ii**

The end of day processes on the terminal took a long time and when these processes were run – the PetroX merchant could not use the terminal. The customer had to wait or another terminal had to be used to process payment.

**Causes:**

**Cause c1a**

In the design of the system the problems with the dealers' reconciliation of his bank statement were not anticipated.

**Cause d1a**

The node was configured incorrectly and this caused the reference number and batch number to be sent to the bank

**Cause e1a**

The system design had not taken this into account.

**Cause c1b**

The way ABSA bank aggregates transaction in terms of batching and cut-off timing was not well understood and incorporated into the design of this system

**Cause d1b**

The workload meant that the online support resources paid superficial attention to the change and they also did not take the time to check and test the change as they should have.

**Cause e1b**

The people in Prism and EasyPay had limited experience in running terminal systems

**Cause c1c**

The EasyPay and Prism people had limited experience with working with ABSA bank settlement

**Cause d1c**

The change did not follow the change control process

**Effect 12**

Dealers' operations inconvenienced. Dealer customer had to wait longer than normal for payment to be processed

**Cause c1d**

The communication with ABSA was not great in that it was limited, incomplete and not always co-operative.

**Effect 11**

Dealers could not reconcile bank account



**Effect:**

**Effect 10**

The dealers became anxious because the could not work out if they had been short paid or where there money was. They complained about the service to PetroX Head Office as a result.

**Effect G**

The settlement issues that accompanied this problem meant large amounts of time had to be spent by both admin and technical resources on extracting data, reconciling and injecting transactions

**Symptom 1a**

**The PetroX dealers who managed the PetroX sites/outlets complained about the service output.**

**Symptom 1a viii**

**Some of the terminals froze and could not be used. The merchant had to wait for a support person before he could get a working terminal again. The merchant was therefore without a terminal for long periods of time.**

**Cause f1a**

The software interacted with the hardware in such a way to cause the terminal operating system to freeze.

**Cause f1b**

The system design had a serious flaw

**Cause f1c**

The terminal was being used for the first time and the software new.

**Cause b1d**

The testing had not picked up the issues. This issue had not been experienced in the laboratory.

**Cause b1e**

The test time in the project had been cut due to development overruns and this did not allow for as thorough testing

**Effect 13**

The terminals had to be swapped out with a new terminal and the terminals had to be fixed.

**Effect G**

The settlement issues that accompanied this problem meant large amounts of time had to be spent by both admin and technical resources on extracting data, reconciling and injecting transactions

**Symptom 1**

**The PetroX corporate Customer was dissatisfied with the service that EasyPay was delivering.**

**Symptom 1b**

**The PetroX corporate customer did not receive the reports and information they had been**

**Cause g1a**

The reconciliation reports had been designed and were ready however the resource borrowed from Prism failed to take into account the change from reconciling per merchant ID to per terminal id. The reports were therefore not ready as the issue was only discovered shortly before the go-live date.

**Cause g2a**

Prism brought the project for implementation to EasyPay under heavy time pressure. They had not realized the changes required to the EasyPay settlement and reconciliation systems because of a fundamental change which was to settle and reconcile per terminal id.

**Cause g1a**

When the reports were written the resources had to try and iron out all the anomalies while also trying to reconcile the merchants screaming for their money

**Cause g1b**

The file from ABSA on whose correctness the reports relied quite heavily was often wrong and these issues still persist after year. The reports are cumulative this causes some large issues.

**Cause g1c**

The resources being so busy solving merchant ids have not had the time to focus on getting the information to the account manager in a consistent manner which allowed PetroX and EasyPay to manage ABSA

**Cause g1d**

There was a huge backlog of work that the report writers were working through and the PetroX reports were not always at the top of the list.

**Cause g1e**

The reports got large because no one in Customer Care was managing them and actioning the exceptions and removing data off the report.

**Cause g1f**

There were issues in staff issues in Customer Care. These issues resulted in the report being neglected.

**Cause g1g**

When the Customer Care did eventually focus on the report there were configuration issues, settlement and data transfer issues that caused the report to be almost unmanageable.

**Cause g2b**

The project was not made a formal collaborative project. The Prism technology group had been developing the terminal software and terminal management system. They had informally consulted EasyPay on aspects of the development.

**Cause g2c**

The project management disciplines in the company were weak.

**Cause g2d**

The two groups had a history of conflict that went back to a Vendstar terminal that Prism implemented in EasyPay with issues. The Prism technology group was frustrated with EasyPay because they found it very hard to get information out of them.

**Cause g2e**

The design had not taken into account the licensing costs and operational requirements of EasyPay which included the reporting requirements.

**Cause g2e**

The right people in EasyPay had not been involved at the right time as the project was not a formal collaborative project.

**Cause g2f**

The issue of this project taking the informal route and the non-involvement of EasyPay was raised by members of management at the EasyPay and Prism management levels.

**Effect 19**

Even though the project went live on the promised date, the shortcuts taken meant that the reconciliation reports etcetera could not be delivered on time and the customer was not impressed by both the EasyPay and Prism delivery.

**Effect 14**

The PetroX corporate Customer was dissatisfied with the service in regards to reporting

**Symptom 1a**

The PetroX dealers who managed the PetroX sites/outlets complained about the

**Symptom 1a i**

The output of the EasyPay settlement service was not correct so the merchants' settlement was either zero, short settled or oversetled.

**Cause h1a**

The database from where settlement is run has no space left. Or the log is out of space. The net result is that the settlement job aborts and settlement is either late or doesn't happen

**Cause h1b**

The database administrator in operations did not check the space as it is his responsibility to do.

**Cause h1c**

The last database administrator had resigned because of long hours and the new one had not arrived in time to do a handover. He therefore did not know to check.

**Effect 15**

This caused delayed settlement and non-settlement.

**Symptom 1c**

The system was implemented late as the roll-out had to be stopped because of the dealers' unhappiness with the

**Cause i1a**

With all the issues the roll-out had to stop. This meant they could not decommission the Tandem switch.

**Effect 17**

PetroX penalized Prism and EasyPay R200000.00

**Effect 18**

PetroX were further dissatisfied with the service

**Effect 16**

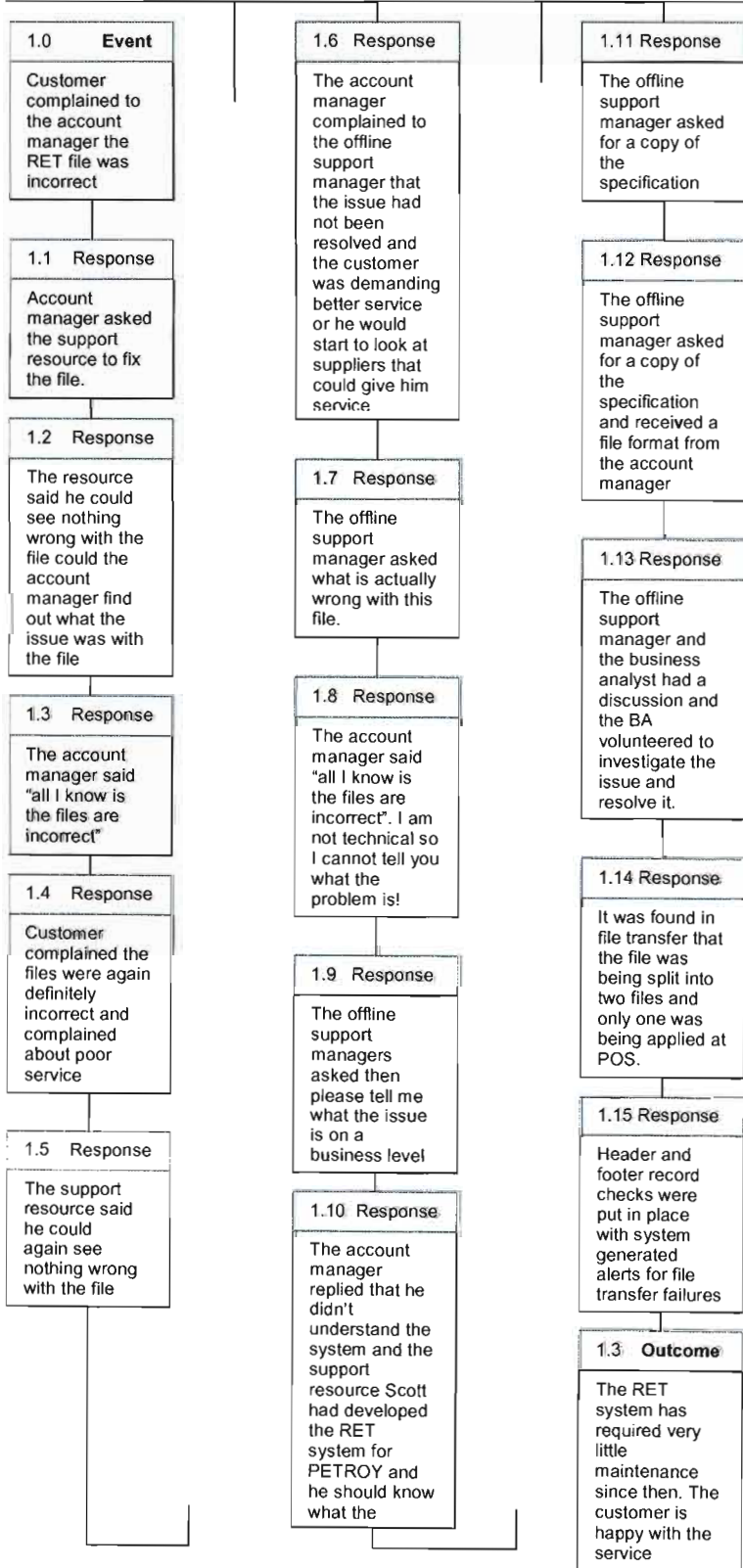
The support resources had to work long hours into the night rectifying the issue

**Effect G**

The settlement issues that accompanied this problem meant large amounts of time had to be spent by both admin and technical resources on extracting data, reconciling and injecting transactions

**APPENDIX D: PETROLEUM COMPANY Y REMOTE ENCODING OF TAGS**

**CASE - FIVE WHY'S INTERVIEWS**



**2.0a Event**  
Customer complaint

**Response:**  
Slow

**2.1 Outcome**  
Poor customer service

**2.2 ?**  
Lack of focus:  
High volume of Customer complaints to deal with

**Why?**

**2.3a1 ?**  
Few resources with the knowledge to do batch support

**2.0b Event**  
PTSS was growing with more customers and services

**Response:**  
Slow

**Why?**

**2.3a2 ?**  
Experienced resources had left the company

**2.3b1 ?**  
Prism moved all the skilled developers into a technology group

**Why?**

**2.3b1 ?**  
PTSS had not re-employed or employed with the expansion in services

**Response:**  
Slow  
(Even after headcount freeze)

**Why?**

**2.2a3 ?**  
They were unhappy with the decisions and direction of Prism holdings:  
1. They felt that Prism did not understand the requirements of PTSS  
2. They disagreed with the technical standards laid down by Prism

**Why?**

**2.2a3 ?**  
Prism saw PTSS as an operation that did not need skilled developers with an in depth understanding of what was required at PTSS

**Why?**

**2.3b2 ?**  
Prism Holdings had cash flow issues and there was a headcount freeze

**Why?**

**2.3b1 ?**  
Did not understand the work load was of permanent nature. Saw the workload as a temporary peak

**Response: Slow**  
(Even after understood work load demands)

**Why?**

**2.3b1 ?**  
Difficulty finding the right skills in the market place.

**Response: Slow**  
(Even after understood work load demands)

**Why?**

**2.3b1 ?**  
PTSS staff found change difficult

**Why?**

**2.3b1 ?**  
**Mental Model:**  
Prism owned us and they would tell us what to do

**Why?**

**2.3b1 ?**  
Did not understand why there was so much work

**Why?**

**2.3b1 ?**  
The combination of C; Java; Unix and Linux difficult to find in the market place

**2.3b1 ?**  
Difficulty finding the right resource

**Effect**

<b>2.1 Outcome</b>
Inexperienced resources in batch support
<b>2.1 Outcome</b>
Poor customer service

**Effect**

<b>2.1 Outcome</b>
Lack of resources in batch support

**Why?**

<b>2.3b1</b>	?
No planning processes in place as a business	

**Why?**

<b>2.3b1</b>	?
Had not developed the systems and tools to deal with the volume of events in the organization	

**Effect**

<b>2.1 Outcome</b>
Lack of resources in batch support

**2.1 Outcome**

Poor customer service
-----------------------

**Why?**

<b>2.3b1</b>	?
Combination of Java; C; Unix & SQL with the right personality type required for the job are hard to find	



2.0a Event  
Customer complaint

Response:  
Slow

2.1 Outcome  
Poor customer service

2.2 ?  
Lack of focus:  
High volume of operational incidents to deal with

Why?  
2.2 ?  
Time consuming incidents because of Capacity problems

Why?  
2.2 ?  
Time consuming incidents because of Availability problems

Why?  
2.2 ?  
Time consuming incidents because of Configuration issues

Why?  
2.2 ?  
Time consuming incidents because of Changes made

Why?  
2.2 ?  
There was a lack of capacity management in the operation

Why?  
2.2 ?  
No performance benchmarking done on servers

Why?  
2.2 ?  
Application development not done to a quality standard

Why?  
2.2 ?  
Co-ordination of configurations on different systems is problematic.

Why?  
2.2 ?  
Wrong version implemented in production

Why?  
2.2 ?  
Lack of quality testing in PTSS

Why?  
2.2 ?  
Lack of quality processes on development

Why?  
2.2 ?  
The configuration processes set-up between account management and customers are not robust

Why?  
2.2 ?  
Incomplete understanding of the impacts

Why?  
2.2 ?  
Lack of Leadership

Why?  
2.2 ?  
Change control process not followed

Why?  
2.2 ?  
We could use a central configuration tool to improve co-ordination

Why?  
2.2 ?  
Change and release management disciplines not installed by Leadership

2.0a Event  
Customer complaint

Response: Slow

2.1 Outcome  
Poor customer service

2.2 ?  
Lack of focus:  
High volume of  
Customer  
complaints to deal

Why?

2.3a1 ?  
Few resources  
with the  
knowledge to do  
batch support

Why?

2.3a1 ?  
We were not  
utilizing some  
batch support  
resources

Why?

Why?

Why?

Why?

2.3a1 ?  
They were / are  
difficult to  
manage so we  
did not manage  
them to make a  
difference

2.3a1 ?  
They are not  
reliable and the  
batch  
resources are  
so busy they  
are so scared to  
handover  
control because  
the resource  
will make a  
mistake and  
they will then  
have to handle  
the  
consequences

2.3a1 ?  
People were getting  
service out of the  
existing resources.  
They trusted that  
resource to do it  
properly and kept  
going to that  
resource

2.3a1 ?  
Knowledge  
transfer was  
slow to  
existing  
resources

Why?

2.3a1 ?  
Managers too  
busy firefighting  
volume of  
incidents

2.3a1 ?  
Managers have  
given up on the  
resource.

Why?

Why?

Why?

2.3a1 ?  
The resource got  
overloaded and  
stopped giving  
good service. The  
staff then want  
the new resourc  
to help but he can  
only do the  
simpler tasks as  
he needs time to  
learn. He  
therefore cannot  
help immediately

Why?

2.3a1 ?  
Few  
individuals  
did not enjoy  
sharing

Why?

2.3a1 ?  
???  
Job Security  
Or enjoyed  
the attention

Why?

2.3a1 ?  
Existing  
resources  
did not have  
time.

Why?

2.3a1 ?  
Volume of  
incidents

2.3a1 ?  
Manager  
doesn't think  
the resource  
has what it  
takes and they  
unsure on how  
to proceed from  
there (Limited  
understanding  
or will to do  
performance  
management)

2.3a1 ?  
They have the  
theory skills but  
they somehow  
do not have the  
context, framed  
experience,  
intuition (PTSS  
systems  
intuition)

<b>2.0a Event</b>
Customer complaint

**Response:**  
Slow

<b>2.1 Outcome</b>
Poor customer service

Why?

2.2 ?
Poor understanding of the service

Why?

2.2 ?
The account manager believed it was someone else's job to understand how the system worked. He was simply a carrier of the message.

**2.2 Response**

Addressed the Mental Model

Why?

<b>2.2 Outcome</b>
Account Manager has a better understanding of his role

Why?

<b>2.2 Outcome</b>
Improved customer service and better teamwork

Why?

2.2 ?
Application not robustly designed

Why?

2.2 ?
The right minds were not applied to the design

Why?

2.2 ?
Poor knowledge transfer

2.2 ?
No specifications i.e. business requirements

Why?

2.2 ?
No time on project to do the project properly

2.2 ?
Lack of planning by project manager

Why?

2.2 ?
There was no development methodology in PTSS

Why?

2.2 ?
Developers did not understand or care about the consequences of no documentation

Why?

2.2 ?
Account Managers commit to unrealistic deadlines

2.2 ?
Customers insist on unrealistic deadlines

2.2 ?
Lack of skilled resources to do documentation

Why?

2.2 ?
Lack of systems thinking

Why?

2.2 ?
They do not understand the time required on the project. They do not understand the organizational commitment on resources with the large amount of projects in PTSS

Why?

2.2 ?
If PTSS cannot make the deadline then they will go to our opposition

Why?

2.2 ?
We could not afford to employ resources as we were concerned about making our revenue budget

Why?

2.2 ?
Lack of leadership in the company

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## APPENDIX E: THE FUTURE AS IMAGINED BY CUSTOMERS AND STAFF

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The vision of EasyPay is to become the “**impeccable industry leader**”.

This vision or “imagined future” was the result of a project where the corporate customers of EasyPay as well as the end users of our service were interviewed. The project included individually interviewing over 30 members of staff. The research was facilitated by the independent marketing and public relations companies of “C-Design” and “Citigate”.

In summary the research indicated that in order for EasyPay to become the impeccable industry leader the people making up the company would need to have a personality with the following attributes:

1. Respected leader
2. Dependable and trustworthy
3. Dynamic and vibrant
4. Collaborator
5. Focused and deeply competent
6. Professional
7. Intelligent and Knowledgeable
8. Modern and in touch
9. Easy to relate to and engaging at all levels of society
10. South African

For EasyPay to be all these things the research also indicated that the people in the company would need to have the following internal values and culture:

1. Accountable
2. Pride in delivery
3. Highly responsive
4. Shared purpose and common language
5. Collaborative

6. Solution orientated
7. Realise potential through focused integrated effort
8. Respect and appreciation
9. Inclusive
10. Open minded
11. Socially relevant

(Source: Provided by Citigate marketing consultants with input from EasyPay.  
EasyPay envisaged future)

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**APPENDIX F: EXAMPLE TYPICAL INCIDENT "OPEN" LOG PER CUSTOMER  
AND PER RESOURCE**

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**Retailer B open incidents**

<b>Open Incidents (12)</b>			
Customer	Service	Reference	Header
1	Retailer B	Gift Voucher (1440) Wetton / Assign Incident (1440)	ODBC Error Code = 37000 onlineResponse.cfm
2	Retailer B	Gift Voucher (1440)	Retailer B Cresta - Pinpad not working on 2nd MM PC
3	Retailer B	Gift Voucher (1440)	WhenTrying to block GV get site unavailable
4	Retailer B Retailer B	Bill Payment (1440)	The Empty Files report is incorrect for Food World EasyPay files for 20051205 (shoprite) not received
5	Retailer B	Bill Payment (1440) EFT	
6	Retailer B	Online (1440)	Amounts are swopped EasyPay files for 20051213 (shoprite) not received
7	Retailer B	Bill Payment (1440)	EasyPay files for 20051214 (shoprite) not received
8	Retailer B	Bill Payment (1440)	EasyPay files for 20051218 (shoprite) not received
9	Retailer B	Prepaid electricity (1440)	Dubble FBE transactions in December
10	Retailer B	Wetton / Assign Incident (1440)	Retailer B Klerksdorp - OK
11	Retailer B	Gift Voucher (1440)	Furnishers Klerksdorp
12		Gift Voucher (1440)	Please create GV admin user Floris Webb

## Retailer A open incidents

Customer	Service	Reference	Header	
<b>Retailer A Corporate</b>				
1	Retailer A	Prepaid airtime (1440)	<a href="#">INPPC038810</a> 9th of November 2005 4:44:12pm	Deep Blue not handling field 127.026
<b>Retailer A Franchise</b>				
2	Retailer A	Bill Payment (PnP) (1440)	<a href="#">INPPF039565</a> 22nd of December 2005 9:54:18am	PnP Silverwater Crossing Family
<b>Retailer A</b>				
3	Retailer A	Bill Payment (PnP) (1440)	<a href="#">INPPG038263</a> 5th of October 2005 9:25:45am	EasyPay Totals Inquiry by Batch Date Customer meter
4	Retailer A	Prepaid electricity (1440)	<a href="#">INPPG038404</a> 12th of October 2005 10:30:42am	number not working anymore Receiving
5	Retailer A	EFT Credit Online (1440)	<a href="#">INPPG038552</a> 22nd of October 2005 3:32:43pm	91's response codes for pnp Error message been recorded on
6	Retailer A	Prepaid airtime (1440)	<a href="#">INPPG039219</a> 1st of December 2005 2:23:21pm	Esocket Acquirer
7	Retailer A	Prepaid airtime (1440)	<a href="#">INPPG039507</a> 19th of December 2005 8:46:45am	Retailer A Reports Debit card commissions been questioned
8	Retailer A	EFT Debit Online (1440)	<a href="#">INPPG039514</a> 19th of December 2005 11:20:41am	

## Resource schedule of Support Resource B

Support Resource B	Task Management	Customers
Log Date	Ref / Service	
	2011/08/05 <a href="#">WR005690</a>	Petro X
1	11:03:18am <b>Other</b>	Multiple Clients
	2014/09/05 <a href="#">WR006090</a>	
2	4:15:50pm <b>File Transfer (Hotcard &amp; Binfile)</b>	Petro X
	2019/05/05 <a href="#">WR004884</a>	
3	4:53:31pm <b>Multiple Services</b>	Retailer B
	2011/03/05 <a href="#">WR004176</a>	
4	12:58:04pm <b>Multiple Services</b>	Retailer B
	2004/10/05 <a href="#">WR006375</a>	
6	11:24:42am <b>Other</b>	NuPay
	2017/10/05 <a href="#">WR006588</a>	
7	4:23:42pm <b>File Transfer (Hotcard &amp; Binfile)</b>	Petro Y
	2017/10/05 <a href="#">WR006590</a>	
8	4:26:31pm <b>File Transfer (Data)</b>	Petro W
	1931/10/05 <a href="#">WR006835</a>	
9	3:30:16pm <b>Terminal</b>	Retailer B
	2014/11/05 <a href="#">INPAY038865</a>	
10	3:47:30pm <b>Postilion Office</b>	EasyPay
	2005/10/05 <a href="#">WR006400</a>	
11	4:51:39pm <b>Other</b>	Petro X
	2001/12/05 <a href="#">WR007397</a>	
12	5:42:40pm <b>Reports</b>	Petro X
	2002/08/05 <a href="#">WR005572</a>	
13	10:41:16am <b>Reconciliation(POS-TSS-BANK)</b>	Petro W
	2001/12/05 <a href="#">INPPG039219</a>	
14	2:23:21pm <b>Prepaid airtime</b>	Retailer A
	2020/12/05 <a href="#">WR007615</a>	Petro X
15	12:12:11pm <b>Postilion Office</b>	EasyPay
	2021/12/05 <a href="#">WR007644</a>	
16	4:55:52pm <b>Configurations</b>	Retailer A



2021/12/05 WR007642

17 4:38:43pm **Configurations** Retailer A

2022/12/05 WR007650

18 1:57:43pm **Configurations** EasyPay  
(Source: EasyPay incident system)

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## APPENDIX G: PICTORIAL GUIDE OF STEPS TOWARDS DERIVING THE AFFINITY DIAGRAM

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### 1. Displaying ideas



### 2. Sorting the ideas into related groups



### 3. Creation of subject headers



### 4. Drawing up the Affinity diagram



(Source: researcher)

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**APPENDIX H: LIST OF PEOPLE INTERVIEWED PER CASE**

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**1. Prepaid Airtime Administration case**

<b>Company</b>	<b>Job description</b>
EasyPay	Operations Manager
EasyPay	Network Manager
EasyPay	CDS 1 Prepaid Development engineer A
Prism	CDS 1 Prepaid Development engineer replacement 1
Prism	Chief Technical Officer
EasyPay	CDS 1 Prepaid Development engineer replacement 2
EasyPay	CDS 2 Prepaid Development engineer A
EasyPay	CDS 2 Prepaid Development engineer B
EasyPay	Prepaid product manager 1
EasyPay	Prepaid product manager replacement 1
EasyPay	Technical support engineer A
EasyPay	Technical support engineer B
EasyPay	Technical support engineer replacement 2
EasyPay	Technical support engineer replacement 2
EasyPay	Technical support engineer replacement 3
EasyPay	Project department manager
EasyPay	Prepaid Project manager
EasyPay	Sales manager
EasyPay	Pick n Pay account manager 1
EasyPay	Pick n Pay account manager 2
EasyPay	Edcon account manager 1
EasyPay	Edcon account manager 2
EasyPay	Retailer Baccount manager
EasyPay	Customer Care manager
EasyPay	Settlement and reconciliation clerk A
EasyPay	Settlement and reconciliation clerk B
EasyPay	Service development manager
EasyPay	Senior systems architect
Vodacom	Order fulfillment manager
Vodacom	Prepaid business manager
Vodacom	Technical support manager
MTN	Order Processing clerk 1
MTN	Order Processing clerk 2
MTN	Order Processing clerk 3
MTN	Prepaid business manager
MTN	Technical support manager
Cell - C	Administration clerk 1
Cell - C	Administration clerk 2
Cell - C	Prepaid business manager
Cell - C	Customer support manager
The Prepaid company	Managing Director
The Prepaid company	Operations Manager
The Prepaid company	Prepaid order processing clerk
The Prepaid company	Technical support
KwikPay	Managing Director

Retailer A	Buyer: all networks
Retailer A	Administration Manager
Retailer A	Prepaid administrator
Retailer A	POS support manager: franchise stores
Retailer A	POS support manager: corporate stores
Retailer C	Buyer Vodacom
Retailer C	Buyer MTN
Retailer C	Buyer Cell C & Telkom
Retailer B	Buyer: all networks

## 2. Petroleum Company X Administration case

	<b>Company</b>	<b>Job description</b>
	EasyPay	Operations Manager
	EasyPay	Network Manager
	EasyPay	Development engineer A on Caltex project
	EasyPay	Development engineer B on Caltex project
	EasyPay	Electronic Funds Transfer product manager
	EasyPay	Technical support engineer A
	EasyPay	Technical support engineer B
	EasyPay	Technical support engineer C
	EasyPay	Project department manager
	EasyPay	Petroleum Company X Project manager
	EasyPay	Sales manager
	EasyPay	Account manager
	EasyPay	Customer Care manager
	EasyPay	Settlement and reconciliation clerk A
	EasyPay	Settlement and reconciliation clerk B
	EasyPay	Settlement and reconciliation clerk C
	EasyPay	Postilion (EFT switch) technical support A
	EasyPay	Postilion (EFT switch) technical support B
	EasyPay	Service development manager
	EasyPay	Senior systems architect
	Prism	Terminal gateway software developer A
	Prism	Terminal management system developer A
	Prism	New business development manager
	Prism	Development manager
	Prism	Sales Manager
	Prism	Petroleum account manager
	Prism	Program manager
	Prism	Petroleum Company X project manager
	Prism	Software analyst
	Prism	Communications manager
	Prism	Terminal support engineer A
	Prism	Terminal support engineer B
	Prism	Chief Technical Officer
	Prism	New Business Development director
	Prism	Verification and Validation department manager
	Petroleum Company X	Star card business manager
	Petroleum	Technical support engineer

	Company X	
	Petroleum Company X	Caltex merchant support manager
	ABSA	Merchant support personnel (call centre)
	ABSA	Merchant services manager
	ABSA	Retail settlement manager

### 3. The Petroleum Company Y Remote Encoding of Tags (RET) service case

<b>Company</b>	<b>Job description</b>
EasyPay	Operations Manager
EasyPay	Operational Support Manager
EasyPay	Network Manager
EasyPay	Petroleum Company Y Technical support engineer A
EasyPay	Systems Analyst
EasyPay	Sales manager
EasyPay	Petroleum Company Y Account manager
Petroleum Company Y	RET file project manager
Petroleum Company Y	Petroleum Company Y POS manager
Petroleum Company Y	Marketing technology manager

(Source: researcher)

The end

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