An Online System to Guide eTransforming SMEs

by Ana Hol

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There are many individuals and businesses that have contributed to this undertaking.

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Statement of Authentication

The work presented in this thesis is, to the best of my knowledge and belief, original except as acknowledged in the text. I hereby declare that I have not submitted this material, either in full or in part, for a degree at this or any other institution.

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(Signature)
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<th>Description</th>
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<tbody>
<tr>
<td><strong>AeIMS</strong></td>
<td>Advanced Enterprise Information Management Systems</td>
</tr>
<tr>
<td><strong>ARC</strong></td>
<td>Australian Research Council</td>
</tr>
<tr>
<td><strong>CBEADS</strong></td>
<td>Component Based eApplication Development System</td>
</tr>
<tr>
<td><strong>CBD</strong></td>
<td>Central Business District</td>
</tr>
<tr>
<td><strong>CEO</strong></td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td><strong>CRM</strong></td>
<td>Customer Relationship Management</td>
</tr>
<tr>
<td><strong>DSS</strong></td>
<td>Decision Support System</td>
</tr>
<tr>
<td><strong>ERP</strong></td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td><strong>ESS</strong></td>
<td>Executive Support System</td>
</tr>
<tr>
<td><strong>eT</strong></td>
<td>eTransformation</td>
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<tr>
<td><strong>eT Guide</strong></td>
<td>eTransformation Guide</td>
</tr>
<tr>
<td><strong>FAQ</strong></td>
<td>Frequently Asked Questions</td>
</tr>
<tr>
<td><strong>FTP</strong></td>
<td>File Transfer Protocol</td>
</tr>
<tr>
<td><strong>GWS</strong></td>
<td>Greater Western Sydney</td>
</tr>
<tr>
<td><strong>HR</strong></td>
<td>Human Resources</td>
</tr>
<tr>
<td><strong>ICT</strong></td>
<td>Information Communication Technology</td>
</tr>
<tr>
<td><strong>IOTP</strong></td>
<td>Internet Open Trading Protocol</td>
</tr>
<tr>
<td><strong>IS</strong></td>
<td>Information System</td>
</tr>
<tr>
<td><strong>ISP</strong></td>
<td>Internet Service Provider</td>
</tr>
<tr>
<td><strong>IT</strong></td>
<td>Information Technology</td>
</tr>
<tr>
<td><strong>KMS</strong></td>
<td>Knowledge Management System</td>
</tr>
<tr>
<td><strong>LAN</strong></td>
<td>Local Area Network</td>
</tr>
<tr>
<td><strong>LGA</strong></td>
<td>Local Government Area</td>
</tr>
<tr>
<td><strong>PVEDB</strong></td>
<td>Penrith Valley Economic Development Board</td>
</tr>
<tr>
<td><strong>SET</strong></td>
<td>Secure Electronic Transaction</td>
</tr>
<tr>
<td><strong>SSL</strong></td>
<td>Secure Sockets Layer</td>
</tr>
<tr>
<td><strong>SME</strong></td>
<td>Small to Medium Enterprises</td>
</tr>
<tr>
<td><strong>TLS</strong></td>
<td>Transport Layer Security</td>
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<tr>
<td><strong>TPS</strong></td>
<td>Transaction Processing System</td>
</tr>
<tr>
<td><strong>UWS</strong></td>
<td>University of Western Sydney</td>
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<tr>
<td><strong>VPN</strong></td>
<td>Virtual Private Network</td>
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<tr>
<td><strong>WAN</strong></td>
<td>Wide Area Network</td>
</tr>
<tr>
<td><strong>WPA</strong></td>
<td>Wi-Fi Protected Access</td>
</tr>
<tr>
<td><strong>WSI TAFE</strong></td>
<td>Western Sydney Institute of Technical and Further Education</td>
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Publications from this Thesis


Other Publications

Abstract

Throughout the centuries, business lives have been changing and modifying. Each era in history brought new needs, demands and requirements. During the Agricultural era land and tools played important roles, while during the Industrial era machines and factories played a dominant role in shaping the organisational and social structures.

Today, we find ourselves in the Information era where Information and Communication Technology (ICT) has a crucial role and has become an integral business component. Survival of businesses nowadays depends strongly on how well they can use ICT to enhance their business processes. Successful electronic transformation is determined by how well companies can identify and implement the eTransformation requirements and with it adjust to the demands of the Information era.

Previous research indicates that Small to Medium Enterprises (SMEs) in particular are struggling to find the optimal way in which to track, guide and measure their eTransformation journey.

In order to identify this, the following research question was proposed:

“How can SMEs guide, track and measure the progress made along the eTransformation journey?

The Researcher identified that to conduct this investigation the Cynefin framework would be the most suitable methodology. The framework provides techniques and methods to move the problem from one domain to the other until the solution is found. Furthermore, the methodology is based on the concept that each problem and the difficulty of solving it, can be classified into one of the Cynefin domains namely: Chaos, the extreme of the unknown, Complex, Knowable and Known, the solution.

When conducting the literature review and studying the eTransformation of the SMEs today the Researcher identified that the problem that requires the identification of “How SMEs can guide, track and measure the progress made along the eTransformation journey” is in the Cynefin domain of Chaos as at that time there is no known solutions to the problem.

To find out the best way to move the problem from unknown closer to the solution, in this case from Chaos to Complex, the Researcher studied currently known data. The study helped identify issues and challenges of eTransformation and reasons why companies throughout the history wanted to undertake transformation and change. Moreover, the study helped the Researcher understand the situation SMEs were facing and has allowed the Researcher to identify new pattern formations.

This brought the problem into the Complex domain where now patterns were emerging and desirable ones required stabilisation. Therefore, to understand the patterns better the Researcher studied models of Organisational Change and eTransformation. The studies identified that the eTransformation Road Map assesses eTransformation along the Dimension of IT Tools and Systems the most
comprehensively. Furthermore, the study revealed that eTransformation is a staged process and that it is influenced not only by the ICT factors, but also by other non-ICT factors, therefore that it is multidimensional. To identify other dimensions the Researcher, through case studies, pinpointed Key Features of eTransformation as well as that Tasks and Processes are one of the other dimensions playing a role in eTransformation. While studying eTransformation models the Researcher also reviewed models used to measure the effectiveness of ICT within the organisations (Valuations Model) where it was identified that eTransformation cannot be measured in monetary values. Therefore, to identify possible measurement criteria, the Researcher continued to study Characteristics of eTransformation through case study narratives, which helped pattern stabilisation. Conducted narrative analysis identified that to pinpoint dimensions, which influence eTransformation, dimensions of the 7 S Model would need to be studied. The investigation was conducted through interviews. Data analysis of the interviews allowed the Researcher to identify four Dimensions crucial for eTransformation. Firstly, eTransforming SMEs are required to identify their **Strategy** – business goals and values, following by **Structure** – business departments and functions, then business **Tasks and Processes** – essential activities for business operations so that an SME can achieve their set goals and objectives, and finally **IT Tools and Systems** – business technology essential to complete set activities quickly and smoothly. Following the above finding the Researcher studied eTransforming SMEs with the aim of identifying characteristics of companies for each of the eTransformation dimensions across eTransformation stages.

Following the identification of eTransformation Dimensions and their Characteristics, questions, abilities and recommendations for the model, eT Guide, that can be used to track, guide and measure eTransformation were tested and applied to 30 SMEs. The study resulted in the production of eT Reports which SMEs could now use to track, measure and guide their eTransformation journey. This led to the identification of the eT Guide requirements which brought this research closer to the solution and moved the problem from the Complex domain into Knowable where an expert, here the Researcher, had the solution to the problem.

Next step for the Researcher was to move the problem from the Knowable domain into Known and design and develop an online eT Guide System that SMEs could use themselves.

As a result of this research, the problem has been moved from the Chaos domain into a solution of the Known domain which is accessible to the SMEs. The solution, eT Guide, can now be used by all eTransforming SMEs themselves. By answering a series of yes / no questions, SMEs can identify their current eTransformation stage, their abilities - what they can do with the resources they currently have and their recommendations - what they could do in order to improve in the form of an eT Report. Furthermore, the system allows organisations to regularly track and measure their progress through features of eT History and eT Position. In the years to come, it is expected that the eT Guide will help assist eTransforming businesses and provide them with the essentials that would help them sustain pressures of the Information era.
Chapter 1 - Introduction

These days, businesses worldwide are faced with increasing competition in the quest to meet the new demands and challenges of global markets. To meet the demands, businesses are implementing Information and Communication Technologies (ICT) with the aim to become globally competitive. The use of ICT has changed the way businesses in today’s information society operate, and has significantly decreased the cost of transactions (Laudon & Laudon, 2007). It has also influenced how tasks within organisations are performed, which has given rise to business re-engineering, and the emergence of new more efficient business processes (Baltzan & Phillips, 2008; Hammer & Champy, 2001).

As a result, a new dynamic business environment that strengthens the importance of knowledge, innovation, immediacy and globalisation has formed (Tapscott, 1996). The properties and characteristics of the new environment are characterised by continuous change. This requires organisations to develop skills so that they can sense the needs of the environment and respond to them without a delay. This is mainly needed so that businesses can stay in the global market and pursue competitive advantage (Tapscott, 1996). To be able to do this, businesses need to do
a lot more than just select appropriate technologies (Lawson, Alcock, Burgess, & Cooper, 2003). They need to understand the way in which ICT can make changes to their business as a whole entity and help them improve business operations. However, to be able to do this, SMEs (Small to Medium Enterprises) need to know and identify what technologies they should be investing in as well as what benefits will result by using the technology to its maximum performance. The ability to do this strongly depends on the SMEs’ knowledge of ICT use, its effects on the organisation and ICT implementation. Previous research indicates that SMEs are struggling to identify where and how they could get ICT help (Austool Limited, 2004). Furthermore, SMEs report that even in cases when they can get help, they are unable to get it on a continuous basis due to limitation of funds. However, even when help is provided in terms of ICT use, application and implementation that help is not holistic and does not take into consideration that implementation and use of ICT require changes in business processes, company operations, organisational structure and other related areas. To achieve these and be able to monitor the effects of ICT use, selection and implementation there is a need to identify a model that could be used to guide this journey. Currently there are various models of organisational change and eTransformation (Burn & Alexander, 2005; Earl, 1989, 2000; Galliers, Merali, & Spearling, 1994; Ginige, Murugesan, & Kazanis, 2001; Mawson, 2002; McKay, Prananto, & Marshall, 2000; Nolan, 1979; People and Process, 2005; Rayport & Jaworski, 2002; Waterman Jr, 1982; Waterman, Peters, & Phillips, 1980; Wons, 1999) (for detailed description of models please see Chapter 4). The models highlight that there are factors influencing eTransformation, however none of the models specifies how eTransformation can be measured. Furthermore, a number of models indicate that organisational change and eTransformation is staged (Burn &
Alexander, 2005; Earl, 1989, 2000; Ginige, Murugesan, & Kazanis, 2001; McKay et al., 2000; Nolan, 1979; People and Process, 2005; Rayport & Jaworski, 2002) however none of the models is suitable to use in order to help an organisation track and monitor ICT use, application and implementation holistically in order to succeed in the global marketplace.

Within this research, the change ICT can bring to organisations and enable them to succeed in the globally competitive market is termed as eTransformation. The eTransformation journey refers to the process the company needs to undertake to successfully eTransform.

eTransformation is composed of two words “e” standing for electronic, which implies that technologies used have components such as microchips and transistors that control and direct electric currents, as well as such transition may be carried out by a computer or other electronic device (Oxford Dictionary, 2008). “Transformation” refers to a marked change in nature, form, or appearance (Oxford Dictionary, 2008). For businesses, transformation may imply innovation and change to business processes through use of ICT and the Internet (Seong, Suh, Kim, & Park, 2003). In the eTransformation literature it is also viewed as a phenomenon that requires application of modern technologies to traditional business and communication processes with the aim of improving business efficiency and effectiveness (Davison, Vogel, & Harris, 2005). In addition, eTransformation represents a change that allows for the value chain to become dynamic due to the use and application of ICT (Ginige, 2004).
Therefore, eTransformation means change in the nature of doing business, which implies that change not only requires selection and application of technologies but also modifications of business tasks, processes and operations.

The phenomenon outlined above can be seen to have an effect on all businesses. However, the way in which organisations deal with such an effect seems to differ depending upon business size. Throughout this study, the Researcher investigates the way in which ICT affects SMEs. In this research a small business is seen as a business that has less than 20 employees, and a medium business, is a business that has more than 20 but less than 200 employees (Australian Bureau of Statistics, 2002). Focus is given to SMEs that have up to 100 employees.

In particular, within this investigation the Researcher concentrates on studying how SMEs can sustain and survive in a globally competitive world. To be able to achieve this, the Researcher investigates the nature of SMEs eTransformation. In addition, the Researcher explores how to simplify and make the eTransformation journey more accessible to SMEs by trying to identify the way in which SMEs can guide, track and measure their eTransformation journey using their own initiative.

1.1 Motivation for This Study

This research’s focus is on the investigation of how SMEs can measure, track and guide the eTransformation journey with the aim of becoming more competitive and succeeding in a dynamic and constantly changing world.
SMEs have already realised a need to invest in ICT. Investment in ICT however is not straightforward as simply investing in ICT is not sufficient for a successful eTransformation. To eTransform, SMEs require knowledge and understanding of ICT. They need to know the potential of ICT, as well as what the optimum organisational structure would be for them to be able to use and implement ICT for ICT investment to help them achieve business benefits.

When reviewing the literature on SMEs and examining their abilities to identify appropriate ICT it was found that SMEs do not always have the necessary skills and knowledge to make such decisions (Piet & Petra, 2004). This observation is supported by the dot.com era crash when a number of organisations attempted change but did not realise that they were missing resources to support the full journey (German, 2007). This is also apparent in SMEs who have invested in ICT but have not been able to use it to the full potential.

In addition, even when SMEs realise that they need external help they rarely choose to seek professional help from ICT consultants primarily because of high costs that eTransformation incurs, including lack of skills and knowledge (Piet & Petra, 2004). This results in an inability to receive support on a continuous basis.

In their daily life, SMEs are often businesses run by their owners who are also often the primary decision makers (Australian Bureau of Statistics, 2002). Owners of SMEs are busy with day-to-day business operations and very few have ICT backgrounds. Therefore, it is extremely unlikely that they themselves would be able to make adequate eTransformation decisions.
When reviewing the needs and requirements of SMEs however, it can be seen that many companies have realised that they do need to change and implement ICT. Some of these organisations have attempted to make changes themselves, some have commenced the journey, while others have failed, a fate endured by many dot.com era entrepreneurs (German, 2007). Many eTransforming SMEs today have however reached the stage where they are seeking professional help with the aim to undertake a successful eTransformation (Ginige, Murugesan, Khandelwal et al., 2001; Khandelwal et al., 2003).

Currently, there is no mechanism that can help SMEs undertake the eTransformation journey, and on that journey, get help to track, guide and measure their progress. Models of Transformation and Organisational change however do exist, although none of these is sufficient and cannot directly be applied to the eTransforming SME so that the eTransforming SME can successfully track, measure and guide their eTransformation journey. This research develops an eTransformation model that will allow SMEs to do these themselves.

Therefore, to allow SMEs to be in charge of their eTransformation journey it is essential to develop a user friendly system based on the identified eTransformation model that SMEs can access online. Furthermore, by doing this, businesses would be able to access needed knowledge and obtain required guidance for eTransformation. Furthermore, the development of an online system would benefit SMEs as they would then be able to use the system to monitor their progress continuously and make constructive eTransformation decisions.
1.2 Research Questions and Objectives

To be able to address the need of SMEs to guide, track and measure their eTransformation journey, it was necessary to split the research question into sub issues as research milestones.

The main research question of this research is:

*How can SMEs guide, track and measure the progress throughout the eTransformation journey?*

The three sub questions are listed and explained below.

- **What are the characteristics of eTransformation?**
  To be able to identify eTransformation characteristics it is necessary to identify what eTransformation represents for SMEs. After this, it is required to outline characteristics of eTransforming companies and find markers that identify that the company has commenced the eTransformation journey. By identifying the eTransformation characteristics, some of the common developmental properties of the eTransformation journey that will later aid in the development of the eTransformation tracking, guiding and measuring mechanisms can be determined.

- **How can eTransformation progress be tracked, guided and measured?**
  After the characteristics of the organisations are ascertained, it is then necessary to start identifying the mechanism by which progress along the eTransformation journey can be measured. Furthermore, it was also necessary to pinpoint the
characteristics and properties, which can be used as markers of progress. In addition, to answer this question, the Researcher reviews some of the valuation models to see whether they could be used when guiding an eTransforming organisation. Such investigations are primary guides into the development of a model to track, guide and measure eTransformation progress.

- **What are the requirements for the design and implement of an online eTransformation Guiding System (eT Guide)?**

After the eTransformation model that can be used to track, guide and measure eTransformation is designed and tested the next question is how this model can be made available to SMEs as an online system so that SMEs can use it themselves to monitor, track and measure their eTransformation.

Original Contributions to knowledge from this research include:

- **The Identification of Characteristics and Key Features of eTransformation**
- **eT Guide Model to track, guide and measure eTransformation progress**
- **Online eT Guide**

The significance of these contributions is partly confirmed by a number of referred publications published by international conferences (please, see page ix in the front section of this thesis).
1.3 Research Background

This research is a part of a larger research project conducted by the Advanced Enterprise Information Management Group (AeIMS) of the University of Western Sydney (UWS).

Research work conducted by AeIMS research group can be broadly classified into three study areas namely: eBusiness Application, Emerging Technologies and eTransformation. The research discussed here is a part of the eTransformation research area. The eTransformation study of the AeIMS research group is trying to assist SMEs to transform their processes using technology and thereby to become competitive. To be able to do this, a part of the process requires organisations to eTransform.

Therefore, to assist SMEs to eTransform the Researcher decided to investigate the question “How can SMEs guide, track and measure the progress throughout the eTransformation journey?”

To conduct this investigation and answer the above questions the Researcher was an active member of the projects listed in Table 1.1 below. Data collected through the projects was analysed by the Researcher.

<table>
<thead>
<tr>
<th>Project / Study</th>
<th>Type of Study Conducted by the Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT Surveys</td>
<td>- Data comparison between data collected in 2000 and 2003 was conducted</td>
</tr>
<tr>
<td>“ICT in Western Sydney – status and potential - 2000 - 2003”</td>
<td>- The Researcher mapped collected company data onto the eTransformation Road Map. This later</td>
</tr>
<tr>
<td><strong>4 SMEs – Toolmakers</strong>&lt;br&gt;“Study of how toolmaking SMEs can eTransform and collaborate”</td>
<td>- To study how traditional brick and mortar companies can eTransform and collaborate four toolmaking SMEs were studied by the Researcher using a case study approach.</td>
</tr>
<tr>
<td><strong>10 ICT Companies – Parramatta Cluster</strong>&lt;br&gt;“Study of how ICT SMEs can eTransform and collaborate”</td>
<td>- Through this project the Researcher studied ICT cluster SMEs to identify ways in which SMEs with prior ICT knowledge are undertaking the eTransformation journey.</td>
</tr>
<tr>
<td><strong>eTransformation Seminars for eTransforming SMEs</strong> – held at Bankstown City Council, Technology Network Meetings, Penrith Valley and Austool</td>
<td>- By conducting eTransformation awareness seminars, workshops and discussions the Researcher studied the process of eTransformation. - Data collected through above listed sessions was analysed using Narratives. - Main outcomes identified that eTransformation is staged and multidimensional.</td>
</tr>
<tr>
<td><strong>Interviews with 17 eTransforming SMEs</strong></td>
<td>- To assess the effectiveness and the extent to which 7 S Model dimensions play a role in eTransformation and identify if there are any other dimensions influencing the eTransformation the Researcher randomly selected SMEs from various industry sectors for the interviews. Interviews help identify dimensions and characteristics of eTransformation which later on allowed for the eTransformation Guide that can be used to guide, track and measure eTransformation to be developed.</td>
</tr>
<tr>
<td><strong>Study of 30 SMEs – Penrith Valley</strong></td>
<td>- After eT Guide model was developed the Researcher randomly selected SMEs from various industry sectors to test usability and applicability of eT Guide using interviews.</td>
</tr>
</tbody>
</table>

Table 1.1 Research Projects in this Study

To conduct this research and identify how SMEs could track, measure and guide their eTransformation journey the Researcher reviewed available research.

Action Research usually is composed of a number of cycles. Within each cycle the Researcher solves a particular problem or answers a part of the research question. Outputs from the action research cycles are often used later as inputs into another research cycle until the research question is answered. This research methodology is iterative and its undertaking requires actions of Diagnosing – what the problem is; Action Planning – identifying what the most suitable actions and research methods to tackle the identified problem will be; Action Taking – undertaking the study, action or observation; Evaluating – evaluating outcomes of the study and finally Specific Learning – indentifying if other cycles are required or if the solution has been reached and problem solved (Avison et al., 1999).

The other research methodology that was reviewed is Socio – Technical Methodology. This research methodology consists of three main stages. The first stage incorporates a Strategic Design Process. During this time a researcher usually reviews users / participants in the study, goals and potential achievements as well as policies and regulations that may be guiding the research or new explorations. Next, a researcher reviews the Socio Technical System Design Process during which requirements for the process change are outlined. Finally, the methodology requires Ongoing Management Process in terms of study, observation and monitoring (Bostrom & Heinen, 1977).
To evaluate possible research methodologies, the Researcher also reviewed Design Research Methodology. The methodology implies that in order for the problem to be solved or a particular output developed it is necessary to have an iterative approach. First, it is necessary to establish Problem Awareness, which should be done together with a review of current knowledge and principles. Output of this review is a research proposal. Next, the Researcher reviews possible suggestions and outcomes. These steps are carried out in parallel with the review of current knowledge and principles. Following this, development of a proposed solution is carried out. The developed solution needs to be tested and its outputs measured. While measuring outputs, a researcher also reviews current knowledge to help identify appropriateness of the proposed solution. Finally, after the final output has been tested and designed, the research solutions and outputs can be delivered (Hevner et al., 2004).

To conduct this research and carry out the research projects, the Cynefin framework (Kurtz & Snowden, 2003) was selected as the research methodology. The main reason is that the framework identifies that for a problem to be solved and the solution for it identified the problem and the difficulty of finding the appropriate solution is determined in accordance with the domains in which the problem has been identified to be in. Furthermore, the methodology provides tools that can be used to tackle problems at various domains. The framework also takes into the account that the problem, in this case the research question, can be at various stages in terms of solution finding. The Cynefin framework consists of five domains namely: Chaos – where solution is unknown, Complex – where patterns towards solutions are forming, Knowable – where experts know the solution, Known –where the problem has now been solved and Disorder – which consists of all interacting and influencing
factors that may either destruct or help the solution identification process. Through this investigation, the Researcher focuses on the Domains of Chaos, Complex, Knowable and Known and deals with Disorder through the other four main domains. The main reason for this is that Disorder has an influence on each of the other four domains and therefore is not reviewed in isolation but as a component of the other domains. The main principles of the framework identify that if a solution to the problem is known and well understood then that problem is in the Known domain. If however, an individual, group, company or a researcher does not possess a particular knowledge, but does know that there are experts that can solve the problem then the problem is in the Knowable domain. If however, an individual, group, organisation or the researcher do not know whom to contact for help but know that there are potential solutions to the problem, the problem is in the Complex domain. If there are no currently known solutions to the problem the problem is in the Chaos domain.

Therefore, the framework sees that Chaos and Complex are domains of un-order. In Chaos there is no relationship between cause and effect and dealing with problems and questions in this domain usually requires quick response to stabilise unrest to find the solution. At the Complex domain cause and effect are coherent only in retrospect. In this domain, study of Complex Systems principles is required.

Therefore, when dealing with issues in this domain it is often necessary to make a probe and wait for possible patterns and system relationships to emerge. The other two domains Knowable and Known are domains of order. In the Knowable domain cause and effect are separate and therefore not always easy to understand. In this domain it is often essential to use scenario planning and system thinking, therefore to deal with issues in this domain, it is essential to be able to sense and analyse changes
and outcomes. The Known domain is a stable domain where cause and effect are known and perceivable. This domain is often referred to as a best practice domain as it relates to set rules, regulations and day to day practices (Kurtz & Snowden, 2003) (for more details about the framework please see Chapter 2). When conducting this investigation the Researcher used the Cynefin framework principles. Therefore, to assess problems and answer the research question at each of the Cynefin domains the Researcher conducted particular activities and projects. The way in which the research questions are answered and the thesis structured is listed in Table 1.2 below. The way in which the listed points are explained through thesis chapters is further elaborated in the Thesis Structure section later in this Chapter.

<table>
<thead>
<tr>
<th>Cynefin</th>
<th>Parts of Research Question Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chaos</td>
<td>This is the stage of unknown. To be able to find and explore ways to identify a potential solution to the proposed research question the Researcher studied business transformation through history.</td>
</tr>
<tr>
<td>Complex</td>
<td>Study of business transformation through the history helped emerging patterns to start forming. The formations lead into the identification of eTransformation Characteristics.</td>
</tr>
<tr>
<td>Knowable</td>
<td>Studies through Complex domain including case study data reviews and interviews allowed for the stabilisation of the desired patterns to be stabilised. This led to the identification of the eT Guide requirements and model development. At this stage an expert was able to apply the eT Guide finding to SMEs and produce the eTransformation report.</td>
</tr>
<tr>
<td>Known</td>
<td>Based on the eT Guide requirements and experts knowledge the Online eT Guide was developed where companies themselves are now able to track, guide and monitor their eTransformation journey.</td>
</tr>
</tbody>
</table>

Table 1.2 Research Questions through Cynefin Domains

The importance and significance of this study are explained in the next section.

A review of the models identified that the Cynefin framework was the model most suitable for this research. Action Research was considered not to be suitable as all
actions were not easily visible and apparent at the early stages of the research. Furthermore, some investigations needed to be carried out in parallel for possible solutions to be identified. The Socio – Technical Methodology was seen to have the required elements essential for the study of the organisations and IT, such as review of users, processes and technology, however it was not detailed enough to provide the base for the study. Design Research Methodology was seen to concentrate predominately on a design of the final solution. Its proposition that it is essential to review knowledge and its flow as well as monitor implementation of the solution was seen to be an important component, however the methodology did not give directions for finding solutions when there are no obvious solutions guidelines.

The Cynefin framework was seen as the most suitable solution as it specifies the depth and complexity of the problem in terms of the dimensions and allows the Researcher to pinpoint the appropriate study method at each of the Cynefin domains (detailed description of the model is given in Chapter 2).

1.4 Significance of This Study

The outcomes of this study are a significant breakthrough for SMEs that are trying to identify the optimal way in which to guide, track and monitor their eTransformation journey. Moreover, this study’s main outcome, the eT Guide, is an online system developed for SMEs who do not have significant amounts of funds or knowledge to invest in their business transformation and also those whose customers have started going overseas and whose shares of the market within the local communities are decreasing. With the use of the eT Guide SMEs can learn to observe changes within
the environment, learn to assess and analyse their current skills and resources. Once skills and resources are identified SMEs are then able to learn and discover how to use those skills and resources to their full potential. Furthermore, the eT Guide system allows SMEs to identify future options and recommendations based upon their current developmental stage. In addition, the eT Guide allows companies to continuously monitor their eTransformation progress and, based on these findings, track their journey. Moreover, the system allows companies to understand that eTransformation requires a holistic approach within the organisation across various business dimensions.

The eT Guide is equally beneficial to researchers who can now easily monitor, track and guide individual organisations and also conduct comprehensive quantitative studies to determine the optimal way in which to undertake the eTransformation journey.

The next section outlines the thesis structure and gives a brief introduction to what is discussed in each chapter.

1.5 Thesis Structure

Chapter 1 Introduction

Chapter One highlights the importance of this study. In particular in this chapter the Researcher outlines the research questions, stressing their significance and identifying the research methodology. Furthermore, the Researcher identifies potential benefits and significance of this study by highlighting how this study’s
findings will help eTransforming SMEs to track, measure and guide their progress using the eT Guide.

**Chapter 2  Research Methodology: Cynefin Framework**

Chapter Two outlines and explains how the *Cynefin* framework is used to conduct this research. Furthermore, the Researcher explains that the *Cynefin* framework consists of a number of Dimensions and that in particular for this study, the Researcher will be concentrating on the tools and methods used to study the Dimensions of *Chaos, Complex, Knowable* and *Known*. Through the assessment of each of the above mentioned dimensions the Researcher explains each dimension’s significance and elaborates upon the tools used to collect and analyse data at each of the four identified dimensions.

**Chapter 3  Business Transformation from Industrial to Information Society: Navigating the Chaos Domain**

Chapter Three tackles the research problem and the issue of unknowns regarding how eTransformation can be guided, tracked and measured. In the *Chaos* domain where a solution to the problem is unknown, the Researcher explores current Knowns of business transformation and studies the way in which companies of different eras of civilisations modified and changed their business processes to meet the needs and requirements of particular times in history. Through these studies conducted within this domain the Researcher identifies the most common reasons for transformation today as well as points out some of the most common issues and challenges that face eTransforming organisations. Furthermore, within this chapter after presenting the results of the above mentioned studies, the Researcher sees first
pattern formations. Furthermore, the pattern formations and data of the historical and case study analysis helps the Researcher identify the optimal way in which to move the problem from Chaos to Complex where now pattern formations can be monitored and desired ones stabilised.

Chapter 4  Review of the Existing Models of Organisational Change and eTransformation: Traversing the Complex Domain

Chapter Four studies patterns and their stabilisation through the Complex domain. Within this chapter, the Researcher is aiming to move the study problem from Complex closer to Knowable. To achieve this, the Researcher continues studying Knowables and reviews existing models of Organisational Change and Transformation. Through a conducted study the Researcher identifies the importance and comprehensiveness of the eTransformation Road Map as a model that can be used to study a staged developmental progress along ICT dimension (later named IT Tools and Systems Dimension). To demonstrate, the Researcher applied the Road Map to some of the previously conducted studies looking into eTransformation. This highlighted that in order to get a comprehensive view of eTransformation it will be necessary to study and identify eTransformation Characteristics.

Chapter 5  Characteristics of eTransformation: Resolving Complexities

Chapter Five continues the study in the domain of Complex with the focus on pattern stabilisation. In this chapter, the Researcher uses case study data to further study complexities and through the application of Narratives understand how eTransforming SMEs see and perceive eBusiness, eTransformation and major hurdles to a successful eTransformation. To try to identify the way in which
eTransformation progress can be measured the Researcher studied Valuation models, models used to measure business success, outputs and profits in monetary values (Laudon & Laudon, 2007). Studies of Valuation models helped identify that eTransformation cannot be measured in monetary values but for it to be measured it will be essential to identify eTransformation Characteristics that support eTransformation progress and can be used as the measurement criteria. To be able to identify eTransformation Characteristics the Researcher first needed to identify Key Features of eTransformation. The study was conducted by assessing potential reasons and benefits of eTransformation and factors that are influencing eTransformation progress. While conducting the study the Researcher identified that one of the characteristics that will need to be taken into the consideration apart from the ICT dimension is a dimension of Tasks and Processes. Once this was identified previously studied models of eTransformation and Organisational Change were applied to the two distinctive types of organisations, that is the Task and Process Based organisations. This investigation helped identify the comprehensiveness of the 7 S Model (Waterman et al., 1980) and a need to study dimensions of the models in more detail so that dimensions crucial for eTransformation can be identified.

Chapter 6  A Search for eTransformation Dimensions: Approaching Knowable

Chapter Six discusses the journey the Researcher took to move enter the Knowable domain, where the solution is now known to the experts. To be able to achieve this, the Researcher studied the 7 S Model dimensions to identify dimensions that are essential for eTransformation. To do this, the Researcher categorised data collected through interviews. Data analysis helped identify dimensions essential for a
successful eTransformation namely: *Strategy, Structure, Tasks and Processes* and *IT Tools and Systems*. Once the dimensions were identified each of them was studied. The categorisation and the assessment of the gathered data and its association with the 7 S Model further helped identify eTransformation Categories for each of the dimensions across stages. After this was accomplished data was further analysed which allowed the Researcher to identify what a company can do at each eTransformation stage of each identified dimensions. This also helped identify characteristics of companies at particular stages in terms of what they are currently able to achieve with the resources they have and identify the most appropriate future direction. Outcomes of this investigation helped the Researcher enter *Knowable*. Within this domain the Researcher designed, tested and applied the model to 30 eTransforming SMEs. This allowed for the eTransformation Stages along each of the eTransforming dimensions to be identified for each of the studied SMEs. Furthermore, this also helped identify what SMEs are able to do with their current resources and also identify their optimal future eTransformation directions. As a result of this study each of the participating SMEs received personalised eTransformation Reports.

**Chapter 7  Online System to Guide eTransforming Organisations – eT Guide:**

**In The Calm Waters of Known**

Chapter Seven explains how the Researcher moved the studied problem from *Knowable into the Known* domain, the place where individuals or businesses now have a solution to the problem they were previously faced with; and the solution has now become a part of their regular procedures. In this domain the Researcher develops an eTGuide which is a web based system that eTransforming SMEs can
now use themselves to determine their eTransformation stage, identify what they can do with the resources they currently have and determine optimal future direction. System development itself was complex and required a lot of probing and testing. The main reason for this was that the system needed to be flexible, adaptable and easily changeable as eTransformation dimensions, as well as their properties are expected to change with new research and developments. Once the eT Guide was developed companies previously engaged in the study were given access to it. Organisations are now able to go through series of questions themselves and find answers, which can be used to guide their eTransformation journey. The system and its content are now in the Known domain where SMEs can easily get the access to it and track, guide and monitor their eTransformation journey. The SMEs using the system can now enter their data into the system using the web based interface and through it be able to generate: eT Position to help them measure and guide their eTransformation journey; eT History to help them track their progress and; eT Report to allow them to make effective eTransformation decisions.

Chapter 8 Conclusion and Future Work

Chapter Eight gives concluding remarks to the study and highlights the way in which the Cynefin Framework was used to conduct the research and as a result develop an eT Guide that SMEs can use to monitor, track and guide their eTransformation journey. The eT Guide system provides assistance to eTransforming companies and on the way helps them identify a dimension in which investment should happen next so that balance across dimensions is achieved and the company can smoothly move to the next eTransformation stage. Within this chapter, the Researcher also highlights
some of the possible future research developments and future uses and applications of the eT Guide.

The remainder of the thesis comprises a list of References and Appendices describing the various instruments and tools used to design and conduct the study.

The next Chapter explains the Research Methodology that has been selected to answer the proposed research question.
Chapter 2 - Research Methodology: Cynefin Framework

This research helps SMEs identify their current eTransformation abilities, track and measure their eTransformation achievements and make optimal eTransformation decisions so that they can undertake a successful eTransformation journey. This research attempts to answer the following research question:

*How can SMEs guide, track and measure the progress throughout the eTransformation journey?*

The methodology for the research was derived based on the below identified research requirements, which are to:

- Identify characteristics of eTransformation
- Identify how eTransformation progress can be tracked, guided and measured
- Design and implement an online eTransformation Guiding System (eT Guide)

The requirements outlined above helped determine that for the research to be conducted it will be necessary to study the eTransformation process; the way in
which SMEs are implementing ICT, identifying business requirements and selecting the most optimum business strategy so that they can gain competitive advantage. Furthermore, in order for the factors important for the eTransformation to be identified and eT Guide developed the research would need to take a comprehensive multidisciplinary approach. The main reason for this is that eTransformation is not only influenced by technology but also other factors such as business environment, position in the market place, business goals and visions as well as business processes, structures and operations. In the following section, the Researcher explains how subjects for the study were selected and justifies the applied methodology.

2.1 Research Methodology

To answer the proposed research question and identify how eTransformation can be guided, tracked and measured it was necessary to conduct a comprehensive study of the eTransformation process and its requirements. Furthermore, it was expected that the study would help identify how eTransforming SMEs can be guided through the journey.

2.2 Subjects

This research was conducted with owners / general managers of SMEs from metropolitan New South Wales, Australia. SMEs for the study were selected based on their expressed eTransformation needs and requirements. SMEs’ needs and requirements were gathered through eTransformation seminars that the AeIMS research group conduct for NSW businesses.
SMEs that were taken as study subjects were either those who have already started the eTransformation journey and identified that they need help to continue it successfully or those that have not yet started the journey but have expressed a wish to learn more about the eTransformation process.

To conduct the studies with the SMEs, Ethics Clearance was sought and granted by the Ethics Committee of UWS (Appendix 1). In accordance with the Ethics Committee guidelines, the Researcher explained the research project in detail to all participants, stressing that at any stage they could leave the study without any consequences or penalties and that all data collected about the SMEs will be safely stored and kept anonymous (Appendix 2 and 3). After that, their consent to participate in the project was obtained.

2.2.1 Methodology

For this investigation a research methodology based on the Cynefin framework was used. *Cynefin*, pronounced ku-nev-in, is a Welsh word that signifies that multiple factors in our environment and our experience influence us and that in some instances we cannot understand the nature and the extent of such influence (Snowden & Boone, 2007). This phenomenon seems to be very applicable to the eTransformation journey of SMEs who are influenced by a number of factors at various stages of eTransformation but who cannot always identify the extent of the influencing factors or even determine which factors are responsible for certain eTransformation decisions.
For the Researcher the *Cynefin* framework is viewed as a sense-making framework used to make sense of unspecified problems in a dynamic and constantly changing world (Kurtz & Snowden, 2003). The framework supports the notion that within each system, in this case an organisation, there are many interactions and possibilities and therefore many possible resulting outcomes. The framework also supports the notion that in order to study a system there is a need to carry out analysis of the interacting components in total as their interplay may determine the future of the whole system (Snowden, 2005). This identification helped point out that, as a process eTransformation needs to be studied holistically as changes made within one of the factors that influence eTransformation may influence other factors and therefore the future of SMEs’ eTransformation.

Within this study, the Researcher approaches the unknown problem of the *Chaos* domains for which there is no currently known solution. The journey towards a solution requires application of various *Cynefin* methods. To move closer towards a solution, the Researcher studies Knowns and is searching for pattern formations. Once identified, the Researcher has moved the problem to *Complex* where it is now required to stimulate formed patterns and their stabilisation with the aim to approach the *Knowable* domain. Within *Knowable* problems solutions can be identified and the Researcher with the expert knowledge can now solve the problem. To allow the solution to be widely applied and used it may need to be tailored and explained to the users. Once organisations or individuals know how to use or apply a particular solution the problem has then reached the *Known* domain.
The domains of the Cynefin framework (Figure 2.1), namely: Chaos and Complex the two un-ordered domains; Knowable and Known the two ordered domains; and the central domain of Disorder are applied to this research, is explained in the section below.

![Cynefin Domains](image.png)

Figure 2.1 Cynefin Domains – adopted from (Kurtz & Snowden, 2003)

2.3 Cynefin Domain: Chaos

*Chaos* is the most un-ordered domain. To make sense or find possible solutions within this domain the Researcher is required to: *Act – Sense – Respond* (Snowden & Mark, 2006). The Researcher’s actions in this domain are often expected to make large changes (Snowden & Kurtz, 2002) which in turn often may lead to extensive structural and operational changes within the studied environment. Therefore, initially at this domain the Researcher may need to act to stabilise any emergent
situations. Any further actions and possible solutions need to be assessed (Sensed) before a substantial change is to take place. If there is a case of disaster, decisions at this domain need to be made swiftly however if there is no disaster then in that case the Researcher may explore current knowns to identify areas where Sensing may need to occur. Such strategies are applied in other situations too. For example, when natural disasters occur such as floods or earthquakes as soon as disaster has settled rescue troops are sent to save lives. Rebuilding and future planning are done later usually by different teams once disaster has settled.

In this domain Cause and Effects are not perceived (Snowden & Mark, 2006). The relationships amongst the influencing factors are often not known. Therefore, applying intervention to manage crisis and tackle unknowns is usually the most appropriate response.

To deal with Chaos two types of interventions can be applied. One is the intervention carried by someone with authority, Authoritarian Intervention, which is appropriate when dealing with Symmetric threat (Snowden & Mark, 2006), where parameters are known and intentions can be determined. This intervention is usually applied where there are known rules and procedures that are to be followed.

The other type of intervention is known as Multiple Interventions appropriate when dealing with Asymmetric Threat (Snowden & Mark, 2006). An Asymmetric Threat is often associated with the “surprise” and the use of tools in the way in which they were not used before (Blank, 2003). Interventions applied when dealing with an Asymmetric Threat often require Scenario Planning so that the problem can be
moved to the Complex domain where patterns can emerge and future interventions can be carried.

To stabilise turbulent situations researchers often tackle Chaos through analysis of past data – Known and Knowable as well particular situations and cases – such as case study analysis, workshops, discussions and historical analysis to gather information required to move to Complex.

Dealing with Chaos is equal to dealing with something not encountered before, and therefore often requires relying on past experiences and situations to identify what will work in the new situation (Snowden & Boone, 2007). Sensing, an important component when dealing with Chaos, allows the Researcher to carefully understand and analyse problem issues and identify the most adequate way in which to deal with them so that the appropriate Respond can be selected and the problem moved into Complex domain (Snowden & Mark, 2006).

2.4 Methods Used to Tackle Chaos

2.4.1 Explorative Case Study

To act and explore the domain of Chaos the Researcher may decide to use Explorative Cases Studies. By using case studies, the Researcher can use observations, data collections and fieldwork to get a better understanding of the studied phenomenon.
In particular, after dealing with the unknown problem, the Researcher may decide to *Sense* the situation by conducting explorative case study analysis where data collection and formulation of the future research directions may be initiated. This corresponds to the notion that research direction and even questions may be formulated after the initial research activity has been carried out (Yin, 2003b). Furthermore, this type of analysis may help identify locations of where possible pattern formations may develop and may bring the exploration into the domain of *Complex*, and therefore closer to the problem solution.

Data collected through case studies can also be enriched through use of supplementary types of data collection techniques. For example, while conducting the case study data collection the Researcher may decide to survey or ask subjects studied to analyse particular scenarios or situations. Moreover, the Researcher may also like to collect study data by assessing various company documents, conducting direct observations or interviewing.

Case studies by their nature are often unique and therefore data collected using them cannot be generalised. However, data gathered through them can be used to aid further research findings and encourage future developments (Coombes, 2001). When using case studies to collect research data it is essential to carefully assess and analyse what case study is to be analysed as its selection will predetermine what will be learned after the study has been completed (Stake, 1995).

When conducting this investigation, the Researcher identified that the problem was not in the state of disaster and that *Action* to stabilise disturbance was not required.
The Researcher also identified that she was dealing with the problem of *Chaos* domain and that Sensing of current *Knowns* will be required. Therefore, to solve the problem the Researcher reviewed the *Knowns* by studying two very distinctive cases. One case was comprised of Four Toolmaking SMEs and the other of Ten ICT SMEs. The reason why the two case studies were selected was primarily that it was found that Toolmakers lacked ICT exposure and it was expected that SMEs specialising in ICT would be more likely to take up technology and undertake the eTransformation journey. The subjects studied through case studies were in close contact with the Researcher. In particular, the Researcher at specific instances carried out observations, discussed various eTransformation issues with the subjects, conducted seminars and was closely involved in the developments, issues and challenges companies faced while striving to eTransform.

### 2.4.2 Historical Analogies

To be able to tackle unknown domains (*Chaos* and *Complex*) of the *Cynefin* framework, the Researcher within *Chaos* tends to turn to what is already known while *Sensing* the situation so that they can identify the appropriateness of the initial *Action* and smoothly reach stability (Kurtz & Snowden, 2003). One of the methods that can be used to review the past and see how it compares to the current situation can be done using Historical Analogies which allow the Researcher to use an image of the past to understand the present (Pehar, 2001). The use of analogies can help explain the subject matter in more detail and allow the researcher to concentrate and explore the differences and similarities of the past and present. Furthermore, very often it is possible to find that crisis solutions may be deeply embedded in past
events which often allow for new visions, guides and inspirations to be formed (Pehar, 2001). In addition, Historical Analogies aid in understanding of past actions, which help identify future directions in the world in which there are many competing forces and possibilities.

Within this study, the Researcher carried out analysis of past data to determine and to identify possible future courses of action. In particular, the Researcher concentrated on finding the most suitable solutions for combating an Asymmetric Threat. This was done through Historical Analysis of organisations and their existence at different times in history.

2.5 Cynefin Domain: Complex

There are two main ways through which the Domain of Complex can be entered. The Complex domain, the domain of un-order, may be encountered in the events where the problem has been found to exist and has shifted stability into un-order. The domain can be entered consciously while travelling from Chaos towards Knowable or entered from Knowable usually with the aim to innovate or find better solutions (Kurtz & Snowden, 2003). In this domain action principles are Probe – Sense – Respond (Snowden & Mark, 2006). Therefore, to make a decision within this domain the Researcher is often required to make a Probe then stimulate pattern formation and understanding. After the understanding has been reached, a decision of how to Respond can be made.
Furthermore, it is important to note that within this domain, Cause and Effect are only coherent in retrospect and they rarely repeat (Snowden & Kurtz, 2002). This notion implies that every situation is different and therefore there are no prescribed solutions; however, once a problem has been dealt with and the appropriate solution found the reason for a selection of a particular solution is understood.

The domain of Complex is closely related to Complex Systems in which there are many interacting agents. Interactions of various agents stimulate creations of self-organising patterns, therefore within this domain patterns can be perceived but not predicted (Snowden & Mark, 2006). While within the domain of Complexity the Researcher can at times decide to Probe by initiating pattern formations and then Sense - wait and observe formations to try and gain new perspectives to stimulate stabilisation of desired patterns and destabilisation of those that are undesired in the form of a Respond (Snowden & Kurtz, 2002).

To conduct the investigation, the Researcher studied Known and Knowable, past repositories of data including past survey data, past models, current case studies and workshop data as well as discussions that formed Narratives in a form of Probe to investigate future possibilities and allow patterns to emerge through Self-Organisations (Snowden & Mark, 2006).

The analysis that supports Self-Organisation is often conducted to help understand the environment in which the problem or the study issue has been noted and to try and stimulate the environment (Sense) to make it more likely for the desirable patterns to emerge and stay (Respond) (Kurtz & Snowden, 2003)
2.6 Methods Used to Tackle Complex

2.6.1 StudyingKnownsandKnowables

To be able to study Complex it is often essential to do a review of the currently Known data and also review data that is known to the experts (Knowable) within the studied field in the given time and place. This for example may include reviews of the existing models, frameworks, theories and structures. Furthermore, to be able to generate further knowledge in some instances it may be necessary to carry out some data assessment of that prior knowledge. This may include data categorisations, grouping or comparisons in order to form Probe. In addition, to be able to best deal with the Complexities it is very important to be able to clearly understand the space in which the study is conducted or the instance in which the particular issue of interest is most likely to appear (Sense). In addition, ability to do this makes it more likely for the desirable patterns to emerge and to be stimulated to stay (Respond) (Kurtz & Snowden, 2003).

In this study, the Researcher reviewed Knownsand Knowables through assessments of current eTransformation and Organisational Change models, studies of the Valuation models, and comparisons between Task and Process Based Organisations.

2.6.2 Narratives

Narratives are often used to study Complexity. They allow for discussions about past, present and future to be carried out based on technical and historical data collections (Browning & Boudes, 2005). Narratives are also mechanisms that allow for stories
to unfold for patterns and meanings to emerge (Kvale, 1996). Moreover, they encourage human interaction and with it unfolding and understanding of stories (Crewe & Maruna, 2006).

To achieve this, discussions and narrations can be carried out using a combination of workshops and exercises that allows the narrative databases to develop from which further possibilities can be generated through networked interactions (Probe). For example, the interactions may consist of workshop and discussions in which participants are asked to use collective sense-making. In some instances however participants may be asked to interpret their own actions and response as evidence (Sense) with the aim to encourage generation of new concepts (Respond) (Kurtz & Snowden, 2003). When conducting Narrative analysis participants may either be given scenarios and asked to give their own interpretations or asked to bring their own material (business situations) and give interpretations of those. The latter was done in this research.

Furthermore, for the Researcher Narratives can help understand past situations, and identify possible solutions for the future (Kurtz & Snowden, 2003).

In this research within the Complex domain Narratives helped assess and analyse some of the data gathered through Case Studies and the interactions between the Researcher and the study subjects.
2.7 Cynefin Domain: Knowable

*Knowable* is the first ordered domain. It is a domain that is entered when expert knowledge and opinions are required to identify the most suitable solution. This domain is often entered after patterns within the *Complex* domain have been stabilised or when there is just a need for the expert in the field to help identify the most adequate innovative solution. Actions within *Knowable* are *Sense-Analyse-Respond* (Snowden & Mark, 2006).

Decisions in this domain are made by *Sensing* the incoming data, *Analysing* it and *Responding* to it in accordance with expert advice. Cause and Effect at this domain are separated over time and are therefore difficult to understand (Kurtz & Snowden, 2003). Expert opinions, analysis and understandings of the subject matter are required so that the appropriate solution can be identified.

To identify an appropriate solution in the *Knowable* domain it is essential to take into consideration that patterns in this domain may be at their most dangerous as their effect cannot always be taken as fact and therefore assumptions should not be made because to identify solutions, it is essential to involve experts. Experts’ role within this domain are to assess and analyse data, use it to conduct further studies and experimentations until they are certain that new facts and solutions have been found and that they can now be applied.
2.8 Methods Used to Tackle Knowable

2.8.1 Semi Structured Interviews

While exiting Complex and moving towards Knowable, the researchers often feel that at this stage, they are required to be open to expert opinions but also new discoveries and new possibilities. Therefore, to discover new facts within this domain semi-structured interviews are often carried out. The interviews are conducted with the use and application of carefully designed open questions, which aim to allow for discussion about certain issues of interest to commence (Sense). To be able to achieve this successfully the Researcher is required to have studied the field in question. Semi-structured interviews can also lead to the collation of narratives and data specific to particular cases and instances (Wengraf, 2001).

Furthermore, while conducting a semi-structured interview, researchers are able to change the sequence of the questions and to follow answers if they identify issues worth discussing in more detail (Kvale, 1996). Successful semi-structured interviews are often composed of introductory questions, follow up questions, probing questions, specifying questions, direct indirect questions, and structuring questions which help collect detailed answers and identify links to the hypothesis or research questions (Kvale, 1996).

Data collected this way requires careful analysis and assessment (Analysis). Therefore, it is beneficial for the interviews to be recorded so that transcripts can be
done. Key concepts can then be identified and analysed data categorised into logical order (*Respond*) (Gillham, 2000).

In this study, 17 Semi Structured interviews were conducted. This was done to allow for two-way communication and better understanding of the studied phenomenon to emerge. Collected data was transcribed and analysed using the Systems Thinking Approach (Waldman, 2007) which helped data assessment, understanding and categorisation.

### 2.8.2 Structured Interviews

Once within a Knowable domain researchers can often incorporate experts’ knowledge to extract particular data from the respondents. While conducting structured interviews the researcher asks specific questions that can only be answered with a clearly defined range of answers (Kayrooz & Trevitt, 2005). This means that the Researcher asking questions is clear as to what is required and knows what is to be studied (Gillham, 2000). To achieve this it is often suggested that the questions be tested for comprehension and usability by experts, as well as if possible within the field of study (Groves et al., 2004) which helps to assure data reliability and instruments validity.

Through structured interviews researchers often aim to collect large amounts of data (Bullen & Rockart, 1981). Furthermore, due to the predetermined nature of the answers, data collected via structured interviews can easily be studied through
comparative analytical and statistical procedures (Coombes, 2001). It is advisable that data collected via interviews is recorded and transcribed for easier analysis.

Within this study, Structured Interviews were conducted to test eT Guide applicability. The study was done with 30 SMEs. The eT Guide questions were structured. The questions asked were to be answered by selecting a possible answer (yes or no). Before conducting interviews the questions were pre tested and reviewed by a number of field experts. The structured interviews conducted allowed for the analysis of the collected data to be carried out.

2.9 Cynefin Domain: Known

Known is a domain of full order and stability. Actions that are used at this domain are Sense -Categorise–Respond (Snowden & Mark, 2006). Decisions at this domain require Sensing of the incoming data, Categorisation of that data in accordance with the needs and requirements resulting in the identification of the Respond which is derived in accordance with the best practice (Kurtz & Snowden, 2003). Therefore, at this domain Cause and Effect are repeatable, easily perceivable, predictable and consistent (Snowden & Mark, 2006).

Knowledge in this domain is captured and embedded into daily procedures. Often it resides within manuals and guides and people at this domain respond in accordance to the pre set rules and procedures (Snowden & Kurtz, 2002).
Analysis conducted at this stage is often structured and quantitative. It is important however to note that this data should be used with the aim of reorganising and reevaluating best practice periodically as over reliance on best practice may become a problem if the environment changes (Snowden & Boone, 2007).

2.10 Methods Used to Tackle Known

2.10.1 Monitor and Review

At the Known domain rules have been written and they are often stored in terms of organisational regulations and policies. To identify what is required in this domain it is necessary to understand issues of concern (Sense) and then channel them (Categorise) towards a productive solution (Respond). However, if this is done continuously then over reliance on what is known may develop (Snowden & Boone, 2007). To ensure this does not happen researchers at this stage are encouraged to carry out continuous reviewing and monitoring. Such processes are often put in place to allow for the new changes and requirements to be identified. Once this has been done changes can be carried out and new possibilities may emerge. This inevitably may bring the Researcher into the domain of Complex with the aim of innovation.

Within Known domain this research develops the eT Guide which is to act as an Expert System for transforming SMEs and help them navigate the eTransformation journey. For the Researcher the eT Guide represents a tool that allows for data collection (Sensing) about eTransformation and, based on the entered data,
periodically guide, measure and monitor eTransformation (Categorise), and based on Categorisations produce a Respond in terms of eTransformation Report and Position.

2.11 Cynefin Domain: Disorder

*Disorder*, is known as the central domain in the *Cynefin* framework that helps to understand conflicts among decision makers.

Once within a research setting this domain becomes a component of various other domains (Kurtz & Snowden, 2003). For example, in *Known* those who are comfortable with the current state are doing everything possible to ensure the situation stays in equilibrium. In research settings, this may be seen in the form of resistance. Within the *Knowable* domain experts may carry out studies that may indicate that changes may be required or outline new possibilities and principles. In *Complex*, where there are many interacting factors politicians for example may seek ways of how to make changes that will benefit a particular group. In *Chaos* it is usually dictators and people with power that may try to use and exploit the situation to their advantage.

In a research setting a reduction of disorder and a consensual act of collaboration among decision makers is a step towards a productive resolution (Kurtz & Snowden, 2003). Therefore, while identifying the optimal research methodology the Researcher decided to tackle the *Cynefin* domain of Disorder at each of the four distinctive framework’s domains rather that as a domain in isolation.
2.12 Study Outline

This study is a journey from the Chaos to the Known domain. The journey undertaken by the Researcher is presented in Figure 2.2 below.

Figure 2.2 Relationship between Cynefin Domains and Thesis Chapters

Figure 2.3 below identifies data collection methods used at each of the Cynefin domains.
Based on the above outline of research strategies within each of the Cynefin domains, this study’s research requirement to identify characteristics influencing eTransformation is dealt with within the Chaos and Complex domains. The second requirement to identify how eTransformation progress can be tracked and measured is tackled within Complex and Knowable through stabilised patterns. The final research requirement to design and implement the eT Guide is studied through Knowable, the domain where experts know the solution and Known domains where users of the solution are familiar with it and can now successfully apply it.

In the preceding chapters of the thesis the Researcher follows the study through the four domains of the Cynefin framework namely: Chaos, Complex, Knowable and Known. The next chapter reviews business transformation through history and
assesses the ways in which organisations deal with un-known and chaotic requirements of transformation posed by new technological advancement.
Chapter 3 - Business Transformation from Industrial to Information Society: Navigating the Chaos Domain

This chapter explains the turbulent and barely predictable side of eTransformation today through the Cynefin analysis of two studies. One study was conducted with four manufacturing SMEs specialising in Toolmaking and the other with ten SMEs specialising in ICT from the IT Cluster. All companies were based in the metropolitan regions of New South Wales. The studies were approved by the UWS Ethical Committee (See Appendix 1).

Based on the analysis of the collected data via the two studies this chapter elaborates how the research problem travelled from the Chaos domain of the Cynefin framework to the domain of Complex and how the Cynefin framework was employed to conduct the study. The journey from one domain to the other is further explained by the analogy linking the issues and challenges of eTransforming SMEs today with historical events that have created turbulence and have therefore helped moved the research problem from one domain to the other by creating new patterns, breaking old structures and opening doors to the problem’s solution.
According to Kurtz & Snowden (2003) the Chaos domain, the domain of Un-order, is the domain that requires the following tactics: Act – Sense – Respond (Kurtz & Snowden, 2003). Only by applying these tactics is it possible to move away from Chaos and enter other domains that would allow positive changes to happen. The Researcher employs this strategy to deal with un-kowns of eTransformation.

3.1 Studies with SMEs: 4 Toolmaking and 10 ICT companies

The Researcher’s Action focused on identifying where possible patterns may emerge. First, the Researcher undertook studies with the two distinctive groups of SMEs. One study was carried out with Toolmakers and the other with ICT providers. The main reason for this was that the two industries were initially perceived in two very distinctive ways in terms of ICT knowledge and ICT acceptance.

In summary, Toolmaking is part of the Manufacturing sector in Australia and consists of over 600 organisations. Most of these organisations are SMEs with less than 50 employees (Australian Bureau of Statistics, 2008). Research indicates that eTransformation seems to be essential in the toolmaking industry so that businesses survive and remain competitive (Austool Limited, 2004). The participating SMEs had less than 10 employees.

On the other hand, the ICT Industry in Australia consists of over 23,000 companies, with 80% employing less than five staff. Most of these organisations are in computer consultancy services (Australian Bureau of Statistics, 2008). eTransformation is viewed as necessary to overcome threats from overseas companies and to increase
market share (Department of State and Regional Development, 2006). The participating SMEs had less than 20 employees.

The first study with four Toolmakers, was initiated at one of the eTransformation awareness seminars that the AeIMS research group conducted at the premises of the industry body to which the four companies belonged. The awareness sessions were conducted so that manufacturers with a relatively small number of employees can understand what eTransformation is and what type of benefits IT tools and technologies can bring to their companies. The awareness sessions also explained that in order for the companies to fully eTransform they would need to make some fundamental changes to the way they did business.

After one of the sessions the AeIMS research group was approached by the four Toolmaking SMEs. The CEOs of the SMEs identified that it was crucial for them to undertake eTransformation as if they do not, their toolmaking jobs may leave the country forever and go to countries such as China and Korea where work is performed more cheaply and quickly. They knew that technology had the power to help them but they did not know how. Therefore, they asked the research group for assistance.

The second study with the IT Cluster companies, was initiated by the Cluster Body to which the studied organisations belonged. The Cluster Body had realised that many small companies cannot take large jobs and that their jobs too were being placed outside of the country’s borders, for example in India. Therefore, the AeIMS research group was invited to one of the Cluster’s general meetings to discuss the
situation with the SMEs and to identify what could be done and how best technology could be implemented to help businesses stay in the globally competitive market.

Both studies were assessed through the Explorative Case Study methodology. The main reason for selecting case study methodology was to have the capacity to understand the phenomena happening where the researcher has little or no control over the emerging patterns and where the causality of the events is unknown (Yin, 2003a). The Researcher, while conducting the study, was observing changes that were happening and was noting places where possible patterns could start forming. The Researcher in this study did not have a control over what was happening within the studied industry sectors nor global markets, however was able to analyse and understand the situation in which the studied companies found themselves. In addition, according to Ghauri (2004) the exploratory case study method can allow study participants and researchers to ask questions and seek clarifications to gain understanding of the perceived situation (Ghauri, 2004). This technique was employed by the Researcher at times when it was needed to gather better understanding and help identify forming patterns. Furthermore, this ensured the Researcher was in a continuous contact with the SMEs, which help her understand studied problem better.

Initial assessments and analyses of the two studies were carried out through seminars, discussions and attendance of the regular monthly meetings with the Industry Association and the Cluster Body respectively. This was another form of Cynefin Action undertaken by the Researcher. The main reason for this was to allow the Researcher to gain understanding of the situations in which businesses were in and to
find the best possible ways to pinpoint future directions. From discussions and seminars it was possible to identify that both Toolmakers and IT companies faced a number of issues and challenges when it came to eTransformation. Findings are summarised in Table 3.1 below:

<table>
<thead>
<tr>
<th>Reasons to eTransform</th>
<th>Issues &amp; Challenges: Toolmakers &amp; IT Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve current business model</td>
<td>- Resistant to change from what is known and familiar</td>
</tr>
<tr>
<td>Overcome competition</td>
<td>- Not quick to respond and deliver as competition</td>
</tr>
<tr>
<td>Improve document management</td>
<td>- No uniform system present</td>
</tr>
<tr>
<td>Streamline processes</td>
<td>- Current workflow is insufficient and is limiting operations</td>
</tr>
<tr>
<td>Decrease production cost</td>
<td>- Operations expensive compared to those overseas</td>
</tr>
<tr>
<td>Bring business home</td>
<td>- Business going overseas and declining at home</td>
</tr>
<tr>
<td>Undertake larger jobs</td>
<td>- Lack of time, resources, monitoring systems, standards and trust</td>
</tr>
</tbody>
</table>

Table 3.1 eTransformation Issues and Challenges

It was identified that both types of companies, those that have solid knowledge about IT and those that do not, are facing similar issues and challenges relevant to eTransformation and that if action is not taken these companies will continue losing jobs and will be lost in the global market. Consequently, the Researcher identified that a detailed study of eTransformation for SMEs is essential and needs to be carried out. The study conducted followed the Cynefin framework and aimed to help studied SMEs eTransform and consequently move from one domain to the other.

3.2 Chaos and Unknowns of eTransformation

Data gathered through discussions and meetings with both groups of the studied SMEs independently indicated that SMEs eTransforming require a significant change
and that neither of the groups of SMEs had a clear understanding of the direction in which they could go to overcome current problems. This supported the notion that the problem the two groups of studied SMEs were facing was in the Cynefin domain of Chaos.

Overcoming this domain required large changes to be undertaken as existing business knowledge and operations were not adequate (Snowden & Kurtz, 2002). Toolmakers had very rigid industrialised structures where work was performed in a linear fashion. Each of the four organisations performed work in an almost identical way. IT companies on the other hand worked along their own rules. Operations were diverse, however each company perceived their own operation to be superior compared to that of the other companies. The processes of neither of the two groups allowed for easy changes, adaptations and modification which is seen as one of the essential criteria of the organisations today (Daniel & Wilson, 2003). Therefore, to sustain themselves in the market today, organisations were required to change.

The SMEs, Toolmakers and the ICT SMEs did not possess the required technology or skills needed to be competitive in the global market. Their operations had barely allowed them to survive. For them, it was impossible to prosper if they were to continue relying on their existing business models.

Kurtz and Snowden (2003) argue that when a problem is in the domain of Chaos it is impossible to find a link between causes and effects. The link between the global market change and the benefits that eTransformation could bring to the businesses was very blurry and almost not evident at all. The only known facts were that the
global market change was shrinking businesses and that therefore the number of customers was in decline but it was not known at this domain what the SMEs should do in order to overcome the problems they were facing. To move away from Chaos it was essential to look into possibilities of how to stabilise Chaos by implementing focused intervention to manage crisis (Snowden & Mark, 2006).

At this stage, time to evaluate change is not available (Snowden & Mark, 2006). Quick and concise action is needed to stabilise Chaos and minimise turbulence. During this time, SMEs were only tending towards survival. SMEs continued to do business as before and hoped that change would happen but it did not. This notion is also supported by literature: “Waiting for patterns to emerge at this stage [stage of Chaos] is waste of time” (Kurtz & Snowden, 2003 p. 469). SMEs were in this mode for quite some time. A possible solution was not visible. To help them do so the Researcher was trying to identify how to move the problem away from the Chaos and reach the Complex domain.

The scenario the Researcher encountered while studying eTransforming SMEs required a technique called Multiple Interventions to be undertaken (Snowden & Mark, 2006) which in turn was another form of Action employed to tackle the problem by the Researcher. The technique is required when there are Asymmetric Threats (Snowden & Mark, 2006). An Asymmetric Threat is a term often used in military settings. It is often a type of threat that includes a notion of “surprise”. The main reason for it is that asymmetric threat implies use of “weapons”, tools or machines in ways previously unplanned. The new type of “fight” very often may create a strategy that alters “the terrain” where the battle is carried out (Blank, 2003).
When we take this analogy and apply it to SMEs it is possible to conceptualise that global market changes are a “threat” to SMEs. The threat is Asymmetric and there are numerous angles from which the threat can be observed. The threat directly impacts upon the status of the organisation, its structure, the tools and technologies the organisation uses as well as the organisation’s position in the global market. To ensure SMEs do not lose the battle they are required to assess the machines and technologies they have and turn them into different “surprising” tools that would help them win the fight. Furthermore, reorganisation is required to allow SMEs to change their business strategy, which will in turn open doors for new emerging networked markets.

Combating an Asymmetric Threat requires careful scenario planning and the identification of current tools and machines that could help fight the problem. The only possible option when dealing with this type of threat is to try and review current Knowable and identify intervention that may help companies move to Complex where patterns can emerge and where new solutions can form (Snowden & Mark, 2006). While reviewing Knowables however there is a need to be prepared and be ready to take up new possibilities that may open doors to patterns not thought of and not previously encountered.

Investigation of the Asymmetric combat led the Researcher into deeper studies of Sense – Respond strategy. The Sense-Respond strategy at the Chaos domain is often one of the primary creators of new possibilities that may lead to new Pattern formations.
Dealing with Chaos often means “looking for what works” not necessarily “looking for the right answer” (Snowden & Boone, 2007). Therefore, the Researcher’s Action continued through the deliveries of workshops and seminars for the SMEs. In addition to that, the Researcher went into deeper explorations of Knowables. The exploration allowed for the analogy between historic events and the present situation to be drawn and for possible future directions for the eTransforming companies to be established.

3.3 Industrial Era: Chaos and Patterns through History

Throughout history, society has been changing, modifying and adapting to new circumstances and has strived to live with technological advancements at particular times. These changes have caused populations to rethink at crucial turbulent moments and have imposed the need to reshape and readapt technologies, business structures and beliefs to suit the life of a particular civilisation.

Each era of civilisation represents a developmental milestone of time in history. During each era particular objectives were reached that consequently determined the work and life of the population during those times. Society moved from the Agricultural revolution during which muscle power and land played the main role to the Industrial revolution during which factories and material goods took the stand (Toffler, 1990). During this time, production outputs were predominately mass based to achieve maximisation and standardisation. Through mass production material goods were produced. Information was shared via mass mediums and was aimed at groups and collectives to achieve concentration and centralisation.
During the period between 16\textsuperscript{th} and 18\textsuperscript{th} century there was a number of inventions and changes that placed an impact on the life of the businesses we know today. Through history, new ways of doing business were introduced due to changes and inventions of those times.

In 1770’s Adam Smith introduced a Concept of Division of Labour (Smith, 1776). The reason for it primarily was the invention of a new ability of how to organise work. For example, the workers of the markets producing pins (pin-market workers) were neither educated nor knew how to use machines and therefore were able to make only a few pins a day. However, with the introduction of the Concept of Division of Labour the work was divided into a number of branches that require certain skills. Each person operated a unique set of tasks and together the group could produce a lot more pins that one individual could.

Division of Labour introduced new patterns to how manufacturing organisations operated. It brought new ideas and new sense. It created new knowledge and has helped manufacturers complete work quicker and in turn has increased quantity and productivity. Moreover, it also ensured that each worker was proficient in the work he / she was required to do. Such operation allowed for the time spent in production to be saved collectively. Future inventions and introductions of machines supported these findings and also enabled one person to do the work of many (Smith, 1776).

Another supporter of the Division of Labour and its benefits was Karl Marx (Marx, 1930). In “Das Kapital” written in 1867 Marx discusses how a handcrafters performing work in ‘his old way’ the way he is familiar with until external
circumstances cause his work and the way that work is performed to change. A requirement for faster delivery would require the work to be re-distributed where each person is performing distinctive operations in isolation that allows the larger product to be developed quicker than before.

In 1890’s Henry Ford made the Distribution of Labour even more apparent by introducing assembly lines (Ford & Crowther, 1922). They explain how Ford Motor Company departmentalised and each department had distinctive tasks, activities and procedures. This meant that each department received only the raw materials they required after which these materials would go through a number of machines or procedures until the finished part was designed. Once the part was designed, it would leave that department and was transported to the next department for installations. In this type of setting, each department operated on its own and there was limited communication between the departments as one department rarely knew what the other one was doing.

Introduction of machines and new tools enabled work to be completed quicker. Machines also helped to specialise departments where each department was producing its own product. Division of Labour also introduced different organisational structures and responsibilities among workers in which they were responsible for their own work, with a middle level manager for the department and a general manager for the whole organisation.

Ford and Crowther (1922) further argue that for the workers to be responsible for the jobs they do they need to have adequate knowledge and skills to complete them.
Furthermore, they state that each time history required workers to use knowledge and analytical power, the place where that knowledge and power were needed was different each time, as each era in history brought new requirements and challenges.

Alfred Sloan in 1880s extended concepts of Division of labour by applying it to management structures (Sloan, 1963). Sloan introduced decentralisation and flexibility. He created five car divisions (Buick, Cadillac, Chevrolet, Oldsmobile and Pontiac) where each division was created to suit the needs of various customer requirements. Sloan believed in business plans and he was not fond of changing plans quickly. In addition, he introduced divisions and corporate functions among executives and required management to submit forecasts of production, purchase and labour for each month, on the basis of which, authority to spend funds was given. Furthermore, Sloan also introduced customer surveys and dealer reports so that he can identify what kind of cars people wanted to buy.

New ways of doing business were closely accompanied by new inventions and discoveries. Coal mining and the utilisation of steam changed and improved work and life in a long run, though brought Chaos at their early times. Mines were dangerous places and many died while working in them. In the 1800s power from coal and steam enabled the invention of the steam engine which later on helped power machines in factories (Sciencemuseum, 2008).

In the mid 1800s factories were still quite small. The majority of employees in those days still did not operate machines. Slowly, however factories grew and steam power started making its way into factories by replacing wind, water and muscle power.
(Nuvolari, 2006). Workers of those times resisted new technology as they thought that they would become redundant which in fact did happen to some as new organisations were developed (Hammer & Champy, 2001).

Work at this time was perceived to be more flexible and reliable than it was when production mainly relied on the unpredictable powers of wind and water. This meant that factories could move from riverbanks and expand. This change brought new requirements and new rules. Factories were formed in the cities and people’s work now moved from home where it once was to the factory.

In the early 19th Century, housing in the cities was poor and overcrowded. The new way of working created new problems and new issues including diseases caused by work in the factories and fatigue caused by working long hours. By the end of the 19th century, working and life conditions improved due to newly formed policies and regulations.

One of the other big discoveries was the invention of electricity. At first when electricity was introduced it was seen as a novelty and by some even seen as a supernatural power. In the early years of its use its application was very much trial and error. Initially it was not reliable nor safe, as precautions to avoid electric shocks were not undertaken when early appliances were designed. It took time for the electrical appliances to be tested and properly implemented. In the early 1900s most of the middle class relied on electricity in their business and daily life (Sciencemuseum, 2008).
Developments further expanded and new innovations took place. For example, in its early days of development, the internal combustion engine was not welcomed by many. Initially there were problems once the engine was introduced with its unreliable ignition system and the tendency to create uneven operations. However, again after trial and error the combustion engine was perfected and became the main source of motion creation for cars (Karwatka, 2004).

The historical view of the organisation and work shows how organisations deal with changes and innovations similarly at different times in history. It can be seen that work has always been changing with new inventions and new ideas. Within organisations, there were many changes. First changes were initiated with production. There was a requirement to complete jobs quicker. That led to the creation of a division of labour where each person was performing only particular activities and actions. Machines and new sources of power helped speed up these operations and allowed the work to be performed in a different way with the aim of achieving the same outcome as before - production of the same product. However, after changes happened production became much quicker and helped increase outputs.

New sources of power were not always welcomed. The primary reason for it was that these new powers in their early days were seen as something new and unknown. Even from that early time people liked to stay with what was Known, tested and understood. Use of new power required meeting Chaos and unknown and dealing with problems previously unmet. Scientists of those times strived to make the link between Knowable and Chaos by accessing areas not travelled before. Some led to
unannounced disasters such as those posed by use of the electrical appliances in the early stages and the often associated electric shocks while others lead to the beautiful panoramic views such as, for example, lighted streets and shops at night.

Once however the proposed technology became a norm many had a hard time separating from that norm and understanding that there may be other sources of power. Ford (1922) in his works makes a note of this, explaining how many thought after electricity was invented, that electricity should be the main power provider for everything that is to come. Many scientists of that time thought that the internal combustion engine had no future. Trying to clarify this for himself and find out if the combustion engine really had the future he engaged in conversation with Thomas A. Edison who said: “Yes, there is a big future for any light-weight engine that can develop a high horsepower and be self-contained. No one kind of motive power is ever going to do all the work of the country. We do not know what electricity can do, but I take for granted that it cannot do everything” (Ford & Crowther, 1922). This shows that even in those times Edison saw that innovations were needed and that there will never be enough. His statement indicates that scientists would start to make the difference by bringing innovations and making large changes by exploring possibilities of already introduced innovations and by creating new things never thought of before. The world from a long time ago has been a changing place and to survive people have been required to adapt to the circumstances of the times they lived in.
3.4 Business Transformation: In the Eyes of Our Ancestors

The historical analysis indicates that businesses at any time in history were faced with inventions and that they were required to adapt and restructure to welcome new technologies if they were to stay in business. Utilisation of new technology often required some or more of the following actions:

*Change the way business is done*

In the early days, pin makers all worked independently and it took each pin maker a day to make one pin. Business changes and new demands allowed production lines to be formed where each worker had only a few tasks to complete. This allowed each pin to be produced through the combined work of a few workers. Consequently, the amount of pins made became much greater.

*Change the organisational structures*

Divisionalised management structures are an example of this. In order to follow work operations and ensure factories functional stability, factory structure was changed by making the worker responsible for the tasks he or she was completing and by introducing various levels of management.

*Ensure business activities are redistributed to maximise production output*

In the Ford Motor Company for example (Ford & Crowther, 1922) each department had its own specialisation. Work there was distributed so that each department was dealing with specific raw material goods and was producing a particular product. Each department was responsible for its own operation. The work was organised in
this way so that it could be completed quicker and that collectively the company could have a higher outcome.

*Ensure that skills and knowledge are adequate to deal with the innovation*

Whenever new technology was implemented it required assurance that people dealing with it had the necessary skills and knowledge to follow its uptake. For example, this happened when manual tasks were replaced by machines and assembly lines were introduced.

*Face problems and issues caused by the invention*

An overview of the invention of and uptake of electricity strongly indicates that the new invention could bring Chaotic and turbulent times. In its early days, electrical appliances were unsafe and they posed a risk of an electric shock and therefore death. Introduction of new technology required careful analysis and understanding of the problem not previously known.

*Life through resistance and rejection of the invention*

From the review of the changes that the invention of coal, steam or electricity for example brought, it can be seen that often people at first rejected innovations. The main reasons for this were that they were frightened of something, which was unfamiliar. In addition, as people, for example, saw power in steam they were scared that they will be retrenched and lose their current jobs, which in turn did happen to some. Therefore, it can be concluded that it is essential to face up to the new technology as resisting it will slow the uptake and the development.
From the above it can be seen that new inventions in history at first created shock and Chaos. After this, quick intervention or a line of action was required to stabilise the created turbulence. Next steps were hard. They often required those immediately affected by the implementation of the new technology to deal with rejection and resistance until they gathered skills and knowledge to cope with change and exploration. During that time, it was also required to Sense changes that the new technology was creating and see what modifications to current operations should be made to be able to effectively utilise the new technology.

3.5 Formation of Patterns in the Information Era

Today, we find ourselves in the Information Era, where interactions depend on instant communication and dissemination of data, information and knowledge, which have in turn revolutionised current methods for wealth creation (Toffler, 1990). The technology has moved the society from the Industrial to the Information era in which data and knowledge play a crucial role. In addition, it has caused migrations from mass production toward increasing customisation, from mass marketing and distribution toward niche and micro-marketing, from the monolithic corporation to new forms of organisations and from the nation-state to operations that are both local and global (Toffler, 1990).

Today, in the Information era, computers and associated technical devices are becoming agents of both social and economic change. Bolter (1984) argues that IT is a defining technology of our time. In his analogies he compares IT to the steam engine and clock, and states that each of the two inventions were the technologies of their times (Bolters, 1984). Furthermore, it appears from the literature that vivid
changes to organisations are often caused by the introduction of IT and that IT seems to be restructuring organisations and the current economy into more flexible – easily adaptable and more dynamic modes that are able to change and modify as need arises (Yates & Maanen, 2001).

Breakthroughs at any stage in history have reflected the given state of knowledge of that time in history. It was not possible to directly predict them however they were a reflection of the particular institutional environment of the organisations of those times and they also reflected the availability of skills that were required to define and solve technical problems during that period (Castllls, 2000).

The past 50 years or so have seen tremendous changes brought by IT related technological advancements. In 1957 The United States Department of Defence formed a small agency called ARPA (Advanced Research Projects Agency) to develop military science and technology. As time passed this idea grew further and in 1969 ARPANET, predecessor of Internet, was established for network research purposes (Berners-Lee & Fischetti, 2000). With innovations, new possibilities started forming. The age of Complexities allowed for new possibilities and patterns to appear which resulted in TCP/IP protocol development in 1983. This further allowed for the complex system of the Internet we know today to form.

The Internet grew and its Complex subsystems emerged. To be able to appropriately store and retrieve documents a need for the stabilisation of the disorder caused by new documents was required. At this stage, around 1994 the World Wide Web consortium was founded by Tim Berners-Lee. The consortium proposed standards for web use and document linkages (Shelly, Cashman, & Vermaat, 2006). New
knowledge allowed this newly formed technology to cross into the domain of Knowable.

New technology did not flourish constantly. Some of the first issues and problems started when the Y2K bug emerged as it created Chaos to businesses and stock markets. The bug demanded governments and businesses just before the turn to year 2000 to work on fixing the problem caused by some older computers and the applications which were unable to make the distinction between 1900 and 2000 (Shelly et al., 2006). Again, persistent work and operations allowed scientists of those times to change and modify old applications and ensure they were capable of meeting demands of current times.

Technology opened doors to new possibilities. In the period 1996 to 2001 new businesses encompassing technology were developed. “Technical Wizards” of those times were seen as the key to business success. The literature refers to this time as the “Gold Rush” (Andrea Hoplight, 2006). Good ideas were on the rise, and numerous companies funded those ideas and rapid economic growth was noted. The main reason why the time was termed the “Gold Rush” was that the dot.com era was seen as over optimistic and opportunistic characterised by ad-hoc organisational structures and huge unplanned investments.

Many young entrepreneurs of those times believed that technical skills were sufficient to manage and run new companies. Dreams and the beliefs they held broke down. Many companies of the time collapsed and went bankrupt due to unplanned
growth, insufficient management and lack of effective business modes (Andrea Hoplight, 2006).

Some early adopters of IT invested in IT hoping it would bring instant benefits however, it brought disappointment and Chaos. One of the main reasons for this was that companies tended to use technology to maximise old ways of doing business. Those companies usually strongly relied on old processes and they used computers to speed up old processes (Hammer, 1990). Alternatively, some other companies decided to combat waters not sailed before on an ad-hock basis without a clear business plan (Andrea Hoplight, 2006).

New advancements did have their dark sides. However, if these were not experienced it would be very hard to identify how best a particular innovation could help, improve and aid the life of the time during which it was invented. According to Hammer and Champy (2001) whenever new technology is introduced it needs to be assessed inductively so that its current use can be identified (Hammer & Champy, 2001).

Today we know that there are numerous eBased organisations such as Dell and Amazon.com that have been established on strong grounds. However, these organisations were not based on old principles but on carefully planned futuristic business models. They managed to cross boundaries of traditional business development and to flourish with new inventions and new ideas that are still not known to many. In turn businesses such as Amazon.com created new dynamic and flexible business models and proved that any traditional brick and mortar business
can successfully eTransform if it is to apply an appropriate business strategy and break away from old policies and rules (Krishnamurthy, 2002).

3.6 Revisiting Studied SMEs: Navigating through Chaos

Detailed assessment and analysis of historical events has helped identify that businesses will be faced with Chaotic and unexpected changes whenever there is a need to implement and explore new innovations. It is also possible to identify that some inventions have brought internal changes within organisations and their structures while others have introduced new tools and machines by allowing the work to be done quicker, smoother or in a different way.

The studied SMEs in this research were faced with both. Introductions of new technologies that have come to substitute for or change the old ways of doing business and new demands, rules and requirements have posed a need for the current business structures to be reshaped. The problem SMEs were faced with was in the domain of Chaos. The SMEs did not know what to change. Their day-to-day work was their dominant activity. They were facing difficulties to complete large jobs on time or alternatively they were struggling to get any type of job as there was not much on the market.

Toolmakers primarily relied on face-to-face interactions and faxes via which they would exchange designs with their clients compared to ICT SMEs that used ICT packages, communicated using e-mail and most had websites. Both groups however
were experiencing difficulties and were requiring assistance to survive in the global market.

As both groups of SMEs approached the AeIMS research group and were attending the eTransformation seminars the Researcher started getting a better perspective of SMEs current state and possibilities of how they could undertake the eTransformation journey. This opened possibilities for Sensing the environment.

The Researcher continued bringing new ideas and new knowledge to the Toolmakers. Initially the Toolmakers were distrustful of the technology. It took them a significant amount of time to move ahead. The Researcher provided ideas and possibilities to the toolmakers. The first ideas about the technologies that were introduced were those of e-mail use and possible set up of a website for each of the companies.

The Toolmakers assessed and analysed possibilities and then agreed for groups of Masters students to design their websites as part of their study project. The time during which websites were designed was chaotic. Toolmakers were unsure what information should be on their websites, which left many websites uncompleted. The first semester was a bit of trial and error. Toolmakers were looking for what would work best to advertise their work and attract new customers. Therefore, they needed time. During the following semester SMEs started gaining more understanding which helped identify new possibilities. Slowly after their websites were developed, they went online. However, being online still did not help the companies solve the problems they were facing.
The Toolmakers were unsure of what the websites could do for them. They treated their websites as newsletters. Furthermore, their business did not start flourishing as they expected they would by being online. They still at this stage did not understand that the website was just a tool to help their business. The website needed people to use it, advertise it and aim it at their customers as otherwise it would get lost in the “electronic super highway”.

After the websites were designed the Toolmakers needed some time to get accustomed to the new technology which gave the opportunity to the Researcher to reflect on the changes that had happened. The Toolmakers needed to understand the concepts behind their websites and this needed time. They also needed time to learn how to use e-mails and send attachments. After learning, these Toolmakers had a better understanding of the technology.

Slowly, the Toolmakers started understanding the possible effect the technology could have on their business. After about four months or so, the Toolmakers came up with some of the first breakthroughs. They were asking for tools that will let them change and modify their websites. The Researcher in Respond provided support to the Toolmakers and gave them additional aid by helping them identify the need for the online marketing.

The Responses brought both the Toolmakers and the Researcher to a new place, a place where new possibilities and options existed. Now the problem was slowly shifting towards Complex where pattern formations were possible and the identification of the problem solution was easier reachable.
The IT companies were the other group of SMEs. This group was associated with the AeIMS research group through the IT Cluster industry body that saw IT companies were requiring help to combat the market of the Information age. These companies too, once introduced to the AeIMS research group, were given seminars about the effects and the impacts eTransformation may have on their organisations. The IT companies were trying to pinpoint solutions that would help them best deal with the demands. More than half of the companies in the group had websites and their websites were there primarily for advertising purposes. This meant that the majority of these companies did not use their websites to expand business or engage in full eCommerce but rather had it to advertise what the company did and give a point of contact to potential customers.

Even though more than half of the IT SMEs had the website, their customers came primarily through word of mouth, which was the case with the Toolmakers as well. This meant that they have not fully utilised the potential of the technology. They problem they were facing was in the Chaos domain as again there was no apparent solution that could help them combat the needs and demands of the Information era. Even though they did have some IT systems, they were not taking time to understand changes and demands within the environment to see how best those systems should be implemented. Furthermore, they did not even try to see how possibly their systems could improve and how they could advance. The only idea the SMEs had was a possibility for them to try to eCollaborate with the aim to try to increase the market share.
These discussions were very chaotic. The IT companies were discussing uses of different platforms, with each of them favouring the one they were using. Other issues discussed included disputes about the application used as well as the use of various programming languages.

Discussions were closely followed by the Researcher. While discussions amongst ICT SMEs were on the way the Researcher was closely Sensing and monitoring changes that were occurring. Following this the Researcher Acted on the SMEs initiative and assisted the ICT companies in establishing their eCollaboration platform. This opened doors for new possibilities.

Now, the Researcher had a sense of direction and now knew that numerous roads lay ahead. All that was needed now was a map that would help the Researcher identify the best route to follow so that the SMEs can reach their planned destination.

3.7 Leaving Chaos Behind

Dealing with Chaos is hard and complex. There is rarely one correct answer that can aid the navigation through this domain. It requires persistence, exploration and will to change and make a difference. Small steps at this domain are desired. Each needs to be carefully monitored and explored. Action at this stage is almost an “instinct” for survival or alternatively a first lead into new possibilities.

Sensing requires virtue, persistence and exploration. Small steps here can make a big difference. They need to be based on what is within the Knowable domain and what
is Known. The steps undertaken can periodically be altered and changed. The process needs to be taken slowly as whenever change is made there is a possibility for new options to emerge.

Once small changes have been made and undertaken, observation is required. During the observation time, new forming possibilities can be Sensed. Once this happens a response to these newly created circumstances is required. The response will open the door to advancements. Moreover, it will aid the move to the next domain, the domain of Complexity.

Table 3.2 below indicates how the Researcher travelled through the domain of Chaos to help identify steps, which would allow the exploration to take the next step and enter the domain of Complexity.

<table>
<thead>
<tr>
<th>Navigating Chaos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Act</td>
</tr>
<tr>
<td>- Studied eTransforming SMEs</td>
</tr>
<tr>
<td>- Delivered seminars and workshops about the eTransformation</td>
</tr>
<tr>
<td>- Undertook historical analysis</td>
</tr>
<tr>
<td>- Assessed pattern formations through history</td>
</tr>
<tr>
<td>- Shared Knowable with SMEs</td>
</tr>
<tr>
<td>- Gave ideas and suggestions in terms of eTransformation</td>
</tr>
<tr>
<td>Sense</td>
</tr>
<tr>
<td>- Delivered Knowables through workshops and seminars.</td>
</tr>
<tr>
<td>- Gave space and time to the SMEs so that they can see future possibilities</td>
</tr>
<tr>
<td>- Observed SMEs while they were making decisions and coming to the understanding of what eTransformation could bring to the companies</td>
</tr>
<tr>
<td>- Made analogies between SMEs transforming today with those of businesses transforming in past</td>
</tr>
<tr>
<td>Respond</td>
</tr>
<tr>
<td>- Identified issues and challenges of eTransformation.</td>
</tr>
<tr>
<td>- Identified some of the causes and effects of business transformation through history.</td>
</tr>
<tr>
<td>- Helped shape and direct SMEs initiatives so that formations of new patterns can be observed.</td>
</tr>
</tbody>
</table>

Table 3.2 Passages through Chaos Domain
After successfully dealing with *Chaos* and identifying the issues and challenges of eTransformation as well as the main ways in which companies dealt with new inventions, change and the formations of new patterns that these new inventions were creating, it was now required to deal with the issues surrounding the formation of newly forming patterns. To understand changes in more detail, in the next chapter the Researcher reviews existing models of Transformation and Organisational Change to identify if they can be used to guide the eTransformation journey.
Chapter 4 - Review of the Existing Models of Organisational Change and eTransformation: Traversing the Complex Domain

In the previous chapter, navigation through the domain of Chaos was discussed. In this chapter, the Researcher elaborates on issues surrounding the Complex domain.

The domain of Complexity was entered consciously by the Researcher (Kurtz & Snowden, 2003) after the Researcher identified issues and challenges of eTransformation and some of its causes and effects to business and individuals through history. This has helped identify where possible pattern formations may happen. Furthermore, this has allowed the Researcher to convert the research question into the problem of Complex domain within which the aim was to find answers about the eTransformation journey and to identify eTransformation Characteristics. At the Complex domain, problem solutions can be anticipated but not predicted. The domain of Complex is still the domain of unknown and un-order (Snowden & Kurtz, 2002) however now a place where possible patterns can emerge and new opportunities arise.
When dealing with the *Complex* it is essential to be open to new ideas and new possibilities. According to Snowden and Mark the main action principles at this stage are: *Probe – Sense – Respond* (Snowden & Mark, 2006). With this in mind, the Researcher undertook *Probe* tactic of the *Cynefin* framework during which it was essential to evaluate options and current *Knowables* before undertaking any further actions. Therefore, to assure the Researcher has tools, methods and required skills to assist eTransforming SMEs and help solve the research question as well as be able to moderate formations of new possibilities, she decided to review current *Knowables*, the existing models of organisational change and transformation.

### 4.1 Models of Organisational Change and Transformation

The Researcher reviewed a number of models relevant to the organisational change and transformation to pinpoint a model that will help most comprehensively explain and help guide the journey of eTransformation. While reviewing the available models the Researcher carefully examined the extent to which each model focused on ICT and associated technologies. Furthermore, the Researcher assessed the extent to which ICT or technology was a part of the model by carefully assessing the accent the model places on the importance of the technology and the technologies’ influence on people and organisations’ internal and external processes.

The first model reviewed is the Cycle of Organisational Development Model (Wons, 1999).
- **Cycle of Organisational Development Model**

This is a generic model that depicts conflicts between forces acting within the organisation (which are shown by circles in Figure 4.1) and where failure to resolve any of the conflicts results in a broken cycle which ultimately causes bigger problems when the organisation is required to deal with future un-knowns (Wons, 1999).

By applying this model to organisational eTransformation the Researcher identified that unresolved problems with eTransformation according to this model are cyclically building up which causes dealing with new issues and problems even harder. This model does not directly deal with ICT however, it helps the Researcher identify and determine crucial power players such as leaders, visionaries, managers and other bodies of authority that may play important roles when it comes to change and therefore eTransformation. Furthermore, this model helps pinpoint cyclical patterns that may appear when the time for decision making, change or transformation may happen by understanding the importance of missions, growth and purpose of change which require to be relevant to the aspirations, economic status and control, principles and truth of the organisation so that the change can be implemented.
Figure 4.1 Cycle of Organisational Development Model adopted from Wons, (1999).

The Cycle of Organisational Development Model (Wons, 1999) has been seen to be relevant to issues surrounding eTransformation but not adequate to help map or guide the eTransformating organisation on its journey. To find whether there is a model that could help map and aid eTransformating organisations the Researcher studied The Drivers for the Advanced Organisation Model (Mawson, 2002).
- The Drivers for the Advanced Organisation Model

This model addresses the key pressures that are presented by ovals in Figure 4.2 which face changing organisations (Mawson, 2002) of today. The model explains that the nature of work has changed from what it was 10 years ago and pinpoints some of the pressures that are shaping the nature of work today. Changes like these are some of the primary causes of eTransformation. This model sees technology as a trend and one of the main enablers of the Advanced Organisations. The crucial importance of the model lies in its ability to highlight that technology is readily available, however it cannot be put into practice without innovation, which will in turn mean breaking of traditional cultures and attitudes to be able to operate in the new circumstances. In addition, this model helps identify the characteristics of the Advanced Organisations and highlights their importance to partner relationships, investment capabilities and innovation.

Figure 4.2 The Drivers for the Advanced Organisation Model adopted from Mawson, (2002)
In terms of technology, the model gives importance to systems, infrastructure, modular system structures, ease of upgrades and maintenance, backup, server integrations and staffs’ ICT skills and knowledge. The model does not give an indication of how an eTransforming organisation could change or what steps it could follow to do so.

The next model reviewed is the 7 Steps to Business Crisis Management Model (People and Process, 2005), that gives importance to future and possible directions.

- **7 Steps to Business Crisis Management Model**

The 7 Steps to Business Crisis Management Model, also known as U-procedure for small business crisis management, is the model developed to help businesses deal with change and crisis (People and Process, 2005). It sees eTransformation as a radical change, which often requires critical decision making. The model shown in Figure 4.3 is based on 7 questions that reflect current and possible future states of the organisational development.

The model assesses organisational processes and links them to the technical subsystems, social subsystems, and cultural systems all of which are important determinants of eTransformation. In terms of technology alone the model looks at processes and associated technologies however does not directly determine what technologies are required for the eTransforming organisation and therefore is not adequate when mapping the organisation’s eTransformation journey.
Figure 4.3 Steps to Business Crisis Management Model adopted from People and Process, (2005)

The next model reviewed was the 7S Model of the Organisational Change, which is one of the well documented and used models (D'Aveni, Canger, & Doyle, 1995; Iles & Sutherland, 2001; Kaplan, 2005; Lin, Huang, Cheng, & Lin, 2007) that looks at changes and interrelationships between factors influencing organisational change.

- **The 7S Model**

The 7S Model developed by McKinsey & Company (Waterman et al., 1980) describes organisational change from 7 dimensions.
The model looks at technology in terms of Systems, in particular those relevant to processes and flows of information and data (see Figure 4.4). The Systems here relate to Information Systems, Accounting Systems, Production Systems, Quality Control Systems and Performance Measuring Systems (Waterman Jr, 1982).

The model comprehensively assesses dimensions that are essential to be considered when organisations are changing. The model however does not elaborate on what steps need to be undertaken by eTransforming organisations as it was too early for the eTransformation era.

The following models reviewed indicate that change usually happens in Stages. The next model reviewed was Nolan’s (1979) 6 Stages of Growth Model.

- **Nolan’s 6 Stages of Growth**

Nolan’s Model of Growth (Nolan, 1979) through which organisations may pass over time while implementing and using technology is composed of 6 stages. Nolan’s model highlights that knowledge external to the organisation influences the ICT that...
is implemented within the organisation and that an organisation’s internal knowledge determines how the ICT is implemented and put to use within the organisation.

<table>
<thead>
<tr>
<th>Nolan’s 6 Stages of Growth (Source Nolan 1979)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 1: Initiation</strong></td>
<td>In this initiation stage, technologies are introduced into the organisation for performing simple administrative functions, such as automation of payroll or general ledger.</td>
</tr>
<tr>
<td><strong>Stage 2: Contagion</strong></td>
<td>In this stage, the learning curve moves up sharply, as use of technology becomes widespread and the organisation becomes confident with the use of the technology. Also in this stage, top management encourages line management to embrace computing and the DP manager follows industry trends.</td>
</tr>
<tr>
<td><strong>Stage 3: Control</strong></td>
<td>In this stage, managers realise the need for controls due to rising expenditure, late delivery of projects and unsatisfied needs. At this stage users feel frustrated about the systems.</td>
</tr>
<tr>
<td><strong>Stage 4: Integration</strong></td>
<td>This stage is seen as an acceptance point, where the users start to accept the system and realise its benefits. At the end of this stage users demand better control to provide more efficient systems.</td>
</tr>
<tr>
<td><strong>Stage 5: Data Administration</strong></td>
<td>Data administration is introduced to enhance the control of the systems.</td>
</tr>
<tr>
<td><strong>Stage 6: Maturity</strong></td>
<td>In this stage, organisation begin to be confident in managing the technologies.</td>
</tr>
</tbody>
</table>

Table 4.1 Nolan’s 6 stages of Growth adapted from Chan & Swatman, (2004)

Nolan’s (1979) model takes into consideration that there are various managerial levels within organisations and that many of these may be impacted by the use and the implementation of technology. In general, the first three stages of the model look at technology while the later three are more management oriented. The model seems to have overlooked that processes related to ICT and Managerial activities often happen in parallel. The model gives insights to eTransformation but alone is inadequate to guide the eTransformation journey.

The next model that was reviewed was Earl’s (1989) Stages Model. This model also identifies the staged nature of electronic change.
Earl’s (1989) model is one of the other Staged models that helps place an organisation at a certain stage of technological development however does not take into consideration that the organisation may like to know how to move from the stage it is currently in and advance (Chan & Swatman, 2004).

<table>
<thead>
<tr>
<th>Timeframe / factor</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task</td>
<td>IS/IT mapping</td>
<td>Business direction</td>
<td>Detailed planning</td>
<td>Competitive advantage</td>
<td>IT Strategy connection</td>
</tr>
<tr>
<td>Objective</td>
<td>Management understanding</td>
<td>Agreement priorities</td>
<td>Firing up the IS strategic plan</td>
<td>Finding opportunities</td>
<td>Integrating IS and business strategies</td>
</tr>
<tr>
<td>Direction / Involvement</td>
<td>DP/IT lead</td>
<td>Senior management drive</td>
<td>User and IS mainly involved</td>
<td>Executive management and users</td>
<td>Partnership of users, general management and IS</td>
</tr>
<tr>
<td>Methodological emphasis</td>
<td>Bottom up survey</td>
<td>Top down analysis</td>
<td>Matching top down and bottom up plus investigations and prototypes</td>
<td>Inside out processes</td>
<td>Multiple method acceptance</td>
</tr>
<tr>
<td>Planning context</td>
<td>Inexperience / unawareness</td>
<td>Inadequate business plans for the purpose</td>
<td>Complexity apparent</td>
<td>Impatience</td>
<td>Maturity</td>
</tr>
</tbody>
</table>

Table 4.2 Earl’s Stages Model adapted from Chan & Swatman, (2004)

Evolving the E-Business (Earl, 2000)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>Corporate PR</td>
<td>Organisational Glue</td>
<td>Online buying or selling</td>
<td>Building e-processes</td>
<td>Business Development And operation</td>
<td>Continuous Reinvention</td>
</tr>
<tr>
<td>Motto</td>
<td>“Let’s have a home page”</td>
<td>“We’re building an intranet”</td>
<td>“Let’s do business on the web”</td>
<td>“Let’s do it properly”</td>
<td>“Let’s behave like dot.com”</td>
<td>“It’s not new anymore”</td>
</tr>
<tr>
<td>Mindset</td>
<td>A modern dot.com company</td>
<td>A front-end and-or communication channel</td>
<td>A channel for commerce</td>
<td>A new business model</td>
<td>A new management model</td>
<td>A dynamic model</td>
</tr>
<tr>
<td>Result</td>
<td>Brochureware</td>
<td>Groupware</td>
<td>Early learning</td>
<td>Capability building</td>
<td>Decisions by wire</td>
<td>Comfortable in the new economy</td>
</tr>
<tr>
<td>Critical Success Factors</td>
<td>Content refreshment</td>
<td>Architecture Design</td>
<td>Channel development</td>
<td>Process Re-engineering</td>
<td>Information Literacy</td>
<td>Continuous Learning and change</td>
</tr>
</tbody>
</table>

Table 4.3 Evolving the e-Business adopted from Earl, (2000)
Some of more recently conducted studies by Earl (2000) indicate that business change and the move towards eBusiness involves a number of stages and that performance at each stage is characterised by Focus, Motto, Mindset, Result and Critical Success Factors. See Table 4.3 (Earl, 2000).

The business change is seen to progress through external and internal communication, followed by eCommerce, eBusiness, eEnterprise and finally Transformation. In terms of technology, this model follows a historical perspective and highlights how eBusiness companies tended to change through history. Earl points out that the model can still be applied to changing organisations and by doing so the eBusiness development stage at which organisations are currently at can be identified. The model’s drawback however is that it does not provide directions for the eTransforming organisations nor point out how organisations can move from one stage to the other.

One of the other Staged models is Internet Based B2B Stages of Growth Model (2002). The model was reviewed by the Researcher to give an overview of how stages of growth impact on Internet based technologies and associated applications.

- **Internet Based B2B Stages of Growth**

Internet Based B2B Stages of Growth (2002) depicted in Table 4.4 highlights the importance of the Internet and its associated tools and systems. The model elaborates stages of possible B2B capacity and highlights that initially the Internet is primarily a Broadcast medium, however once a company has developed and has progressed it can become a fully Collaborative medium. This model in particular looks only at the
technology associated with the Internet and its relevant tools, and therefore is relevant to eTransformation. The model can be used as a guide when determining the stage of use of the Internet and associated tools and applications however it cannot be used as a guide by eTransforming organisations as it lacks ability to progressively guide the eTransformation journey.

### Internet-Based B2B Stages of Growth (From Rayport & Jaworski 2002)

<table>
<thead>
<tr>
<th>Stage</th>
<th>B2B capability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Broadcast</td>
<td>A web page creation to primarily static information to the customers such as company-related information, product and services.</td>
</tr>
<tr>
<td>2</td>
<td>Interact</td>
<td>Using the Internet for interaction with customers such as emails, customer survey and feedbacks.</td>
</tr>
<tr>
<td>3</td>
<td>Transact</td>
<td>The use of the Internet to take, manage and support transactions with customers such as online ordering systems.</td>
</tr>
<tr>
<td>4</td>
<td>Collaborate</td>
<td>The use of the Internet to provide inter-organisational activities, which can be accessed and utilised by the company and its trading partners.</td>
</tr>
</tbody>
</table>

Table 4.4 Internet Based B2B Stages of Growth adapted from Chan & Swatman (2004)

Following this, another Staged model, the model of e-Business Transformation, was reviewed by the Researcher. The model looks at three dimensions important for the eBusiness Growth (Ash & Burn, 2003).
- **e-Business Transformation Model**

The e-Business Transformation Model indicates that ICT Technologies, Business Models and Products and Services act as three independent dimensions of Transformation where each dimension is further detailed across three stages (Figure 4.5).

![Figure 4.5 e-Business Transformation Model adapted from Ash & Burn, (2003)](image)

From the e-Business Transformation Model, a Matrix for ERP (Enterprise Resource Planning) was developed by (Burn & Ash, 2005). The model is shown in Table 4.5 below. It is possible to see from the figure that multiple dimensions here continue to guide the organisation’s Transformation. In terms of technology and particularly ERP the model pinpoints stages and explains that through time organisations moved across Integration, Differentiation and Realisation of Value Proposition for the dimension of Technology, Products and Services and Business Models. In terms of technology the model discusses how technology changed over time, however it still
does not provide a map that eTransforming organisations could follow to become eEnabled.

<table>
<thead>
<tr>
<th><strong>Stage 1: Integration</strong></th>
<th><strong>Stage 2: Differentiation</strong></th>
<th><strong>Stage 3: Realisation of Value Propositions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
<td><strong>ICT</strong> ERP with e-Sales &amp; e-Procurement systems</td>
<td><strong>Innovative Technologies</strong> ERP and non-ERP networks for e-marketplaces</td>
</tr>
<tr>
<td><strong>Products &amp; Services</strong></td>
<td>e-Mails e-Mail integration and information exchange</td>
<td>e-Communities Foster customer, supplier, and employee expertise. Emerging collaborative online communities</td>
</tr>
<tr>
<td><strong>Business Models</strong></td>
<td>e-Branding Customisation vs standardisation, Brand identity &amp; integrity</td>
<td>e-Enterprise One2Many vs One2One. Distinct focus of One2One partnerships</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td>e-Positioning B2B positioning within a range open to private e-marketplaces</td>
<td>Business network to design and leverage interdependent e-communities. Dependent on relationships</td>
</tr>
</tbody>
</table>

Table 4.5 Stages of eBusiness Transformation adopted from (Burn & Ash, 2005)

Following this, Galliers and Sutherlands (1994) Six Stages of Maturity model was studied. The model has been used as a base for a number of studies (Lin et al., 2007; McKay et al., 2000).
-**Galliers and Sutherlands (1994) Six Stages of Maturity**

Galliers and Sutherlands (1994) model depicted in Table 4.6 allows for the maturity of the company in terms of IT and IS to be plotted for six identified stages along the characteristics of the 7S model (discussed earlier).

In terms of technology the model provides a framework for thinking about IT change and obtaining business value from the implemented technology (Lin et al., 2007) however, the model does not provide a guide for eTransformation.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Adhocracy</td>
<td>Uncontrolled, ad hoc approach to the use of IT</td>
</tr>
<tr>
<td>2-Starting the Foundations</td>
<td>Beginning of the ascendancy of IT ‘priesthood’ in organisations</td>
</tr>
<tr>
<td>3-Centralised Dictatorship</td>
<td>Attempts to right the imbalances caused by the ad hoc nature of stage 1</td>
</tr>
<tr>
<td>4-Democratic dialectic and cooperation</td>
<td>Move towards integration and co-ordination</td>
</tr>
<tr>
<td>5-Entrepreneurial opportunity</td>
<td>IT begins to provide strategic benefit by building strategic systems.</td>
</tr>
<tr>
<td>6-Integrated harmonious relationships</td>
<td>IT is deeply embedded throughout aspect of the organisation and embarks on implementing IOS</td>
</tr>
</tbody>
</table>

Table 4.6 Galliers and Sutherlands Six Stages of Maturity adopted from Chan & Swatman, (2004)

The next model studied was The Stages of Growth (SOG) e-model (2000). The model, based on Galliers and Sutherlands (discussed earlier), also stresses that Transformation is a staged process.
- The Stages of Growth (SOG) e-model

The Stages of Growth (SOG) e-model (McKay et al., 2000) shown in Figure 4.6 explains eCommerce Maturity and associates it with the existing internal IT Maturity (Galliers and Sutherlands model described above) and IC (Internet Commerce) Maturity. In terms of IC, the model incorporates a “No Website” stage and follows the development progressively until the company is ready for full Internet Commerce and Integration. The IC component of the model can be applied to eTransforming organisations however the model does not take into consideration that both IT Maturity and IC Maturity are very much linked to the Internal and External Processes of the organisation as well as people that work within those organisations.

![Figure 4.6 The Stages of Growth (SOG) e-Model adopted from McKay et al., (2000)](image)

Interactions that happen at each stage of eBusiness maturity (Prananto, McKay, & Marshall, 2003) are shown in Table 4.7
<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>There is no clear direction for the organisation’s e-business initiatives.</td>
</tr>
<tr>
<td>Stage 2</td>
<td>E-business initiatives are increasingly considered to be an important component of the organisation’s business. However, there is no proper planning and a lack of direction for IS/IT development and implementation.</td>
</tr>
<tr>
<td>Stage 3</td>
<td>E-business initiatives are considered an important component of the organisation’s business. There is a clear direction for the development of e-business initiatives within the organisation. However, e-business development is still focused much on technology-centric perspective and not influenced by business needs.</td>
</tr>
<tr>
<td>Stage 4</td>
<td>E-business adoption and development is becoming more business-focussed. There is a move towards integration and greater coordination between the components of e-business (eg. IS/IT and Internet) and the organisation’s business processes.</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Integration between traditional business processes and activities and e-business processes and activities, creates seamless communication and flow of processes within your organisation. E-business initiatives aim to provide strategic benefits by building strategic systems.</td>
</tr>
<tr>
<td>Stage 6</td>
<td>E-business is deeply embedded throughout every aspect of the organisation. There is a strong integration between the components of e-business and business processes within the organisation as well as with those of its suppliers and business partners. E-business initiatives are aimed to create and maintain our organisation’s strategic advantage.</td>
</tr>
</tbody>
</table>

Table 4.7 Stages of Business Maturity adopted from Pranto, McKay & Marshall, (2003)

The next model reviewed is the eTransformation Road Map.

### 4.2 eTransformation Road Map

The eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001) indicates that there are two major types of processes (internal and external) for a typical ‘bricks and mortar’ company that influence eTransformation. Furthermore, the model explains
stages through which a business needs to pass to successfully eTransform across the

*IT Tools and Systems* dimension. The stages are detailed in Table 4.8.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Hardware, Software and Networking infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Effective Individual</td>
</tr>
<tr>
<td></td>
<td>Individuals with stand-alone computers having productivity software such as accounting packages spreadsheets, word processors etc installed. Possibly dial up connection to the Internet for individual email accounts.</td>
</tr>
<tr>
<td></td>
<td>Basic Web Site</td>
</tr>
<tr>
<td></td>
<td>Organisation having its own domain name and “Brochure ware” type web site hosted with an ISP.</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Effective Team</td>
</tr>
<tr>
<td></td>
<td>Computers are networked. People can work in teams using networked applications. Providing email and Intranet capabilities can enhance productivity of a team.</td>
</tr>
<tr>
<td></td>
<td>Interactive Web Site</td>
</tr>
<tr>
<td></td>
<td>Organisations having Web sites that provide two-way flow of information. From these Web sites users should be able to get immediate responses to structured queries such as a quotation for a particular product configuration user has selected. Also another feature would be to provide personalised information to frequent visitors. These types of Web sites though they can be hosted with an ISP are better to host on site. This requires a Web server and a high-speed dedicated connection to the Internet.</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Effective Organisation</td>
</tr>
<tr>
<td></td>
<td>Organisation now uses enterprise wide applications; a single application that supports different sections of the organisation such as purchasing, sales, accounting, manufacturing etc. thus enabling information integration and sharing across enterprise.</td>
</tr>
<tr>
<td></td>
<td>eCommerce Site</td>
</tr>
<tr>
<td></td>
<td>At this stage the organisation should have secure Web servers to facilitate financial transactions or a link to a payment gateway to get this facility.</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Convergence</td>
</tr>
<tr>
<td></td>
<td>Organisation has now achieved integration of information that needs to support all its business processes. The flow of information of an organisation that has reached the level of convergence.</td>
</tr>
</tbody>
</table>

Table 4.8 eTransformation Stages and Accompanying Technologies - adopted from Ginige, Murugesan & Kazanis, (2001)
The eTransformation Road Map gives an understanding of how a company can progress from one stage to the other (Figure 4.7) across the *IT Tools and Systems* dimension. Its only drawback however is that it only looks at eTransformation from the perspective of one dimension.

![eTransformation Road Map](image)

Figure 4.7 eTransformation Road Map adopted from Ginige, Murugesan & Kazanis, (2001)

### 4.3 Analysis of the Studied Models

The analysis of the models of organisational change and eTransformation indicates that the eTransformation Road Map seems to be one of the most comprehensive models explaining the progress within the dimension of *IT Tools and Systems* through stages.

The extent to which each model elaborates upon the dimension of *IT Tools and Systems* and its associated tools and technologies is shown in Table 4.9. From the
table it can be seen that models such as the Cycle of Organisational Development Model (Wons, 1999), The Drivers for the Advanced Organisation Model (Mawson, 2002), The 7 Steps to Business Crisis Management Model (People and Processes, 2005) and The 7S - McKinsey & Company model (Waterman et al., 1980) are models that give a more comprehensive overview of the organisation, its change and transformation. The models above, apart from the Cycle of Organisational Development Model (Wons, 1999), look at a specific strain of ICT as one of the dimensions of the organisational change.

On the other hand, models such as Nolan’s Six Stages of Growth (Nolan, 1973), Earl’s Stages Model (Earl, 1989), Evolving the E-Business (Earl, 2000) and Internet Based B2B Stages (Rayport & Jaworski, 2002) look at a particular strain of technology through developmental stages.

Models such as the eBusiness Transformation Model (Burn & Ash, 2005), Galliers and Sutherland’s six Stages of Maturity (1994), SOGe (McKay et al., 2000) and the eTransformation Road Map (Ginige et al., 2000) identify that eTransformation / change is Staged and that there are a number of various factors affecting it.

The SOGe model, based on Galliers and Sutherland’s model, identifies that there are two main forces governing eTransformation, the IT Maturity represented via Galliers and Sutherland’s model, and IC Maturity, which closely correlates to External Processes of the eTransformation Road Map.
<table>
<thead>
<tr>
<th>Models of Organisational Change</th>
<th>IT Focus</th>
<th>Model Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle of Organizational Development Model (Wons, 1999)</td>
<td>No direct link to IT.</td>
<td>Generic approach to organisational change.</td>
</tr>
<tr>
<td>The Drivers for the Advanced Organisation Model (Mawson, 2002)</td>
<td>ICT seen as Key Business Enabler.</td>
<td>Highlights importance of innovation and associates it to ICT use and implementation.</td>
</tr>
<tr>
<td>7 Steps to Business Crisis Management Model (People and Processes, 2005)</td>
<td>Identifies technical subsystem as one of the systems within organisation.</td>
<td>Links organisations processes to technical, social and cultural subsystems.</td>
</tr>
<tr>
<td>Earl’s Stages Model (Earl, 1989); Evolving the E-Business (Earl, 2000)</td>
<td>IT direction (mapping, lead, strategy, users) for a relevant business plan</td>
<td>Focus is given to a particular stage of technological development. More recently developed models mimic strategies undertaken during dot.com crash.</td>
</tr>
<tr>
<td>Internet Based B2B Stages (Rayport &amp; Jaworski, 2002)</td>
<td>Internet as a medium.</td>
<td>Focuses only on Internet its use and application.</td>
</tr>
<tr>
<td>eBusiness Transformation Model (Burn &amp; Ash, 2005)</td>
<td>Identifies ICT Technologies as one of the transformation dimensions.</td>
<td>Looks at dimensions of ICT Technologies, Business Models and Products and Services across stages (value, differentiation, integration)</td>
</tr>
<tr>
<td>Galliers and Sutherlands six Stages of Maturity (1994)</td>
<td>Looks at IT implementation within the organisation.</td>
<td>Focuses on obtaining business value from the implemented technology.</td>
</tr>
<tr>
<td>SOGe (McKay et al., 2000)</td>
<td>Looks at IT and Internet maturity.</td>
<td>Identifies and follows eBusiness maturity as staged and multidimensional by focusing at IT and Internet maturity.</td>
</tr>
</tbody>
</table>

Table 4.9 Models of Organisational Change
The eTransformation Road Map was taken as a basis for further explorations because it identifies that Internal and External Processes are continuously carried within the organisation and they are always supporting and complementing one another while the SOGe model (McKay et al., 2000) places emphasis on processes once the stage of Integrated Organisation has been reached. Furthermore, the eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001) highlights that eTransformation cannot happen without interactions of people, processes and technology.

To analyse the extent to which the eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001) can be used to guide and map the eTransformation journey the Researcher applied the Road Map to the data collected through the studies that looked at eTransformation in 2000 and 2003.

4.4 eTransformation Road Map its Use and Application

Detailed studies of the Models of Organisational Change and Transformation helped identify that the eTransformation Road Map is one of the most comprehensive models explaining in detail one dimension, the ICT Tools and Systems. Therefore, to test the assumptions the Researcher undertook a comparative study of the data collected through the ICT Western Sydney Status and Potential surveys conducted in 2000 (Ginige, Murugesan, Khandelwal et al., 2001) and 2003 (Khandelwal et al., 2003).
In 2000 and 2003 the AeIMS research group of UWS conducted two surveys titled “Information Technology: Status and Potential”. The aim of the two surveys was to establish the level of ICT usage, and determine the growth and potential of the region. In addition, the study assessed ICT skills, and examined the requirements and needs of the businesses. The results of the two surveys were helpful to business, government and industry sectors across the region. In addition, the surveys helped the Researcher identify businesses readiness to take up ICT and pinpoint issues businesses faced in regards to ICT adoption, use and acceptance.

The group evaluated a number of research data collection techniques such as structured interviews (Bullen & Rockart, 1981), focus groups, group interviews (Khandelwal, 1992) and survey approach (Galliers et al., 1994) As the objective was to collect a large amount of data, the survey method was selected. Limitations were identified and steps taken to ensure a maximum response rate. Each survey was mailed with a covering letter personally addressed to the company’s Chief Executive Officer (CEO). Furthermore, to ensure the quality of the responses, the letter indicated that one or more appropriate individuals (Head of Organisation, CEO, IT Manager, and Production Manager) could complete the survey.

Using standard surveying procedures a sample of the region’s businesses was selected. The sample covered 19 industries and 14 local government areas. Adaptive sampling (Thompson, 1992) was used to ensure appropriate businesses and parts of the regions were covered in the surveys. In total 590 (13.5%) surveys were returned in the 2000 Survey (Ginige, Murugesan, Khandelwal et al., 2001) and 307 (7.2%) in 2003 Survey (Khandelwal et al., 2003).
To meet the objectives of the survey a range of questions was developed by the members of the Research Group. The questions were clustered into the following groups to form the questionnaire:

- Details of the organisation – included general company information such as location, size, industry and information about main business processes.

- IT infrastructure – included questions about staff, their skills and knowledge, current and future ICT trends, general hardware and software information such as the number of computers used, types of productivity tools packages and applications.

- Network infrastructure – included questions about the organisations’ networking capabilities and infrastructure.

- Internet infrastructure – included questions about the Internet, its use, connections and applications and electronic transactions.

- Website and eCommerce capabilities – included questions about websites, its development, hosting and potential site marketing. In addition, respondents who already had a website were asked to state what online services they were providing.

- Future Plans – this section looked at views and plans of the company including ICT visions and initiatives.

Data collected from the 2000 and 2003 surveys was compared and analysed by the Researcher based on the eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001). Results of the analysis are shown in Table 4.10
<table>
<thead>
<tr>
<th>Stage Characteristics</th>
<th>Business at a Given Stage</th>
<th>2000</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Individual</td>
<td>Businesses that have computers</td>
<td>88%</td>
<td>97%</td>
</tr>
<tr>
<td></td>
<td>Businesses that use productivity tools for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accounting</td>
<td>58%</td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>Payroll</td>
<td>28%</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>Inventory and stock control</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>Web Design</td>
<td>3%</td>
<td>28%</td>
</tr>
<tr>
<td>Basic Web Site</td>
<td>Organisations that have Web sites:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Web sites that are hosted:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In-house</td>
<td>25%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>With an ISP</td>
<td>71%</td>
<td>77%</td>
</tr>
<tr>
<td></td>
<td>Not specified</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Effective Team</td>
<td>Communication Infrastructure:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have LANs</td>
<td>54%</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>Are connected to the Internet</td>
<td>56%</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>Have email facility</td>
<td>47%</td>
<td>74%</td>
</tr>
<tr>
<td></td>
<td>Have intranets</td>
<td>8%</td>
<td>30%</td>
</tr>
<tr>
<td>Interactive Web Site</td>
<td>Websites that have:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Online electronic catalog</td>
<td>18%</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>Handle customer enquiries</td>
<td>30%</td>
<td>71%</td>
</tr>
<tr>
<td>Effective Organisation</td>
<td>ERP, MRP, CRM</td>
<td>11%</td>
<td>15%</td>
</tr>
<tr>
<td>eCommerce Site</td>
<td>Websites that have online capabilities to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Receive orders</td>
<td>10%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Provide after-sales service</td>
<td>6%</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>Offer follow up service</td>
<td>4%</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Track order progress</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Deliver of goods (information products)</td>
<td>1%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Table 4.10 Use of IT to enhance Internal and External Business Processes

From Table 4.10 it can be seen that the eTransformation Road Map can be used to monitor and study the change that has happened over time. In particular, it can be seen that between 2000 and 2003 considerable changes have occurred for both internal and external business processes. The 2003 data indicates that 97% of
companies have computers compared to 88% of companies in 2000. In addition, the 2003 data shows that companies are making use of various applications and tools particularly those that are required for accounting at 65%, compared to 54% in 2000. Furthermore, in 2003 59% of companies had websites compared to 41% in 2000.

Data indicates that in 2003 almost all companies have reached the “Effective Individual” Stage by the use of computers, and a range of productivity software. It was also found that the majority of companies have reached the “Basic Website” Stage with websites or plans for the development of web sites.

The “Effective Team” and “Interactive Site” Stages seem to have been a concern for companies in 2003, as they were looking into developing and enhancing their communication infrastructures and networks. For example, in 2003 74% of organisations were communicating via e-mails compared to only 47% in 2000. Also, the number of organisations with Intranets has increased from 8% in 2000 to 30% in 2003. In addition, in 2003 companies were making use of their websites with the introduction of online catalogues and the handling of customer enquiries. For example, in 2000 only 18% of companies had an electronic catalogue while in 2003 44% of companies had introduced catalogues. The number of online customer enquiries sharply increased from 30% in 2000 to 71% in 2003.

Results show that not many companies have reached the “Effective Organisation” Stage or “eCommerce” Stage. Only a very few companies have introduced Enterprise Resource Planning in 2003 (15%) and Customer Relationship management tools (13%). Data collected about “eCommerce” Stage indicated that a few companies have
started receiving orders electronically. For example, 10% of companies were doing this in 2000 while in 2003 the figure only rose to 19%. Data corresponding to payment options and transaction processing are still not significant enough to be reported. However, increases in these types of activities are expected to increase in the future.

<table>
<thead>
<tr>
<th>Processes</th>
<th>2000 Survey</th>
<th>2003 Survey</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Processes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of Computers</td>
<td>89%</td>
<td>97%</td>
<td>8%</td>
</tr>
<tr>
<td>Accounting Packages</td>
<td>58%</td>
<td>65%</td>
<td>7%</td>
</tr>
<tr>
<td>Productivity Tools</td>
<td>7%</td>
<td>12%</td>
<td>5%</td>
</tr>
<tr>
<td>Internet</td>
<td>56%</td>
<td>70%</td>
<td>14%</td>
</tr>
<tr>
<td>e-mail</td>
<td>47%</td>
<td>74%</td>
<td>27%</td>
</tr>
<tr>
<td>LAN</td>
<td>54%</td>
<td>63%</td>
<td>9%</td>
</tr>
<tr>
<td>Intranet</td>
<td>26%</td>
<td>30%</td>
<td>4%</td>
</tr>
<tr>
<td>External Processes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Companies with Websites</td>
<td>41%</td>
<td>59%</td>
<td>18%</td>
</tr>
<tr>
<td>Online Catalogues</td>
<td>18%</td>
<td>44%</td>
<td>26%</td>
</tr>
<tr>
<td>Customer Inquiry</td>
<td>30%</td>
<td>71%</td>
<td>41%</td>
</tr>
<tr>
<td>Receiving Orders</td>
<td>10%</td>
<td>19%</td>
<td>9%</td>
</tr>
<tr>
<td>Tracking and status</td>
<td>2%</td>
<td>5%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Table 4.11 Growth comparison for Survey 2000 and 2003 results

To complete the analysis of the survey data, study of the growth of both Internal and External Processes was undertaken by the Researcher. Furthermore, to analyse current trends and predict future trends, growth findings were graphed against the eTransformation Roadmap. Internal Growth Analysis consisted of the following measures (See Figure 4.8, noting that percentage within brackets shows the growth from 2000 to 2003):
• Effective Individual – three measures namely: Use of Computers (Stage1a=8%), Use of Accounting Packages (Stage1b=7%) and Use of Productivity Tools (Stage1c=5%)

• Effective Team – three measures namely: Use of Internet (Stage2a=14%), Use of e-mail (Stage2b=27%) and Use and applications of Intranets (Stage2c=4%).

• Effective Enterprise – only one measure, Use and application of Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) tools (Stage3a=9%).

Figure 4.8 Internal Growth Analysis

Analysis of the Internal Processes shown in Figure 4.8 indicates that most of the growth corresponds to activities related to creation of internal effective teams. Furthermore, from Figure 4.8 it can be seen that the use of the Internet has grown by
14% and that the use of e-mail was the highest growing factor for Internal Processes overall (27%) between 2000 and 2003.

Growth for the “Effective Individual” Stage appears to be reasonably low. The reason for this is that the “Effective Individual” Stage has almost reached saturation. From Table 4.11 it can be seen that almost all companies (97%) use computers. In addition, data from the table shows that Western Sydney has experienced a much sharper growth than the rest of Australia. The fluctuation in the ABS findings (in 2000 84% of businesses used computers, while in 2003 the figure was 83%) might have been influenced by factors external to the business such as the introduction of GST (Goods and Services Tax) in 2000.

It is clear that the “Effective Enterprise” Stage (Figure 4.8) in 2003 was in its early stages of development. In 2003 companies were still far from the state of an effective organisation as there were no enterprise-wide applications reported to support different sections of the organisation, and enable information sharing and integration across the enterprise. It should be noted however that at the time a small number of organisations are using Enterprise Resource Planning and Customer Relationship Management tools (growth of 9%).
Figure 4.9 External Growth Analysis

Details about External Growth measures were mapped as following (see Figure 4.9):

- **Basic Website** - two measures namely: Companies with Websites (Stage1a=18%) and Companies with Online Catalogues (Stage1b=26%).

- **Interactive Site** - two measures namely: Online Customer Inquiry (Stage2a=41%) and Number of Received Orders (Stage2b=9%).

- **eCommerce Site** - only one measure: Ability to Track and Get Order Status (Stage3a=3%).

From Figure 4.9 it can be noted that between 2000 and 2003 the number of companies with a website increased by 18%, which was followed by an increase in website development and the introduction of online catalogues (26%). This is the
“Basic Website” Stage. The “Interactive Site” Stage was the fastest growing stage between 2000 and 2003. From the data it can be seen that Online Customer Inquiries increased by 41%. In addition, it was noted that the number of companies receiving online orders increased by 9%.

By 2003, not many businesses had embraced eCommerce, although there were attempts by organisations to get close to having an eCommerce website. It appears that companies first started receiving inquiries online, and then followed with online orders. It is also observed that some organisations have provided facilities for customers to track their orders using the organisations website (3%). Very few companies have reached convergence and have started establishing new business processes. Studies of both internal and external processes highlight a gradual eTransformation trend and indicate changes that have occurred within the region between 2000 and 2003.

From this analysis, it can be seen that the Western Sydney region has commenced its eTransformation journey. The progress is slow but steady and progressing more rapidly than in other parts of Australia. Most companies within the region have reached the “Effective Individual” and “Basic Website” Stages.

Likewise, most companies within the region have started moving towards the stages of “Effective Team” and “Interactive Site”. The progress towards these stages is still quite slow although from the data gathered it seems that in 2003 a very large number of organisations have started seeing the potential that websites offer and have commenced introducing online catalogues (26%) and communicating with staff and
customers online (41%). For the companies to reach this stage it was essential to understand and learn what websites can offer and how a company could make full use of such technologies. Increase in Internet access, use of e-mail and other communication tools, as well as development of interactive websites are all indicative that companies are progressing and learning more about available technologies.

Not many companies have yet reached “eCommerce” and “Effective Organisation” Stages, however they are slowly making progress by adopting required technologies to ensure that they are able to communicate electronically, share data and carry out day-to-day business processes. In 2000 38% of companies found finances to be a problem when considering adoption of ICT, and in 2003 this figure rose to 60%. Furthermore, 53% of businesses indicated that lack of time was a problem adopting ICT, as was the need to ensure employees have necessary education and skills to implement and maintain ICT (34%).

Data collected is signalling that ICT adoption will continue to rise in the years to come. Companies will start moving towards full eCommerce websites and will work within Effective Organisations while using enterprise-wide applications (Figure 4.9). In addition, to ensure companies have gained the full benefit of eTransformation, it is expected that in the future ICT adoption will be closely linked to product innovation, education, training and organisational change and learning (Productivity Commission, 2004).
This can also be supported by data gathered in the 2003 Survey where 70% of the respondents indicated that if they had necessary resources, such as appropriate skills and infrastructure, their business competitiveness would have improved dramatically.

Figure 4.10 Growth Analysis

Application of the data gathered through survey analysis to the eTransformation Road Map helped identify that the eTransformation Road Map can be used to follow eTransformation progress for the *ICT Tools and Systems* dimension.

Through the analysis above, it can be seen that there is a general trend to progress along the eTransformation journey. Through the above analysis, it can be seen that there is a general trend to progress along the eTransformation journey. Through literature in addition, it can also be seen that technologies such as those available through Web 2.0 and 3.0 also signify such trend. Web 2.0 and 3.0 put users in charge, which is where ultimately eTransforming companies are heading to. The technology which aims to support interaction, participation and collaboration is slowly becoming integral component of
businesses lives. It is expected that eTransformation growth in the future will see high use of blogs, wikis, social networks semantic web and 3D web that will also enable people, knowledge and applications connectivity (Murugesan, 2007).

The Researcher concludes this chapter with the identification that eTransformation is staged and most probably multidimensional as there may be other factors influencing company’s ICT selection and implementation.

In the next chapter, the Researcher continues to explore Complexities by introducing the concept of Key Features of eTransformation and by applying the eTransformation Road Map to the Case Studies, the 4 Toolmaking SMEs and 10 IT Cluster SMEs. The aim of the analysis was to help understand (Sense) pattern formation and help companies navigate the domain of Complexity by finding the appropriate mechanisms to help guide and follow the eTransformation journey.
Chapter 5 - Characteristics of eTransformation: Resolving Complexities

This chapter continues following the research problem through the Complex domain and pattern formations. The analysis conducted in the previous chapter identified that among a number of the available models of Organisational Change and eTransformation, the eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001) best describes the dimension of *IT Tools and Systems*. This finding lead into further studies that aimed to explore the extent in which the eTransformation Road Map can be used to measure and guide the eTransformation journey.

In this chapter the Researcher continues to tackle Complexity by undertaking Probe and Sense tactics of the Cynefin framework (Snowden & Mark, 2006). The analysis carried out included Sensing- the exploration of how well the Road Map can be used to measure and guide the eTransformation journey. Sensing was conducted by applying the Road Map to the two types of SMEs, Toolmakers and the ICT Cluster. The application of the Road Map to the two distinctive groups of SMEs is demonstrated in the next section.
5.1 Application of the eTransformation Road Map to the Toolmakers and the ICT Cluster Companies

To tackle the domain of Complex and understand forming patterns the Researcher continued to follow Toolmakers and the ICT Cluster companies. Numerous discussion and business explorations allowed the Researcher to gather data essential to plot the Toolmakers and the ICT Cluster companies on the eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001) to determine the extent to which the Road Map can be used to measure and guide eTransformation. Findings of the study are presented in Figure 5.1 below.

![Application of the eTransformation Road Map to the two Case Studies](image)

Figure 5.1 Application of the eTransformation Road Map to the two Case Studies

The analysis of the collected data indicates that in terms of eTransformation the ICT companies have somewhat better utilised technology than the Toolmakers as they have reached a higher Stage of eTransformation (eg. Stage 3). The study also shows...
that in both groups there were companies that did not have websites and have therefore not utilised technology to support external processes.

Through tactics of Sensing the Researcher identified that the application of the Road Map allowed for the stage of eTransformation to be determined in terms of the *IT Tools and Systems* dimension. The Road Map itself however, did not allow the Researcher to identify non-ICT elements that may play a role in eTransformation. Therefore, to study and identify how eTransformation progress could be measured within stages the Researcher decided to carry out studies of the data collected through Narratives.

### 5.2 Understanding Complexities through Narratives

The domain of Complex is still the state of un-order however it is a place where formation of patterns is possible (Snowden & Kurtz, 2002). As seen by Kurtz and Snowden (2003) complexity is a study of “…how patterns emerge through the interaction of many agents” (2003:469). Furthermore, how ‘the interactions of many agents’ happen determines the way that new structures form and allow the system to adapt to new circumstances (Grobman, 2005).

Although the application of the eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001) was seen to be adequate for the understanding of the dimension of *IT Tools and Systems* the study also helped identify that other dimensions of eTransformation should also be reviewed. Consequently, the Researcher decided to study data collected through Narratives that were collected at a range of
eTransformation workshops in a period between the 2004-2006 to try to identify important elements and factors influencing eTransformation.

While delivering workshops to the SMEs about the eTransformation the Researcher closely monitored sense-making processes. Narratives in this instance were powerful guides. Workshops about the eTransformation throughout the time were mixed with group discussions, which allowed for collective sense-making to emerge. As Snowden did through his analysis, the Researcher here presented various views of eBusiness and eTransformation to the SMEs. Through discussions, the Researcher collected participants’ views on those concepts, which helped, clarify and interpret eTransformation from the SMEs point of view. Responses and ideas on various eTransformation topics were collected through seminars, workshops and discussions that were conducted by AeIMS research group (For more details see Chapter 3). Collected data was used to form a Narrative database (Kurtz & Snowden, 2003). Data collected this way was used as a raw guide for future interventions (Browning & Boudes, 2005). Table 5.1 summarises the Narrative data collected through discussions, workshops and seminar sessions.
<table>
<thead>
<tr>
<th>What is an eBusiness?</th>
<th>Benefits of eTransformation</th>
<th>What is holding you back?</th>
</tr>
</thead>
</table>
| - Electronic & instant communication  
- Email and ordering  
- Intelligent use of IT  
- To transact quicker  
- To produce benefits  
- Using web to do business  
- Time convenience  
- Paperless business  
- Increase in production and accuracy  
- Group dynamics  
- Better accessibility | - Quick information  
- International exchange  
- Rapid response  
- Effective and higher productivity  
- Penetrate market – what else can I do?  
- eBusiness means: Capability, Well implemented technology (technology can quickly create rubbish) | - ROI – hard to establish  
- Customers not ready for eBusiness  
- Flood of enquiries – fear of volume  
- No access to skills  
- Must be quick  
- Challenge – keep updated and maintained Cost  
- Need for common standards  
- Security, integration reliability  
- Risk management  
- Where to go? |
| Toolmakers | | |
| - Anything / everything without boundaries  
- Capture new customers globally  
- Accessibility  
- Available for customers 24/7 | - Expansion  
- Manage info effectively  
- Change management  
- Ongoing customer service | - Fear of the unknown  
- Perception that is expensive  
- Initial investment and ongoing cost unclear  
- Need for staff to use and operate IT  
- Need for training |
| Companies from Bankstown Council | | |
| - Website – a point of reference, information about the business  
- Price for websites design, maintenance ranges  
- Higher informality  
- It’s not do it once It is progression | - Increased opportunities  
- Improved customer service  
- Make more money  
- Internal efficiency  
- Real time data  
- Improved staff moral  
- Different business model | - Lack of money  
- Lack of confidence  
- Fear  
- Lack of time  
- Need for change  
- Lack of trust |
| Technology Network – mix of SMEs | | |
| - Online trading  
- Ability to advertise business, make contacts  
- Have website  
- Use IT for marketing  
- Interactions done electronically  
- Ability to track accounts | - Dealing with suppliers easier  
- Ability to free up time  
- Ability to track records, transactions  
- Cost efficiency | - Money hard to estimate  
- Hard to identify ICT budget  
- Lack of knowledge (about new technology)  
- Less face to face interaction |
| Penrith Valley – mix of SMEs | | |

Table 5.1 Summary of Data Gathered through Narratives
Data collected through Narratives supports previously identified findings that in order for the eTransformation to be measured and guided a number of factors need to be considered apart from those that are directly linked to *IT Tools and System*. The above Narratives identify that ICT benefits are hard to measure and related financial requirements not easy to determine. Therefore, the Researcher decided that factors such as Valuation models of business achievement, turnover and benefits as well as the nature and structure of business operations would need to be investigated as well and their influence in the process of eTransformation identified.

### 5.3 Reviewing the Existing Measurements of ICT Returns and Benefits

After identifying that Valuation models may have some role in eTransformation the Researcher returned to tactics of *Probe* with the aim to identify if some of the available Valuation models can be used to measure progress made by eTransforming organisations. While undertaking *Probe* the Researcher reviewed a number of models, which are used to calculate ICT benefits in monetary values.

*Simple Cost and Benefit Analysis* is a method for calculating the returns from capital expenditures by dividing total benefits by total costs (Laudon & Laudon, 2007). When applying the model to eTransformation it was found to be almost impossible to predict total benefits and estimate total costs related to the ICT investment and associated returns. One of the primary reasons why benefits of eTransformation do not become visible immediately after the investment is made is because ICT investment needs to be implemented and positioned well before benefits can be seen. The company may for example decide to invest in a Customer Relationship...
Management system. Initially, implementation and purchase of hardware and software will only be an expense. At this stage, there will be no observable benefits. It is only after the system has been implemented and staff trained that benefits will be seen. Furthermore, many associated eTransformation costs are ongoing and it is therefore hard to place them against the benefits. All implemented systems require upgrade and maintenance. In some cases, it is very hard to predetermine the required budget. Furthermore, it was seen that ICT investment and change might need to happen within the associated departments as well.

Payback Analysis is a method for calculating the time required to pay back the investment (Laudon & Laudon, 2007). Time required to pay back investment is difficult to place against the ICT investments. One of the main reasons is that technology continues to change and this notion is ongoing. New versions of software packages are available or new tools are being invented. Such schema requires constant ICT budget and therefore it is hard to calculate the payback for a particular product or service.

Net Present Value (NPV) analysis is a method for calculating the amount of money an investment is worth considering its cost, earnings and the time value of money (Laudon & Laudon, 2007). When investing into ICT’ companies will often carry NPV analysis. However, companies investing in ICT may also need to invest in other supporting activities within the organisation such as training, new processes or new management which again makes comprehensive NPV hard to calculate.
**Internal Rate of Return (IRR)** analysis is a method for calculating profit an investment is expected to earn (Laudon & Laudon, 2007). Investment into ICT will not bring immediate benefits; therefore, it is hard to predict the profits a particular investment may bring. For a certain ICT investment to bring profit there is a need for it to be well utilised within the organisation, for staff to have required skills to use it, and for business processes to adequately match capabilities of the newly implemented technology.

**Return on Investment (ROI)** analysis is a method for calculating the income earned by an investment (Laudon & Laudon, 2007). It is relatively hard to calculate the return on the investment in total for ICT. Partial calculations are possible; however, they do not represent the total holistic view of the investment that is needed to be made within different areas of the organisation so that the full potential of ICT infrastructure can be seen.

As analysis of the Valuation models indicated that tangible benefits alone are not sufficient to measure eTransformation the Researcher also reviewed some of the techniques incorporating intangible elements too. The research indicates that intangible benefits are important measures of transformation however often hard to incorporate into measurements as they are often hardly perceivable (Brynjolfsson & Hitt, 2000). Some of the models reviewed are explained below.

**Intellectual Capital** is an important asset. It is knowledge owned by an organisation and shared by their employees. Furthermore, knowledge is a power of the Information Era and the main driving force of businesses in today’s changing
environment (BEI-Consulting, 2004). The model indicates that information, data and knowledge are important assets and represent main driving forces for businesses today. Such assets are valuable however impossible to calculate as each employee within the organisation has its own knowledge and experiences that are guiding their work. Furthermore, an organisation as a whole is a sum of data, information and knowledge collected and owned throughout its working history.

Skandinal Navigator is a measurement model developed for evaluation of both tangible and intangible components of a business. This model consists of five parameters: financial, customer, business processes, renewal and development, and human interactions (BEI-Consulting, 2004). This model incorporates various parameters that are important when changing. However, even though they are important, the values of such parameters are hard to estimate. Therefore, this model cannot be used to measure eTransformation.

Intangible Assets are important driving forces for SMEs today. They are integral parts of companies’ goals and objectives as well as the changes through which eTransforming SMEs need to go through. For example, initial ICT investments are very often intangible such as planning, analysis and design of the solution and implementation processes. During eTransformation, they represent main driving forces as they are helping businesses learn and understand new principles. After necessary knowledge has been gathered, these intangible benefits can slowly be transformed into tangible assets. According to previous researchers, intangible assets can be captured in Human Competencies, External Structures and Internal Structures of SMEs (BEI-Consulting, 2004; Brynjolfsson & Hitt, 2000). This principle supports
the notion that multiple factors influence eTransformation and highlights that in order for the eTransformation to be tracked, guided and measured it will be necessary to identify the multiple dimensions influencing it as well as dimensions characteristics.

**Balanced Scorecard** is one of the methods that has in recent years been used to supplement measures of ROI. It is a system that enables organisations to clarify their vision and strategy and translate them into action (Arveson, 2007). It was created by Kaplan and Norton (Kaplan & Norton, 1992). The Balanced Scorecard system requires managers to look at four major perspectives:

- *The Financial Perspective* – tangibles such as ROI, profitability and revenue growth;
- *The Customer Perspective* – the drivers of revenue growth such as satisfaction, retention and growth;
- *The Internal Process Perspective* – in terms of operating processes, customer management and innovation; and
- *The Learning and Growth Perspective* – the intangibles important to organisations strategy (Kaplan, 2005).

The Balanced Scorecard method (Kaplan & Norton, 1992) has been used by a number of researchers who have highlighted that its benefits lie in the ability to identify both tangibles and intangibles and therefore give a more comprehensive view to the managers in terms of ICT investment and their ability to bring benefits to the organisations (Epstein & Rejc, 2005; C. Kim & Davidson, 2004; Simon, 2005).
This model strengthens the findings that for the eTransformation to be measured it would be essential to identify appropriate dimensions through which the journey of eTransformation could be guided. In addition, the model highlights that for the measures to take place there will be a need to develop measurement criteria that could be followed so that the exact stage of eTransformation can be justified.

*Six Rules for Finding IT Value* (Strassmann, 2004) model highlights the importance of 6 rules.

- Rule 1. Follow the money;
- Rule 2. Do not let the accountants measure value;
- Rule 3. Focus on the Shareholder’s value;
- Rule 4. Commit to value after discounting for risks;
- Rule 5. Keep away from revenue ratios; and

The rules listed are all relevant to eTransformation. However, the rules listed are not sufficient when deciding to invest in ICT and undertake the eTransformation journey.

Analysis of the models above indicates that in order for companies to prosper and eTransform there is a need to understand that Valuation models alone are not sufficient to measure eTransformation progress. To evaluate and find out the type of model that could help measure eTransformation it is essential to understand that it is hard to put monetary values to eTransformation. One of the reasons for this is that the Information era, the era in which we live today, is characterised by the way we use and implement data, information and knowledge. These days, wealth and
prestige, the ability for businesses to eTransform depend on knowledge, which highlights the importance of symbolic interpretations, values and images (Toffler, 1990). Furthermore, workers, the staff in organisations, are predominately mind workers who are required to interpret data and utilise knowledge in the way that they allow for the new understandings and innovations to emerge. Therefore, the Researcher predicts that for eTransformation to be guided it will be essential to identify factors influencing it.

5.4 A New Model to Account for eTransformation Complexities

Traditionally company benefits were primarily calculated in monetary values only. For example, ROI calculations were done in order for enterprises to ensure that they will earn a satisfactory rate of return. Shown is an ROI calculation, which is composed of two parts: calculation of Net Benefits and calculation of ROI:

\[
\frac{(Total\ Benefits - Total\ Cost - Depreciation)}{Useful\ Life} = Net\ Benefit
\]

Then, Net Benefit needs to be divided by total Initial Investment to arrive at ROI.

\[
\frac{Net\ Benefit}{Total\ Initial\ Investment} = ROI
\]

(Laudon & Laudon, 2007)

Measurement of eTransformation on the other hand not only involves calculations of its monetary properties, but also those that are seen as intangible, and therefore
valuation models alone such as ROI are insufficient when calculating IT benefits and returns (Epstein & Rejc, 2005; Jeffery, 2004; Kaplan, 2005; C. Kim & Davidson, 2004; H. M. Kim & Ramkaran, 2004; Love, Irani, Standing, Lin, & Burn, 2005; Pavlou, Housel, Rodgers, & Jansen, 2005; Simon, 2005; Stanic, 2003).

Nowadays there is a need to focus on product quality, customer relations, and customer satisfaction and faster delivery times, generally properties that cannot be measured directly in monetary values (Violino, 1997). The economy of the 21st Century is turbulent characterised by random, variable and high-intensity movements. In addition, it is characterised by unexpected changes, uncertainties, complex decisions and group interdependencies (Dolan, Garcia, & Auerbach, 2003).

Furthermore, throughout the centuries new ‘Power Shifts’ have been created. For example in 19th Century the production power was in the manufacturers’ hands, in 20th it has moved predominately into retailers’ hands, while today it is strongly embedded into customers’ requests. Power, in terms of virtualisation, molecularisation, convergence, innovation, immediacy and globalisation seems to be one of the important intangible assets that needs to be considered when determining how and when to invest in ICT and therefore eTransform (Toffler, 1990).

When analysing eTransformation and searching for the model that will help guide and measure eTransformation progress we need to take into account that eTransformation is influenced by a number of factors that are external to the organisations. For example, eTransforming businesses are required to focus on their customers as they are changing the nature of business by demanding products and
services. Furthermore, organisations’ internal qualities such as job training, decentralised decision making, business processes also need to be taken into the account when analysing eTransformation (Dedrick, Gurbaxani, & Kramer, 2003).

Moreover, so that organisations can speed up their business processes, ensure accuracy and reliability, they need to have the right skills and knowledge to be able to use the resources needed and to undergo necessary changes (Powell & Dent-Micallef, 1997). SMEs need to be familiar with the environment they live in as it may prove to be one of the very important companies’ future resources. In the Information Era, where knowledge and data interactions play important roles organisations need to be ready to reassess their business environment and consequently be able and ready to change so that they can survive in the competitive marketplace.

Today, business environment is very dynamic. Its properties and characteristics are constantly changing. Organisations are now required to Sense and Respond to the changed environmental circumstances quickly and effectively and for these reasons, organisations are required to invest in the organisation’s knowledge capital.

The studies with the Toolmakers and ICT Companies were based on workshops, discussions and observations. Complexities were dealt with through Narratives (Kurtz & Snowden, 2003) that allowed for collective sense-making to emerge (Browning & Boudes, 2005). In some instances, the Researcher continued to provide workshops by delivering new ideas and information through the collected Knowables. For Toolmakers, this was the analysis of their business environment, information
about the strategies Toolmaking bodies overseas have taken and information about potentials and possibilities of what the technology could offer for their future. For ICT Companies on the other hand the information provided was about the business environment, collaboration, possibilities to unite and collaboratively achieve information about documents and agreements. The two groups required different information as each needed to better understand the business environment they were facing. Each group needed to understand the space around them to make it more likely for desirable patterns to emerge (Kurtz & Snowden, 2003). Workshops conducted were always followed by discussions that allowed Narratives to emerge, patterns to form through self-organisation (Snowden & Mark, 2006). In addition, the analysis of conducted Narratives allowed for discussions about past, present and future to be carried out (Browning & Boudes, 2005).

Looking at the Toolmaker’s case study it can be seen that environmental changes, new needs and demands, customer requests and overseas competition have given Toolmakers new possibilities. At this stage, Toolmakers had websites but websites alone were not sufficient to help these companies survive in the Information era. For that, companies needed to understand the complexities of eTransformation and bring themselves to the state of order. Toolmakers jobs were going overseas and they were in fear of losing their businesses. To combat this threat they needed to change and understand the importance and the effects of immediacy, globalisation and innovation (Toffler, 1990).

Therefore, through the assessment of the discussions and Narratives, the Toolmakers identified that they needed to change. With help of the Researcher, they were able to
identify some of the possibilities that could put them back in business. They realised that if they are to survive in the electronic world they will need to have websites up to date. Furthermore, they have realised that they will need to identify solutions that will help them meet the demands of the new markets by possibly sharing tools, undertaking projects together or ordering raw goods collectively. Toolmakers now saw new possibilities. They needed time to assess and analyse what would suit their situations the best.

At this stage, Toolmakers were certain that they will need to make some strategic changes to their business which also meant that new solutions will confront some of the old ones (Snowden & Mark, 2006). In particular, this was seen when Toolmakers reviewed options of doing parts of their jobs collaboratively. Up to this time, the four Toolmakers were competitors, following the old patterns. Now new forming patterns were breaking those old patterns by introducing new possibilities. To make the change they needed time to observe forming patterns and gain new business perspectives (Snowden & Mark, 2006). The observations help them self-organise and identify future routes.

Toolmakers were now facing new possibilities and opportunities. Their future looked brighter.

The ICT Cluster companies were in a very similar state. Their business environment was changing, their jobs were leaving the shores too and they were struggling to identify a strategy that would help them tackle future demands.
They had skills to use technology and those who did have websites kept them up to date. The main reason why their jobs were going overseas was not that they did not use technology but that they did not have appropriate skills to live in the Information era. The ‘Power Shift’ here again indicated that companies needed to focus on innovation, immediacy and globalisation (Toffler, 1990).

ICT companies needed to restructure their operations and find new more innovative ways of how to place technology within their businesses. ICT companies started exploring possibilities of collaboration and were looking into platforms that could allow them to share data and resources. Furthermore, through Narrative analysis they identified that they need to have rules and regulations that would govern possible collaboration strategies.

For them too, new patterns started changing views of the old (Snowden & Mark, 2006). They were exploring possibilities of uniting some of their resources and identifying some of the common IT platforms they could use for their work. Up to that time these companies, same as Toolmakers, saw their company’s tools and inventions as the main agents of competition.

They too needed some time to understand the environment during which the Researcher helped Sense the scene and pinpoint patterns that will guide them ahead (Snowden & Boone, 2007) which slowly helped them reach the place where future options looked brighter. New options now represented new roads and new possibilities.
The above analyses led the Researcher to new investigations. New findings have helped initiate new possibilities, which in turn have stimulated formations of new patterns. Those new forming patterns now gave insights into complexities and helped Researcher identify Key Features of eTransformation.

5.5 Forming Patterns: Key Features of eTransformation

Assessment and the analysis of the pattern formation in the Complex domain led the Researcher to revisit properties of ICT Returns. By doing this, the Researcher identified that ICT Returns properties and organisational investment in Information Technology could be compared to the analogy of what happens when water is heated and it becomes steam. In this particular case, water represents the organisation, heat represents the investment that will drive the transformation (investment in Information Technology) and temperature represents the return. At the point of transition, water absorbs heat energy, however temperature does not increase. In the organisational case investment will give rise to changes that will happen within the organisation without producing immediate benefits. This can be compared to the analogy of water state change from liquid to steam. As steam absorbs energy, its temperature can increase or steam can expand. The question remains what happens to an organisation when it decides to undertake eTransformation?

It is obvious that once organisations invest in Information Technology their properties will change and the nature of work within those organisations will change as well. How this happens could be described through self-organisation. Self-organisation is seen as “…spontaneous, unplanned and unpredictable systemic
phenomenon” (Henning, 2007:178). The self-organisation is only possible when systems are open and non-linear where interactions of elements are fluctuating and changing (Knyazeva, 2003). During such process interacting particles develop connections suddenly resulting in highly-ordered relating patterns (Henning, 2007).

For organisations principles of self-organisation when eTransforming can be associated with changes that need to happen across dimensions for eTransformation to be successful. To some it may create process changes; to others it may create new organisational structures; to others it may create both. The extent and the nature of eTransformation compared to the water analogy depends upon the heat applied, the air humidity, the amount of heated water, the air temperature of the environment in which the water is heated.

For eTransforming organisations this may mean that in order for them to change they need to allow for the self-organisation to happen. Therefore, after analysing data presented through Narratives and case the Researcher predicted that eTransformation is governed by the following Key Features.

- Improvements to Organisational Performance by Automating Existing Tasks

In task based organisations people invest in ICT to automate the tasks. For example, previously it took a long time for bank cheques to be cleared. Today, in the time when ICT support is playing an important role by automating the above task clearing cheques has become a lot quicker and smoother (Walsh, 2006). The current approach to measuring ROI or NPV is very much aimed at finding the benefits of this type of task improvement.
- **Transactional Efficiency**

As the environment changes, the situation changes and so do ways in which businesses work and operate. Previously organisations were task based. Today organisations are changing and moving towards process based organisations. Nowadays, people withdraw money using ATMs while previously they had to go to a bank to perform the same task (Laudon & Laudon, 2007). Today people use different more efficient processes. Thus the measure of how fast and conveniently transactions can be carried out and the cost associated with it will impact on the organisations overall profitability.

Furthermore, mass production and large quantities are not considered to be the main means of purchasing or producing goods today. The new, Information Economy is increasingly highlighting the importance of personalised tasks and processes and the ability to produce personalised products or goods for individual customers (Tapscott, 1996). For this to be achieved, the right ICT infrastructure needs to be implemented to support the business processes.

- **Ability to Adapt to Changing Environment**

For organisations to be able to adapt quickly to the changing environments they need to be skilled and able to carry out environmental scanning so that they can be able to make strategic decisions and relocate their competitive positions (Moss, 2001).

Processes in the Information era are changing due to the dynamic business environment. In order to meet this changing environment businesses need to adapt and modify their processes accordingly. For example, previously home loans were
looked after by the banks, while today processes for approving loans have changed and been modified so that new customers’ demands can be met. Today, mortgage brokers do the job by visiting customers at their homes and, when doing it, they very often use ICT to access the company’s knowledge base from the remote site.

- *Ability to Capture and Use Organisational Knowledge*

Today, by investing and using available ICT, organisations can store, access and be able to analyse their knowledge capital in the electronic format. This in turn allows organisations to get quick insights in how into improve their tasks, process and business models (Egbu, Hari, & Renukappa, 2005). Furthermore, it allows organisations to use that knowledge to modify and reshape current business models so that their increasing customer’s requests and demands can be met. For example, many supermarkets analyse buying patterns of the customers captured from tellers and use it to organise how they arrange products on shelves.

The above presented findings indicate that self-organisation may mean various things. The way each of the organisations will tackle eTransformation and be able to guide it will depend upon an organisation’s individual characteristics. To help study Key Features of eTransformation further the Researcher decided to assess extent to which Valuation models can be applied to eTransforming organisations.

**5.6 Resolving Complexities: Valuation Model of eTransformation**

After *Sensing* the *Complexities* of eTransformation the Researcher identified that eTransformation represented through Valuation models would include the following four parameters: Improvements to Organisational Performance by Automating
Existing Tasks $R_1$, Transactional Efficiency $R_2$, Ability to Adapt to Changing Environment $R_3$ and Ability to Capture and Use Organisational Knowledge $R_4$. To sum up, ICT Returns = $R_1 + R_2 + R_3 + R_4$

The Researcher assumes that in a task based organisation $R_1$ will dominate while in a process based organisation $R_2$ will dominate. During Transformation $R_3$ and $R_4$ will play a major role. Investment in $R_3$ and $R_4$ will enhance organisations’ competitiveness however will not result in increasing organisations’ profitability. The benefits will become tangible only when newly acquired capabilities are used for competitive advantage.

To return to the analogy, once water is transformed into steam, it acquires a different set of characteristics. The water analogy can be represented in the following way using ICT Returns: water is the organisation, heat is the investment. If it is a task based organisation, by investing in automating the tasks, the organisation can get tangible benefits. This is similar to the rise in temperature when heat is applied. At the point of transformation (water transforming to steam) the temperature remains more or less constant at about 100 °C. Water however keeps absorbing heat energy. This is the time during which an organisation transforms from being a task based organisation to a process based organisation. It will acquire new ICT infrastructure to support its business processes. This will enable it to adapt to the changing environment and capture and use knowledge for competitive advantage. These intangible benefits, if used appropriately, can be converted into benefits that are tangible and easily seen.
When steam absorbs heat energy, its temperature can go up or steam can expand. Similarly, a process based organisation can increase its profitability by investing in ICT to increase its transactional efficiency or diversify its range of activities.

To test the identified Key Features of eTransformation and see which of those would need to be taken into the consideration when developing a model that would allow for the eTransformation to be guided in the later sections of this chapter the Researcher analysed how *Task and Process* based organisations deal with change and work.

### 5.7 Interacting Agents in Task and Process Based Organisations

To assess and *Probe* the other outcome of the Narrative, the Business Operations, and to test Key Features of eTransformation the Researcher identified a need to analyse and compare characteristics and properties of the two main types of organisations: Task-based (Make and Sell) Organisations, and Process-based (Sense and Respond) Organisations.

The two types of organisations differ in how they carry out business and how they approach various events and situations (Barabba, 1998). This is due to their mindsets, knowledge priorities and profits. A comparison is shown in Table 5.2
As can be seen from Table 5.2, Task-based and Process-based organisations approach life in different ways. Task-based organisations tend to follow predictable tasks and mechanical procedures, while Process-based organisations tend to rely on networked and flexible organisational systems. Furthermore, Task-based organisations tend to produce for particular and predictable market segments, while Process-based organisations tend to cater more for unpredictable market segments with dynamic needs and requirements. As in their essence, the two types of organisations automatically tend to approach the same situations in different ways.

To understand patterns of transformation and change the Researcher revisited Toolmakers the Task-based organisations and Amazon.com the Process-based Organisation.

### 5.8 Task Based – Make and Sell Organisations

Task-based organisations rely on strict bureaucratic procedures for their operations. They are often very mechanical and have strict divisions of labour. To complete day-
to-day tasks these organisations rely on the knowledge embedded within their business operation.

So, when such organisations decide to implement new procedures or technologies they often only end up doing so with the aim to support, or at most, automate their already existing operations $R_1$ and $R_2$.

For example, each of the four Toolmakers relied on old traditional procedures with which they were familiar. Each toolmaker was the owner of the company and three out of four had other employees working for them. Businesses predominately relied on paper-based instructions, faxes for communications and word-of-mouth advertising. Such operations were valid when matched with the demands of their surrounding environment. However, when the environment surrounding the businesses changed, the nature of life and their existence changed as well. Since these environmental changes have occurred, the toolmakers have been struggling to keep their businesses afloat. Therefore, the toolmakers were forced to look for new possibilities and try to discover what they could do if they were to stay in the market. When faced with the problems of everyday life the toolmakers had skills and knowledge to deal with them. However, when faced with problems of a much larger scale and the uncertainties of the dynamically changing world the four businesses lacked the means to predict change before it completely disturbed and modified their environment and they lacked $R_3$ and $R_4$. 
5.9 Process Based – Sense and Respond Organisations

Process-based organisations have gone through the transformation process and have grasped required skills and knowledge essential for successful operations in the new circumstances (Shapiro & Lorenz, 2000). One good example of how a process-based organisation deals with the unknown is Amazon.com, which was founded by Jeff Bezos in 1994. Data used for the analysis comes from a comprehensively-written case study (Krishnamurthy, 2002). Bezos was inspired by statistics about the Internet’s growth and was astonished by new business frontiers and possibilities for the retailing industry (Krishnamurthy, 2002).

Before Bezos started the company, he identified the importance of the business surroundings – the environment. In fact, Bezos tried to deal with the issues of the chaotic world prior to establishing the business. Through comprehensive analysis, he evaluated the environment and identified the most suitable location for the business was in Seattle. In his evaluations, he included the importance of the location. Within proximity there was one of the most prominent book wholesalers located in Roseburg and the region was favoured by government regulations on taxes and profit (Krishnamurthy, 2002).

From here, it can easily be seen that even before Bezos formed the company he had skills essential to deal with the unknown. He understood the importance of the environment, the business location and government regulations early in his retailing career. Furthermore, this helped him enter new ventures and possibilities knowingly.
with the sense of direction, which in turn gave him strength to overcome possible problems.

Bezos started small with the business based in the garage. However, the business grew quickly. Complexities to him were more like possibilities and he took them as they came. He dealt with opportunities through research that was driven by a wish to find out more about the Internet’s uniqueness and customer centric principles (Krishnamurthy, 2002).

To bring the uniqueness to the customers he started with retailing books as they were compact and easy to order and ship to the customer. Bezos was trying to learn and understand the strengths of the existing technologies (R$_3$ and R$_4$). He was also skilled in analysing and assessing data and requirements. He knew how important customers were and he knew that they should be asked about their needs and requirements.

Bezos had a goal and a sense of direction. He also used a sense-making framework to categorise gathered data through patterns and associations. From numerous options and possibilities, Bezos identified that in order to have the customer centric purchases, the company would need to introduce personalised services by allowing customers to view or add reviews, browse through the books’ content pages and use a one-click purchase button.

These days the company has expanded and has become an international online superstore selling a large array of products. Amazon’s flexible and dynamic
structures with a focus on innovation have allowed it to use its tracking, monitoring and reviewing systems for sensing and responding.

Amazon.com is an example of a complex adaptive system. The system is built of a number of subsystems that co-exist in the business environment. Within the system of the organisation there is a number of interconnected agents that together impact on the way in which Amazon.com functions. Through its existence Amazon.com as a complex adaptive system showed the ability to learn and evolve based on experiences (Carapiet & Harris, 2007). Its complex characteristics can be seen when an analysis of its diverse connections of business processes and structures is carried out. Its adaptive ability is noted when its ability to change and learn on the basis of customer requests or new technological innovations is noted (Grobman, 2005).

Therefore, it can be identified that Amazon.com, a system itself, showed the importance of a system’s ability to adapt to the new environments, innovations and demands. Through this exploration, it can be concluded that an eTransformed organisation would tend to have the ability to behave as a complex adaptive system, which furthermore indicates that further studies would need to be undertaken to clearly identify eTransformation dimensions and allow for the progress within those dimensions to be tracked and measured.
5.10 Pattern Management: Revisiting Models of Organisational Change and eTransformation

Conducted research has indicated that Valuation models cannot be used to measure and guide eTransformation as it is almost impossible to put financial values to its properties. Detailed analysis of such models has helped identify that in order for the eTransformation to be measured and guided, its identified Key Features will need to be taken into consideration.

Analysis of the previous views of Organisational Change and identified Key Features of eTransformation indicates that dimensions relevant to eTransformation may be related to factors influencing particular business change or requirements. For example to change the way business is done and adapt to life within the new business environment, organisations may need to accept that change is required and face innovation. To achieve this, organisations may need to change their current business structures and make them more adequate to the new requirements and operations. Furthermore, to improve Transactional Efficiency and Organisational Performance companies may need to change and modify their current business operations. In addition, for the above to be completed, organisations may need to ensure that they have adequate skills and knowledge to help them deal with the change.

Identifying that a number of Key Features play roles in eTransformation the Researcher undertook the activity of pattern management through which the Researcher identified some of the desirable patterns (Snowdon & Grasso, 2002). Desirable patterns were those that formed when the assessments of the IT Tools and Systems dimensions were conducted and when the Researcher identified that should
be one of the dimensions of the eTransformation. The other pattern that required
stabilisation was the pattern, which indicated that eTransformed organisations are
Process-based. This finding helped the Researcher identify that one of the other
dimensions that would need to be stabilised and studied further would be the
dimension of *Tasks and Processes*. This consequently correlates to the notion that
desirable patterns once they are formed can be stabilised (Snowden & Kurtz, 2002)
and therefore can be nurtured.

Some of the early emerging patterns lead the Researcher to look into ROI and
Valuation models. Patterns that emerged around the ROI through further studies
were disturbed. The new investigations conducted allowed the Researcher to
determine that ROI alone is not a sufficient measure of eTransformation.

Patterns, which emerged however, through the investigation of Valuation models
helped clarify that eTransformation cannot be measured just in tangibles but that
other intangible characteristics of eTransformation need to be taken into
consideration. Consequently, for those patterns to stabilise, the Researcher identified
a need to carry out further investigations.

Therefore, to try to establish dimensions essential to the eTransformation the
Researcher revisited studied models of Organisational Change and eTransformation
(For more details please refer to Chapter 4). Analysis of data is presented in
Table 5.3 below.
<table>
<thead>
<tr>
<th>7S Model</th>
<th>Other Models</th>
</tr>
</thead>
</table>
| **Strategy** | The Drivers for the Advanced Organisation Model (Mawson, 2002)  
7 Steps to Business Crisis Management Model (People&Processes, 2005)  
Earl’s Stages Model (Earl, 1989)  
Evolving the E-Business (Earl, 2000)  
eBusiness Transformation Model (Burn & Ash, 2005)  
Galliers and Sutherlands six Stages of Maturity (1994)  
SOGe (McKay et al., 2000)  
eTransformation Road Map (Ginige et al., 2000) |
| **Structure** | Cycle of Organizational Development Model (Wons, 1999)  
7 Steps to Business Crisis Management Model (People&Processes, 2005)  
Evolving the E-Business (Earl, 2000)  
eBusiness Transformation Model (Burn & Ash, 2005)  
Galliers and Sutherlands six Stages of Maturity (1994)  
SOGe (McKay et al., 2000)  
eTransformation Road Map (Ginige et al., 2000) |
| **Staff** | Cycle of Organizational Development Model (Wons, 1999)  
7 Steps to Business Crisis Management Model (People&Processes, 2005)  
Nolan’s Six Stages of Growth (Nolan, 1973)  
Earl’s Stages Model (Earl, 1989)  
Galliers and Sutherlands six Stages of Maturity (1994)  
SOGe (McKay et al., 2000) |
| **Skills** | 7 Steps to Business Crisis Management Model (People&Processes, 2005)  
Nolan’s Six Stages of Growth (Nolan, 1973)  
Galliers and Sutherlands six Stages of Maturity (1994)  
SOGe (McKay et al., 2000) |
| **Style** | Cycle of Organizational Development Model (Wons, 1999)  
7 Steps to Business Crisis Management Model (People&Processes, 2005)  
Nolan’s Six Stages of Growth (Nolan, 1973)  
Earl’s Stages Model (Earl, 1989)  
Evolving the E-Business (Earl, 2000)  
Galliers and Sutherlands six Stages of Maturity (1994)  
SOGe (McKay et al., 2000) |
| **Shared Values** | Cycle of Organizational Development Model (Wons, 1999)  
7 Steps to Business Crisis Management Model (People&Processes, 2005)  
Evolving the E-Business (Earl, 2000)  
Galliers and Sutherlands six Stages of Maturity (1994)  
SOGe (McKay et al., 2000) |
| **Systems** | The Drivers for the Advanced Organisation Model (Mawson, 2002)  
7 Steps to Business Crisis Management Model (People&Processes, 2005)  
Nolan’s Six Stages of Growth (Nolan, 1973)  
Earl’s Stages Model (Earl, 1989)  
Evolving the E-Business (Earl, 2000)  
Internet Based B2B Stages (Rayport & Jaworski, 2002)  
eBusiness Transformation Model (Burn & Ash, 2005)  
Galliers and Sutherlands six Stages of Maturity (1994)  
SOGe (McKay et al., 2000)  
eTransformation Road Map (Ginige et al., 2000) |

Table 5.3 7S Versus Other Models
From the above Table 5.3 it can be seen that the 7 S Model (Waterman et al., 1980) is one of the most comprehensive models of Organisational Change. As such, the Researcher used the model and applied it to the Task and Process based organisations to identify the extent to which the model can be used to measure eTransformation.

5.11 Application of the 7 S Model to Task and Process Based Organisations

The 7 S model (Waterman Jr, 1982) was applied to two types of organisations with the aim to determine the extent to which the model can be used to measure and guide eTransformation. One type of the companies are Toolmakers the companies that are yet to transform and undertake the eTransformation journey and the other Amazon.com the company of the 21st Century which started its journey as an SME and has over time managed to become one of the largest multinational companies of today. Amazon.com is a company that started business as a company of the Information Era and remained as such today. Therefore, the Researcher sees that the comparison of the two types of companies is highly relevant to the future of eTransformation. The main reason for this is that the Researcher identified that a majority of brick and mortar companies that are undertaking eTransformation start as task based organisations. Their day-to-day operations depended upon successful completion of each individual task and their associated activities. Tasks in such companies are usually carried out independently of the whole process to which those tasks belong. Once however companies start implementing ICT, they then slowly start integrating and streamlining tasks through the use of systems. Therefore, it is seen that Task based organisations once they have transformed will become Process based. The following is illustrated through a comparison of the two very distinctive
types of organisations, Toolmakers and Amazon.com. Data about the Toolmakers was collected while conducting the study of their eTransformation journey by the Researcher while data about the Amazon.com was taken from the case study written by Krishnamurthy in 2002.

<table>
<thead>
<tr>
<th></th>
<th><strong>Task Based 4 Toolmakers</strong></th>
<th><strong>Process Based Amazon.com From garage days to online super store</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy</strong></td>
<td>Strict guidelines and procedures. Each employee has set tasks to complete, there are no variations.</td>
<td>Flexible, organic (differentiation, uniqueness, focus, innovation, breadth). Each employee has a power to suggest innovation. Innovation and use of technology are appreciated and received with gratitude.</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td>Bureaucratic structure, strict division of labour, strictly split tasks. CEO – and workers.</td>
<td>Flexible and dynamic. Amazon started retailing from a garage as a small store. Its CEO’s virtue to use technology allowed it to grow into a large multinational enterprise.</td>
</tr>
<tr>
<td><strong>Staff</strong></td>
<td>CEO/ Managing director and factory floor workers.</td>
<td>CEO/Managing director, staff responsible for various departments and needs.</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td>Skills associated to the management, production and toolmaking.</td>
<td>Range of skills with a focus on technical innovation.</td>
</tr>
<tr>
<td><strong>Style</strong></td>
<td>Output driven leadership aimed at tool production.</td>
<td>Innovation driven leadership aimed at utilisation of technology to make difference and deliver a variety of products in a quicker and more reliable way to the customers.</td>
</tr>
<tr>
<td><strong>Systems</strong></td>
<td>Access to stand alone computers, use Internet, e-mail productivity software, Static website, office and document management systems</td>
<td>Enterprise wide collaboration tools integrated into applications. Has fully functional eCommerce website integrated with a number of systems. Amongst other systems there are: computerised inventory management system, one-click shopping system, recommender system, product rating and review system, e-mail notification system, customer personalisation system, customer</td>
</tr>
</tbody>
</table>
Table 5.4 Task (Toolmakers) Versus Process Amazon.com Based Organisation

| Shared Values | Get jobs, complete them on time, satisfy customer requirements | Be competitive, excel in the market, be different to the competition, satisfy customer requirements |

The analysis above (Table 5.4) shows that Amazon.com never changed its innovative virtue and ability to assess the environment, study customer requirements and apply technology to new innovative business models. As a process based organisation Amazon.com is a good example of an eTransformed organisation.

Furthermore, the study identified that the range of 7S dimensions is relevant to eTransformation and that they may closely be related to eTransformation selections and decisions as well as decision-making possesses by eTransforming Organisations.

The study also identified that some of the dimensions may have a potential to be used as measurements of the eTransformation journey but for that to be identified more detailed assessment of the 7S dimensions will need to be undertaken.

<table>
<thead>
<tr>
<th>Resolving Complexities</th>
<th></th>
</tr>
</thead>
</table>
| **Probe**              | - Assessment of Models of the Organisational Change and eTransformation was undertaken.  
                       | - Further studies of Valuation Models were conducted to evaluate if eTransformation can be measured using them. |
| **Sense**              | - eTransformation Road Map was applied to case study organisations.  
                       | - Valuation Models were reviewed.  
                       | - Available data on Task and Process Organisations was used to help identify possible eTransformation patterns.  
                       | - 7 S Model was tested for the application to the eTransforming organisations by applying it to Task and Process based organisations |
| **Respond**            | - Assessments of Organisational Change and eTransformation Models helped identify Patterns and pinpoint that eTransformation Road Map explains IT Systems and Tools dimension best.  
                       | - Key Features of eTransformation were identified which helped determine that eTransformation cannot be measured using Valuation |
Models but requires more descriptive dimensions.

- Identification that Task and Process organisations deal with work situations in a different way helped identify that eTransforming companies need to have characteristics of Process Based organisations.

- Analysis identifies that 7S dimensions should further be explored.

Table 5.5 Passages through Complex Domain

Travel through the *Complex* domain allowed the Researcher to evaluate a number of competing models and identify those that would be of benefit for eTransforming organisations. The investigation also helped identify Key Features of eTransformation which helped pinpoint that eTransformation cannot be measured using the Valuation models but that it needs dimensions through which its progress can be measured and tracked. Furthermore, the study helped identify that the 7S Model’s dimensions should be explored in more detail to see which of its dimensions could be used to guide, track and measure the eTransformation journey. In the next chapter the analysis through interviews of the 7S Model is described. The aim of the interviews was to identify dimensions of eTransformation and bring SMEs and the Researcher closer to Order and the domain of *Knowable.*
Chapter 6 - A Search for eTransformation Dimensions: Approaching Knowable

In the previous chapter, the Researcher discussed the Complex domain. Explorations carried in the Complex domain allowed the Researcher to identify that the 7 S Model (Waterman Jr, 1982) can be used to describe the eTransformation for tasks and process based organisations.

In this chapter, the Researcher travels through Knowable and is assessing and analysing the applicability of 7 S and its dimensions to be used to track, guide and measure the eTransformation journey. The study is conducted through a series of 17 semi-structured (Wengraf, 2001) and 30 structured interviews (Bullen & Rockart, 1981).

6.1 Application of the 7 S Model through System Thinking

Once the Researcher left the Complex domain a relatively unpredictable domain, she commenced a journey through Knowable in which the primary decision model is Sense – Analyse – Respond (Snowden & Mark, 2006). To understand and assess this
domain the Researcher first needed to collect and then Sense the collected data so that further Analysis of the Sensed data can be carried out.

Initial data collection was done by carrying out 17 semi-structured interviews. The main reason for selecting the semi-structured interviews was that such interviews are conducted with an open framework that allows for two-way communication, detailed analysis and elaborations to happen. Such discussion was seen as beneficial as this would allow the Researcher to collect more information about the eTransformation. The interview guide was developed prior to the interviews. The guide consisted of broad questions that corresponded to the 7S dimensions. The list of the questions can be found in Appendix 4.

Through interviews and guided discussions, each of the dimensions was explored. The semi-structured nature of the interviews allowed for specific questions relevant to each interviewed business to be asked. One of the main reasons why the Researcher asked each of the interviewed CEOs or Managing Directors to elaborate upon the discussed issues was to minimise any potential bias that collected data could produce.

Participation in the interviews was voluntary. All participants were asked to consent to be interviewed. It was also explained to the participants that at any stage they could withdraw their consent and decide not to participate in the research.

Data collected via the interviews was transcribed and summarised. Analysis of the collected data identified that to build a model to be used to guide and measure
eTransformation it was necessary to apply the System Thinking Approach through which a more structured analysis could be carried out. Furthermore, this would allow the Researcher to learn through the experiences of change and achieve an innovative outcome and identify the essential dimensions of the model that could be used to measure and guide eTransformation (Waldman, 2007).

Initial data assessments and data categorisations helped identify that Strategy, Structure, Tasks and Processes and IT Tools and Systems appear to play the most crucial roles in eTransformation. Data collected also helped pinpoint that changes within the above listed dimensions happen through staff interactions at various organisational levels, their skills and knowledge, the leadership guiding the organisation and the values and goals shared by the staff. Therefore, the Researcher identified that these qualities are rather characteristics of the identified dimensions rather than dimensions in their own right. A summary of the data is presented in Figure 6.1 below.
Following the identification of the most crucial dimensions of eTransformation, the Researcher analysed data further by using the structural approach and categorising the collected data (Snowden & Mark, 2006). Now aware that eTransformation is staged and multidimensional, the Researcher carried a comprehensive analysis of the data collected via interviews to determine what properties each of the four dimensions had at each of the four eTransformation stages. Dimensions studied were:

- **Strategy** – organisation’s visions, values, goals and aspirations;
- **Structure** – organisation’s departmental and operational structure;
- **Tasks and Processes** – operations and activities an organisation needs to conduct to deliver products or services; and
- **IT Tools and Systems** dimension – IT Tools and Systems essential for the tasks and processes to be completed quicker and smoother.
To commence this investigation, the Researcher started with the identification of the eTransformation stage for each of the interviewed companies on the eTransformation Road Map, the *IT Tools and Systems* dimension.

Next, companies belonging to the same *IT Tools and Systems* stage were grouped. Following the groupings, the Researcher assessed companies that belonged to the same stage and assessed those companies along the other three Dimensions, namely *Strategy*, *Structure* and *Tasks and Processes* to establish properties of each of the Dimensions along four previously identified stages.

This assessment helped the Researcher identify that characteristics of the companies at various stages for each of the four proposed Dimensions very often do not correlate to one another and identified that a company can be in a different stage of development for each individual Dimension. Following this identification, the Researcher went through the data grouped in accordance to the stage for each of the dimensions again, now to establish the progression along stages. Data is shown in the Table 6.1

In addition, as none of the companies reached stage four of eTransformation the Researcher used data collected through prior conducted case study analyses such as that one of Amazon.com to predict characteristics of the companies at the fourth stage.
<table>
<thead>
<tr>
<th>Based on the eT Road Map</th>
<th>6 SMEs Stage 1</th>
<th>8 SMEs Stage 2</th>
<th>3 SMEs Stage 3</th>
<th>Predictions Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy</strong></td>
<td>Strict guidelines, stable ongoing operations and customers</td>
<td>Moderately centralised control, flexibility encouraged</td>
<td>Strategies: differentiation, uniqueness, focus innovation, breadth</td>
<td>Clearly defined strategy (selections from S3)</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td>CEO makes decisions, strict division of labour, strict operations</td>
<td>Focused bureaucracies, companies identify that structure should change if so is required</td>
<td>Basic networked structures, flexibility and innovation are encouraged</td>
<td>Networked, flexible and dynamic</td>
</tr>
<tr>
<td><strong>Tasks and Processes</strong></td>
<td>SMEs tend to avoid change, Activities are independent.</td>
<td>Task automation use IT to speed up current tasks and focus on transactional efficiency.</td>
<td>Organisations with the abilities to adapt to the changing environment (create new tasks &amp; processes)</td>
<td>Using systems to create, change and adapt new tasks and processes</td>
</tr>
<tr>
<td><strong>IT Tools</strong></td>
<td>Access to stand alone computers, use internet, e-mail, productivity software</td>
<td>Making use of networks scheduling and collaborations tools, VPN and FTP</td>
<td>Enterprise wide applications use: CRM tools, tracking Tools</td>
<td>Enterprise wide collaboration tools use: tools integrated into applications</td>
</tr>
<tr>
<td><strong>IT Systems</strong></td>
<td>Static website, office and document management systems</td>
<td>Interactive website, operational level systems - CRM, TPS</td>
<td>eCommerce website, KMS, DSS emerging, organisations have IS department</td>
<td>Convergence, ISs at all levels across all functional areas, CRM, TPS KMS, DSS, ESS, ERP</td>
</tr>
</tbody>
</table>

**Table 6.1** Initial Assessment Conducted Based on the IT Tools and Systems Dimension

Following the initial analysis of the eTransformation dimensions and their Characteristics the Researcher used collected data to plot 17 SMEs. Out of the 17 SMEs there were 4 Toolmakers (4SME), 8 IT Provider SMEs (8IT SME) and 5 SMEs studied via other eTransformation projects that expressed a wish to follow their eTransformation journey. The main aim of the study was to identify the current stage of their eTransformation along dimensions of **Strategy, Structure, Tasks and**
**Processes** and *IT Tools and Systems*. During the initial analysis, *IT Tools and Systems* were separated to help identify if there was a need for a Dimension to be split in two or if it will be sufficient to keep the Dimension of *IT Tools and Systems* united.

While conducting the analysis companies belonging to *IT Tools and Systems* dimension Stage 1 were marked with A, Stage 2 with B and Stage 3 with C. There were no Stage 4 companies. In addition, to marking the companies along each of the Dimensions the Researcher also extracted data from the interviews about the company’s views and goals in terms of where they think they should be investing into next to determine if findings through the dimensional analysis match views of the companies. Data is summarised in Table 6.2.

<table>
<thead>
<tr>
<th>ID</th>
<th>Road Map Stage</th>
<th>Strategy</th>
<th>Structure</th>
<th>Tasks &amp; Processes</th>
<th>IT Tools</th>
<th>IT Systems</th>
<th>Company wants to invest in</th>
<th>Company Should Invest in</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 sme 4</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>IT Strategy</td>
<td></td>
</tr>
<tr>
<td>2 sme 4</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>IT Strategy</td>
<td></td>
</tr>
<tr>
<td>3 sme 4</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>IT Strategy</td>
<td></td>
</tr>
<tr>
<td>4 sme 4</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>IT Strategy</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>IT Tasks &amp; Processes</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>IT Strategy</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>IT Systems Strategy</td>
<td></td>
</tr>
<tr>
<td>8 ItSME</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>IT Tools Strategy</td>
<td></td>
</tr>
<tr>
<td>9 ItSME</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>Structure Strategy</td>
<td></td>
</tr>
<tr>
<td>10 ItSME</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>IT Tools Structure</td>
<td></td>
</tr>
</tbody>
</table>
From Table 6.2 it can be seen that 14 out of 17 SMEs interviewed wanted to invest in **IT Tools and Systems** Dimension. The analysis carried however indicated that 12 of these companies required investing in **Strategy**, 4 in **Tasks and Processes** and 1 in **Structure**. The observation of the data signified that none of the studied SMEs should have been investing further into **IT Tools and Systems** as they have not yet positioned themselves appropriately or identified where and how to use **IT Tools and Systems** to the full potential.

Following the initial analysis of the eTransformation Dimensions and the finding that Dimensions across stages possess various properties it was identified that further studies will need to be carried out in order to establish Categories and their Characteristics of the Dimensions at various stages of eTransformation. The study also helped identify that **IT Tools and Systems** can be looked as one dimension as a system cannot exist if there are no tools to support their functions.
Next, it was required to assess data collected via the interviews further and to pinpoint some of the common views and Characteristics of the companies that have been found to be at the same Dimension stage. Data categorisation was carried out in order to help discover links that at the time of the categorisation were not known (Snowden & Kurtz, 2002). After interviews were conducted, data collected was analysed and categorised. Categorisation for the dimensions was done in accordance with the stage the SME rated on the *IT Tools and Systems* dimension. Data is presented in Tables 6.3-6.6 for all four dimensions across four eTransformation stages.

### 6.2 Study of Each of the Identified Dimensions

<table>
<thead>
<tr>
<th>Dim</th>
<th>Category</th>
<th>Stage 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>The Environment</td>
<td><strong>SMEs competitors awareness</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs report knowing who most of their competitors are</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs identify some of the competitors’ strengths in terms of products, services, operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs identify that the business environment we live in today is not the same as one 20 years ago</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs identify some of the environmental changes (jobs going overseas, lack of individuals willing to specialise in particular disciplines, market shortages)</td>
</tr>
<tr>
<td>2.1</td>
<td>Plans &amp; Visions</td>
<td><strong>Meet essential deadlines</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs report struggle to meet all deadlines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs report that their counterparts overseas can complete much more in a shorter time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs identify that if they are not to complete essential deadlines they will lose jobs completely</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs report that their survival depends on their ability to deliver on time</td>
</tr>
<tr>
<td>3.1</td>
<td>Customers</td>
<td><strong>SMEs Customers awareness</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are generally aware of who their customers are</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs at this stage are usually able to deliver and market required goods / services</td>
</tr>
<tr>
<td>4.1</td>
<td>Products &amp; Services</td>
<td><strong>Standards &amp; certifications</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- In general, SMEs follow industry standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Depending upon industry sectors – companies are usually covered with necessary certifications</td>
</tr>
<tr>
<td>5.1</td>
<td>Employees</td>
<td><strong>Knowledge requirements</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs report requirement of industry specific tasks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- A small number of SMEs at this stage identifies that their...</td>
</tr>
</tbody>
</table>
employees may need more holistic knowledge than they currently have.

### 6.1 Goals

**SMEs goals**
- SMEs report that they are aiming to stay in the market
- SMEs are stating that they are doing all they can to ensure they can keep their existing operations
- SMEs are ensuring that they are able to deliver to the customers on time

### 1.1 Centralisation / Decentralisation

**Decision – CEO**
- Business owner (CEO, managing director) is usually the only decision maker
- If business is owned through partnership then partners make decisions together
- For majority, decision is made by one single individual
- Employees at this organisation are rarely asked for opinions

### 2.1 Functions / Divisions

**Operations fixed**
- SMEs report that their operations day to day are fixed (Employee is in charge of operating a particular machine. Job performed day to day is the same – it repeats).
- Product / services do not change either.
- There are no changes in the ways in which particular operations are carried they have been same throughout the time organisation existed.

### 3.1 Formalisation

**Business functions / operations**
- SMEs report that their operations are highly formalised
- Each day there are particular actions to be carried. Those actions are performed in a staged manner.
- Departments operations are formalised and there is a strict control to how operations within them are conducted

### 1.1 Nature of Tasks

**Streamlining**
- SMEs are trying to streamline operations before automation
- SMEs are assessing their current operations and identifying if they could be changed and done in a different way for speed and / or reliability

### 2.1 From Tasks to Processes

**Removal of repetitive tasks**
- SMEs report that they are trying to identify repetitive tasks
- Some SMEs report that they are trying to use electronic systems to minimise paper data
- Some SMEs are trying to use scheduling packages to remove repetitive data distribution

### 3.1 Task & Process Streamlining

**Avoid change**
- SMEs at this stage are not willing to change
- SMEs at this stage are scared of what change may bring
- SMEs at this stage are often resistant to change
- SMEs report that they are trying to use their current resources the best they can to achieve required outcomes

### 4.1 Task & Process Integrations

**Activities are independent**
- SMEs report that each employee has a set of activities to complete
- Activities of one employee are usually independent to those of others, however linear progression may be required for the product to be placed in its final form
- Applications used within the organisation are often dedicated to a particular task and they are often independent of all the other IT application the organisation has

### 1.1 IT Tools

**Stand alone tools**
- SMEs at this stage report use of stand alone computers / printers (basic hardware)
- SMEs may also use Internet and associated tools (ie. e-mail)
- SMEs also report use of productivity software (ie Office)
- SMEs have ability to store, manage and retrieve documents

2.1 Tool Users
- **Few employees**
  - Usually CEO (managing director or a business owner) would usually use ICT
  - In rare cases there may be one or two other employees who would use ICT

3.1 Internet
- **Searching**
  - SMEs report use of Internet to find descriptions about other companies
  - SMEs report use of Internet to communicate with industry bodies
  - SMEs report use of Internet for education

4.1 Website
- **Static**
  - Companies at this stage have a brochure ware static site
  - Site consists of few electronic pages with images and contact details

5.1 IT Support
- **Limited support (internally or externally)**
  - Often there is someone within the company, friend or a relative who may know something about IT and provide help
  - Person providing the ICT support at this stage usually does not have a comprehensive knowledge about ICT
  - If more advanced knowledge is needed company may look for contractor

6.1 IT Systems
- **Office Management – File management**
  - SMEs at this stage use office and document management systems
  - SMEs save, retrieve and manipulate documents
  - SMEs also report use of MYOB

7.1 Security
- **Antivirus and anti-spyware software**

Table 6.3 Stage 1 - Characteristics of the eTransformation Dimensions

<table>
<thead>
<tr>
<th>Dim</th>
<th>Category</th>
<th>Stage 2</th>
</tr>
</thead>
</table>
| 1.2 The Environment | Competitors – products & services | - SMEs report that they are aware of what services / products their competitors are offering  
- SMEs identify their most of the strengths and weaknesses of their own products / services  
- SMEs acknowledge that change is needed to be able to meet the needs of the changed environment |
| 2.2 Plans & Visions | Meet all deadlines | - SMEs at this stage are usually able to complete all set deadlines  
- Set deadlines at this level correspond to minimum requirements – the sustainability  
- SMEs at this stage are still unable to differentiate themselves from the competition |
| 3.2 Customers | Customer requirements | - SMEs at this stage are becoming aware of customers requirement  
- SMEs are trying to identify and justify customer requirements  
- SMEs carry surveys/ data analysis of existing customer records to identify industry needs and requirements |
| 4.2 Products & Services | Marketing strategies | - SMEs identify that products and services need to be marketed  
- SMEs try to go beyond face to face marketing  
- SMEs try to incorporate electronic online marketing  
- SMEs are developing marketing strategy through portfolios and market analysis |
<table>
<thead>
<tr>
<th>5.2 Employees</th>
<th>Education and new ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs identify that employees of their employees should not be limited to the industry sectors</td>
</tr>
<tr>
<td></td>
<td>- At this stage SMEs start identifying that knowledge from multiple disciplines is valuable</td>
</tr>
<tr>
<td></td>
<td>- SMEs also identify that employees at various functions could benefit with ICT knowledge</td>
</tr>
<tr>
<td></td>
<td>- SMEs highlight that future advancements depend on innovations of today</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6.2 Goals</th>
<th>Reality VS goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs have goals and plans</td>
</tr>
<tr>
<td></td>
<td>- SMEs at this stage are required to ensure their current skills and abilities are adequate for them to achieve their set goals</td>
</tr>
<tr>
<td></td>
<td>- SMEs set their goals based on the environmental changes, industry sector trends and customer requirements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structure</th>
<th>1.2 Centralisation / Decentralisation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Decision- Managing director</td>
</tr>
<tr>
<td></td>
<td>- SMEs report that primary decision maker is CEO (General manager, business owner) and associated managers</td>
</tr>
<tr>
<td></td>
<td>- Employees in this organisation take responsibility for the activities that they have been given</td>
</tr>
<tr>
<td></td>
<td>- Employees are occasionally asked for their opinions when decisions are made</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.2 Functions / Divisions</th>
<th>Diversification present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs report that some operations still remain fixed (ie. the production of a particular product)</td>
</tr>
<tr>
<td></td>
<td>- SMEs at this stage also report they are trying to ensure product is suitable for the customers’ needs</td>
</tr>
<tr>
<td></td>
<td>- SMEs are reporting that they may offer slight product customisations (ie. products in different colours)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.2 Formalisation</th>
<th>SMEs Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs report that their activities are often centralised around particular activities</td>
</tr>
<tr>
<td></td>
<td>- SMEs identify that their centralisation is often determined by their products and services</td>
</tr>
<tr>
<td></td>
<td>- SMEs are also reporting that they are centralising their services around customers need and demands</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tasks and Processes</th>
<th>1.2 Nature of Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automation</td>
<td>- SMEs identify a need that activities within the organisation could be automated</td>
</tr>
<tr>
<td></td>
<td>- Automation is evident within the shop floors within manufacturing as well as within the organisations offices</td>
</tr>
<tr>
<td></td>
<td>- SMEs are reporting use of IT to speed up operations and make them more reliable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.2 From Tasks to Processes</th>
<th>Improvement in operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs are looking into the ways how to improve current operations</td>
</tr>
<tr>
<td></td>
<td>- SMEs are making assessments of the company’s workflow</td>
</tr>
<tr>
<td></td>
<td>- Workflow assessments are helping identify tasks that can be collated into processes</td>
</tr>
<tr>
<td></td>
<td>- Workflow assessment is also helping identify ways how to improve operations, speed them up and perform them more efficiently</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.2 Task &amp; Process Streamlining</th>
<th>Change when essential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs at this stage are not always happy to change</td>
</tr>
<tr>
<td></td>
<td>- SMEs at this stage may be still trying to hold back onto the old / known tasks and processes</td>
</tr>
<tr>
<td></td>
<td>- SMEs at this stage are ready to change only if there is strong evidence that change will bring benefits</td>
</tr>
<tr>
<td></td>
<td>- SMEs alone are not proactive to change however with the help of the trusting body are usually willing to explore new possibilities</td>
</tr>
<tr>
<td>4.2 Task &amp; Process Integrations</td>
<td>Activities are grouped – tasks</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td></td>
<td>- SMEs are conducting the workflow analysis and through it identifying essential tasks and processes</td>
</tr>
<tr>
<td></td>
<td>- SMEs at this stage are also able to see what tasks and processes could be grouped and or reorganised to ensure better productivity</td>
</tr>
<tr>
<td></td>
<td>- SMEs are identifying that some tasks or processes could be sequenced in parallel.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2 IT Tools</th>
<th>Networked – sections, whole integration not present (VPN, FTP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs at this stage have basic networks</td>
</tr>
<tr>
<td></td>
<td>- SMEs may have computers connected to the printer or scanner</td>
</tr>
<tr>
<td></td>
<td>- SMEs at this level may have LAN or they may have wireless networks</td>
</tr>
<tr>
<td></td>
<td>- SMEs may also use VPNs and FTPs for file access and transfer</td>
</tr>
<tr>
<td></td>
<td>- SMEs may use scheduling packages and groupware facilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.2 Tool Users</th>
<th>All departments not all employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- At this stage all employees are still not ICT Tools users</td>
</tr>
<tr>
<td></td>
<td>- SMEs report that at this stage all of companies departments keep some type of electronic records</td>
</tr>
<tr>
<td></td>
<td>- There is usually one individual within each of the departments that is able to use ICT Tools</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.2 Internet</th>
<th>Customer Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs at this stage often use Internet for communication with customers</td>
</tr>
<tr>
<td></td>
<td>- Majority of Internet communication happens via e-mails or through forms</td>
</tr>
<tr>
<td></td>
<td>- SMEs use Internet to reach customers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4.2 Website</th>
<th>Interactive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Websites of the SME at this stage usually have forms</td>
</tr>
<tr>
<td></td>
<td>- Websites allow for the two way communication to happen</td>
</tr>
<tr>
<td></td>
<td>- Interactive website is often associated with the product catalogue</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5.2 IT Support</th>
<th>Some support – usually ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- IT support is usually provided by someone within the organisation</td>
</tr>
<tr>
<td></td>
<td>- Person within the organisation may not have a very comprehensive ICT knowledge and therefore company often may require someone from outside (ie. contractor)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6.2 IT Systems</th>
<th>Operational Systems – CRM, TPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- SMEs at this stage have basic CRMs</td>
</tr>
<tr>
<td></td>
<td>- CRMs start being developed from basic spreadsheets and contact databases</td>
</tr>
<tr>
<td></td>
<td>- CRMs advance and become one of the first integrated systems in the organisations</td>
</tr>
<tr>
<td></td>
<td>- TPS is usually the second system that is developed which allows for the transactions to be carried out and conducted electronically</td>
</tr>
<tr>
<td></td>
<td>- TPS forms a base for the appropriately implemented eCommerce site</td>
</tr>
<tr>
<td></td>
<td>- SMEs at this stage may have product tracking systems</td>
</tr>
<tr>
<td></td>
<td>- SMEs at this stage may have employee hour tracking systems</td>
</tr>
</tbody>
</table>

| 7.2 Security | - User access rights, authorisation and authentication, proxies and firewalls |

Table 6.4 Stage 2 - Characteristics of the eTransformation Dimensions
<table>
<thead>
<tr>
<th>Dim</th>
<th>Category</th>
<th>Stage 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3</td>
<td>The Environment</td>
<td><strong>Matching competition</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are aware that they should be able to match what their competitors are offering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are exploring products and services of the competition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are trying to assess if they could do business online, open virtual store or have online product customisation facilities</td>
</tr>
<tr>
<td>2.3</td>
<td>Plans &amp; Visions</td>
<td><strong>Create improvements</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are realising that they need to plan for the future</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are aware that they live in the constantly changing world</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are seeing that they should be acting fast</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs realise that they should have plans and visions that will take them into the future</td>
</tr>
<tr>
<td>3.3</td>
<td>Customers</td>
<td><strong>SMEs marketing</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are realising that they need to market their products and services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are realising that face to face marketing is not sufficient</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are realising that their customers are exploring the electronic market place</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are realising that they need to put effort to ensure their existing customers stay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are seeing that they need to find ways how to attract new customers</td>
</tr>
<tr>
<td>4.3</td>
<td>Products &amp; Services</td>
<td><strong>Support &amp; guarantee for customers</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are realising that it is essential to go beyond simple product / service exchange and provide trust product service guarantees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are seeing that it is important to provide continuous support to the customers</td>
</tr>
<tr>
<td>5.3</td>
<td>Employees</td>
<td><strong>Employees &amp; Future</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are encouraging their staff to go beyond their day to day jobs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are realising at this stage that new knowledge and ideas should be incorporated within the business</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are encouraged to plan for the future</td>
</tr>
<tr>
<td>6.3</td>
<td>Goals</td>
<td><strong>Strategy VS goals</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs are identifying their goals need direction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs realise that they need guidance on how to achieve their goals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs realise that goals alone are not enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs at this stage know that they need a sense of direction to achieve and meet their goals</td>
</tr>
<tr>
<td>1.3</td>
<td>Centralisation / Decentralisation</td>
<td><strong>Decision - Some employees</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Decision making at this stage is given to some employees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Employees are responsible for the work they do</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Some employees are able to make decisions for the job they are responsible for</td>
</tr>
<tr>
<td>2.3</td>
<td>Functions / Divisions</td>
<td><strong>Operations can be changed if needed</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs identify that many of their procedures can now be changed if required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs at this stage are not rigid and strict</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SMEs at this stage are ready to explore new possibilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- If SMEs at this stage see that they could benefit if they change some of their functions they are willing to do so</td>
</tr>
<tr>
<td>3.3</td>
<td>Formalisation</td>
<td><strong>Global needs</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Formalisation now reflects global needs and the environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Depending upon customer requirements structure within the organisation can be adjusted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- If customers require product customisation or an alternative way</td>
</tr>
<tr>
<td>Tasks and Processes</td>
<td>Creation of new tasks</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------</td>
<td></td>
</tr>
</tbody>
</table>
| **1.3 Nature of Tasks** | - At this stage SMEs identify that their current operations are not adequate  
- Assessments of the workflow help identify that there may be activities that could be performed better if new tasks were to be introduced  
- Assessments may also indicate that there may be a different or more productive way to do a particular task |

<table>
<thead>
<tr>
<th>Tasks and Processes</th>
<th>Improvement in profitability</th>
</tr>
</thead>
</table>
| **2.3 From Tasks to Processes** | - Changes in the operations often reflect upon the operations such as correctness or the production, operations precision, speed and delivery  
- Changes within tasks and processes are often reflected through increase of profit  
- After changes of tasks and processes have been carried out companies may be able to serve more customers, market product in different ways, produce new more innovative products |

<table>
<thead>
<tr>
<th>Tasks and Processes</th>
<th>Change for benefits</th>
</tr>
</thead>
</table>
| **3.3 Task & Process Streamlining** | - SMEs identify that change is integral component of the businesses today  
- SMEs identify that if there are benefits that change could bring, they need to revisit their operations and change accordingly  
- Reassessment of workflow is essential to ensure tasks and processes can be streamlined so that there is no duplication  
- Reassessment of the workflow also can help identify tasks and processes that can be done in parallel so that the organisation can be more efficient |

<table>
<thead>
<tr>
<th>Tasks and Processes</th>
<th>Activities form processes</th>
</tr>
</thead>
</table>
| **4.3 Task & Process Integrations** | - Integration of the tasks and activities at this stage helps companies create processes  
- SMEs identify that integration of the tasks can bring smoother, quicker, better and more reliable productions  
- SMEs identify that IT is helping them integrate tasks and processes and minimise repetition |

<table>
<thead>
<tr>
<th>IT Tools and Systems</th>
<th>Networked-Partially integrated</th>
</tr>
</thead>
</table>
| **1.3 IT Tools** | - There are a number of small networks within the organisations  
- Some networks are integrated with one another  
- At this stage, companies may still have some systems, which are not fully integrated within the wide enterprise network (these are usually industry specific systems).  
- At this stage company may have systems such as – CRM, TPS, Tracking system  
- A few companies reported use of CRM to learn about their customers |

<table>
<thead>
<tr>
<th>IT Tools and Systems</th>
<th>All employees</th>
</tr>
</thead>
</table>
| **2.3 Tool Users** | - At this stage all employees use IT tools  
- All employees have e-mail accounts  
- Most of the employees are able to log into the company system and in accordance to their roles and responsibilities access appropriate data  
- Most employees use tools such as Word, Excel |

<table>
<thead>
<tr>
<th>IT Tools and Systems</th>
<th>Advertising</th>
</tr>
</thead>
</table>
| **3.3 Internet** | - Internet is used for advertising and marketing  
- Internet is used as a tool to let others know about the company  
- Via internet SMEs are able to use websites of the other companies to advertise some of their products and services  
- SMEs are able to form partnership with other organisations and advertise their products and services via portals |
4.3 Website | **eCommerce**
---|---
SMEs at this stage are able to support full online transactions
- Products can be selected and purchased online

5.3 IT Support | **Basic IT Department**
---|---
SMEs at this level often have a basic IT department
- If IT department does not have required knowledge the IT department knows where to get additional help
- IT department may often work in cooperation with contractors or may have a company to which certain jobs are outsourced

6.3 IT Systems | **KMS, DSS – emerging**
---|---
SMEs at this level are starting to develop their systems
- SMEs at this stage have fully functional CRM and TPS
- SMEs at this level are making plans how to consolidate knowledge within their organisation
- SMEs keep data and records in the databases
- SME are slowly integrating basic KMS and DSS

7.3 Security | **Network traffic encryption (SSL, TLS)**
---|---

Table 6.5 Stage 3 - Characteristics of the eTransformation Dimensions

<table>
<thead>
<tr>
<th>Dim</th>
<th>Category</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4 The Environment</td>
<td>Be better than competition</td>
<td></td>
</tr>
<tr>
<td>2.4 Plans &amp; Visions</td>
<td>Vision for the future</td>
<td></td>
</tr>
<tr>
<td>3.4 Customers</td>
<td>SMEs learn from Systems</td>
<td></td>
</tr>
<tr>
<td>4.4 Products &amp; Services</td>
<td>New improved products &amp; services</td>
<td></td>
</tr>
<tr>
<td>5.4 Employees</td>
<td>Innovation</td>
<td></td>
</tr>
</tbody>
</table>

- SMEs are realising that they need to beat the competition
- SMEs are realising a need to excel
- SMEs are trying to be innovative and try new things
- SMEs are seeing that if they can offer more than the competition they will be leaders within the market place
- SMEs realise a need to plan for the future
- SMEs try to explore new business avenues
- SMEs start to think how to put their futuristic visions into realisations
- SMEs use the systems and learn from them
- SMEs use CRM to learn about customers
- CRM allows SMEs to find out new information about their customers
- SMEs act upon systems reports to try to attract new customers and ensure old ones stay
- SMEs also learn through KMS, TPS and DSS
- SMEs are learning through their systems about their current product / service offers
- SMEs are also exploring through their KMS and other research finding products / services their competitors offer and what is new on the market
- At this stage SMEs are trying to improve their existing offerings and try to come up with new, better ones
- SMEs are exploring needs and demands of the environment and trying to match them with futuristic solutions
- At this stage employees are encouraged to innovate
- SMEs at this stage have employees that regularly go to trainings and workshops
- Employees in this companies are encouraged to learn
- Employees are encouraged to bring new innovative tools and technologies
- Employees are encouraged to test and experiment with new ideas

### 6.4 Goals

<table>
<thead>
<tr>
<th>Skills &amp; resources VS goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>- SMEs are constantly gaining new skills and knowledge to ensure they are up to date with new inventions and technologies</td>
</tr>
<tr>
<td>- SMEs at this stage are ready to use their current skills and through research find and pinpoint the optimal directions for the future</td>
</tr>
<tr>
<td>- Goals at this stage drive SMEs to achieve often something that was not done before or that is not very common or still not done by many organisations</td>
</tr>
</tbody>
</table>

### 1.4 Centralisation / Decentralisation

#### Decision- Whole organisation
- Whole organisation to some extent participates in decision making
- Employees within departments have say about the future of their departments
- Employees are always asked for ideas and suggestions
- Employees are able to suggest new innovations
- Employees are the power and the knowledge of the organisation and to a large extent they determine organisations future
- Organisation is able to act quickly when needed

### 2.4 Functions / Divisions

#### SMEs adaptable to new circumstances
- SMEs at this stage are ready to adapt to new circumstances or new inventions
- SMEs are ready to restructure or form new divisions or functions
- SMEs are aware that they live in turbulent times and that therefore they need to be able to appropriately position themselves in the market place
- SMEs at this stage are often ready to approach situations in a new innovative way.
- SMEs are ready to open / close divisions or specialised in different areas

### 3.4 Formalisation

#### New ideas, innovation and future
- SMEs at this stage are flexible
- Their structure is not very formal as it can be restructured to fit needs
- SMEs structure is governed by innovations and new needs and demands
- If there is a requirement to serve a particular region, deliver or produce goods / services in a customised way SMEs at this stage are usually able to meet the demands

### 1.4 Nature of Tasks

#### Reassessment of existing tasks – fit
- SMEs at this stage are always evolving
- SMEs identify a need to check and reassess their tasks periodically to ensure they still fit organisations needs and requirements
- SMEs at this stage see that if needs and the requirements change company will need to change and modify its current tasks to suit those needs

### 2.4 From Tasks to Processes

#### Reassessment of existing processes – fit
- As tasks change SMEs also identify a need to change processes
- New demands and new requirements will change companies operations
- Needs of the environment need to match tasks and processes
- Demands from the outside world need to be constantly monitored to ensure organisation can meet them
- Changes within operations require changes in processes
- Changes within individual tasks also bring changes to the existing Processes

### 3.4 Task & Process Change for innovation
- SMEs at this stage know that without change there is no business

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| Streamlining                                                                 | - Change is an integral business component  
|                                                                             | - SMEs at this stage work with innovation  
|                                                                             | - SMEs at this stage are trying to do new things, produce better products, innovative new machinery, attract a variety of customers and market in innovative ways |
| 4.4 Task & Process Integrations                                             | **Activities across processes are integrated**  
|                                                                             | - Tasks and processes within SMEs at this stage are integrated  
|                                                                             | - Integration is one of the important characteristics of the companies at this stage  
|                                                                             | - Information and data easily flow from one department to the other  
|                                                                             | - Changes within one department are reflected in the other |
| 1.4 IT Tools                                                                | **Enterprise wide network – fully integrated**  
|                                                                             | - All tools are now fully integrated with the companies systems  
|                                                                             | - There is a full enterprise network with one common platform (or at least major systems reside on this platform)  
|                                                                             | - There is no duplications of data within separate systems  
|                                                                             | - Once change is made via one system on a particular data that change is reflected through the other organisations systems  
|                                                                             | - Organisation learns through system reports |
| 2.4 Tool Users                                                              | **All employees & some stakeholders**  
|                                                                             | - All employees use IT Tools  
|                                                                             | - IT Tool use is determined by employee requirements and their rights to access the system  
|                                                                             | - In some instances companies may allow their stakeholders to access parts of their internal system  
|                                                                             | - Companies may also be using collaboration tools when doing business jointly with other organisations |
| 3.4 Internet                                                                | **External & business contacts**  
|                                                                             | - Internet is used by employees as a means to access company systems from remote locations  
|                                                                             | - Internet is used now to create external networks with business partners  
|                                                                             | - Internet is used for communication with business partners and the establishment of new business ventures |
| 4.4 Website                                                                 | **Convergence**  
|                                                                             | - Many systems present within the organisation converge  
|                                                                             | - There is a link between internal and external company systems  
|                                                                             | - SMEs at this stage often have customisation systems that are integrated with company product catalogues and eCommerce site |
| 5.4 IT Support                                                              | **IT Department fully operational**  
|                                                                             | - At this stage SMEs have fully functional IT department  
|                                                                             | - IT department is able to look after technology within the organisation  
|                                                                             | - Company at this stage still may have relationships with contractors or it may be outsourcing particular jobs and if so there is a permanent business relationship established with those providers |
| 6.4 IT Systems                                                              | **ERP, ESS**  
|                                                                             | - SMEs at this stage have a number of systems within their organisations  
|                                                                             | - Systems are well integrated and are able to communicate to one another  
|                                                                             | - In particular ESS and ERP are found to be present at this stage |
| 7.4 Security                                                                | **System monitoring (intrusion detection, full system disaster recovery plan)** |

Table 6.6 Stage 4 - Characteristics of the eTransformation Dimensions
After the identification of the eTransformation Dimensions and their Categories (all except Category - Security which was developed later) along four eTransformation stages, the base for the model which could be used to guide and measure eTransformation for the SMEs was identified. The model that was to be developed at this stage was named the eTransformation Guide (eT Guide).

Following the identification of eTransformation Dimensions and their Properties the Researcher used the above summarised data to identify questions relevant to each Dimension across all identified Categories and Stages to help pin point a company’s eTransformation stage.

The above findings also helped the Researcher identify answers for each of the proposed questions. To allow the company to identify its eTransformation Stage at each of the Dimensions the Researcher used yes or no answers to point company’s direction and identify if there were any questions left within a particular Dimension’s Category sequence. Out of two answers, one was seen as a progressive answer, which implied a move across stages (If Stage 4 is reached for a Category, the sequence would continue along the next Category if there are any left for that Dimension). This answer was seen as the Ability. The Ability marked what the company could do with the resources they currently have. The other answer was the one that indicated that the company was lacking skills, knowledge or resources. This answer was marked as the Recommendation. The Recommendation indicated what the company could possibly do in the future in order to advance in eTransformation. In addition, once the Recommendation has been reached the question sequence for that Category would end and the new sequence for the next Category (if there are any
left for that Dimension) would begin. Alternatively, the end of that Dimension would be reached and the respondent would be presented with the eTransformation Report outlining their current Abilities and Recommendations.

The identification of Questions, Abilities and Recommendations allowed for the holistic eT Guide model to be developed. Data is presented in Appendix 5 and 6. It was expected that in the future this identification would allow companies to confidently measure and guide their eTransformation journey. However, before applying the eT Guide to the eTransforming SMEs the Researcher decided to carry out a review to identify how well findings that helped develop the eT Guide correlate to the current *Knowables*. This is covered in the next section.

### 6.3 Model Validation: The eT Guide

Development of the eT Guide prompted the Researcher to identify how closely the eT Guide findings correlate with the current *Knowables* of the fields of Information Systems, Organisational Studies, Process and Tasks development and implementation and Management. The main reason for this was to ensure that no pattern errors accumulated during the development of the eT Guide. The patterns in the *Knowable* domain are seen to be at their most dangerous and false assumptions can easily be made due to research data accumulations (Kurtz & Snowden, 2003). Therefore, it was seen as essential to think outside the square and to thoroughly validate and test the findings before the eT Guide’s wider use and implementation (Snowden & Boone, 2007).
To aid validation and testing, the Researcher diagrammatically plotted the eT Guide (Figure 6.2).

**Figure 6.2 eT Guide in a form of a Diagram**

From Figure 6.2 it can be seen that within all eT Guide Dimensions and across all functional levels of the organisation People with various skills and knowledge are required to ensure that the organisation prospers and achieves what is required. Therefore, the Researcher decided to incorporate People also known by 7 S as: Staff, Skills, Style and partially as Shared Values as integral components of the four identified eT Guide Dimensions rather than as an additional Dimension.

In the eT Guide People are seen as integral components of the four identified Dimensions. For example, in Strategy – People are seen as company employees, those who have knowledge and skills to complete what is currently required and those who have plans and visions to achieve future goals. In Structure – People are decision makers and general employees. Through Structure in particular the communication between a decision maker and subordinate is explored. In Tasks and Processes People are those with particular skills and knowledge completing
particular activities and tasks and in *IT Tools and Systems* – People are seen as users or developers and maintainers of the IT Infrastructure.

After the identification that the People component should be integrated within the other identified Dimensions, the Researcher reviewed how the People component fitted with the Operational Environment of an Enterprise Models (Ginige, Murugesan, & Kazanis, 2001) and Organisational Resistance and the Adjusting Relationship Model (Leavitt, 1965). From Figures 6.3 and 6.4 it can be seen that the People Dimension plays an important role in the Operation of an Enterprise in the model proposed by Ginige et al. (2001). According to Ginige et al. (2001) People are organised within management structures where they have particular roles and responsibilities. The *Structure* is seen to be correlated to how well particular Business Processes can be completed. The model proposed by Leavitt (1965) identifies that there is always a need for a balance among dimensions for the organisation to function well. It states that change in one Dimension will always make changes in others. The model proposed by Ginige et al. (2001) supports the notion that change in one of the Dimensions may require changes in the others to achieve required outcomes.

![Figure 6.3 Operational Environment of an Enterprise](image)

*Figure 6.3 Operational Environment of an Enterprise, adopted from Ginige, Murugesan & Kazanis (2001)*
When examining the Dimensions of both the Leavitt (1965) and Ginige (2001) models it can be seen that the eT Guide’s Dimensions are closely correlated with the Dimensions of the two discussed models. In particular, the eT Guide correlates with the models and supports the finding that changes in one Dimension may require change in other Dimensions for the change to be fully beneficial for the organisation.

Furthermore, both of the assessed models have People as Dimension, while the eT Guide does not, but assumes that People play roles in all identified eT Dimensions. In addition, the eT Guide assesses People through Dimensions’ Categories.

*Structure* is the Dimension looked at by the models in a slightly different way. Leavitt’s (1965) model has *Structure* as a separate Dimension while the Ginige (2001) model assumes that *Structure* is the way in which People are organised and
therefore combines *Structure* and People into one Dimension. *Structure*, as all other Dimensions of the eT Guide, incorporates in it the People component.

*Technology* is one of the Dimensions all of the models consider as important. Leavitt’s (1965) model considers it a driving force of all the changes that are to happen within the organisation while Ginige (2001) sees technology as one of the integral business components. *Technology* is seen as an equal Dimension to the other Dimensions in the eT Guide. Dimension that is closely linked to the other Dimensions and which effect can fully be seen only once Technology has been appropriately selected and incorporated into the organisation.

The eT Guide’s *Strategy* Dimension is a Dimension driving the eTransformation. That Dimension is the only one that has not been noted and addressed directly by the two models. *Strategy* however was discussed in the 7 S Model and also acknowledged by a number of other academic scholars (Carnall, 2003; Laudon & Laudon, 2007; Stutely, 1999). The importance of the *Strategy* dimension as well as the other dimensions will be discussed in the next section in which the Researcher will continue model validation particularly looking into the eT Guide’s Dimensions and their Characteristics.

### 6.4 Validating eT Guide’s Characteristics

Once it was established that *Strategy, Structure, Tasks and Processes* and *IT Tools and Systems* play important roles in the eTransformation of organisations Researcher
decided that it would be beneficial to conduct a literature review and validate characteristics of the eT Guide’s Dimensions.

From the previous section, it can be seen that there are often interdependencies among the Dimensions of eTransformation and change. According to Laudon and Laudon (2007) there are interdependencies between an organisation’s business capabilities and its IT systems. This again supports the finding that changes in one Dimension or its characteristics may often require changes in the others so that the organisation can successfully achieve its goals. In particular, it was noted that changes in the organisation’s Strategy, Business Rules and or Processes often require corresponding changes in the IT Dimension (Laudon & Laudon, 2007).

Importance of the interdependencies among the Dimensions is identified within the eT Guide. Therefore, to allow SMEs to monitor and track eTransformation and review it holistically the Researcher developed the eT Report that allows the company to assess the progress made along all Dimensions in parallel which helps the organisation to evaluate their eTransformation comprehensively.

This part of the validation helped the Researcher understand that in the future it would be beneficial if SMEs could based on their eT Guide survey answers receive personalised eTransformation Reports. This would allow SMEs to track and monitor their eTransformation journey periodically, mark changes they have already made and identify changes that they will need to make in the future.
An eTransforming organisation is often required to make a number of changes within Dimensions for the improvements to be seen overall. To achieve improvements within *Strategy* for example it is often required to do the environmental analysis. The analysis should include the study of the organisation’s wider environment including the company’s industry sector and other associated sectors that could be part of the company’s supply chain operations and future improvements (Cogliandro, 2007).

Furthermore, thorough environmental analysis often helps determine the needs and demands of the customers, competitors and stakeholders. Moreover, it aids in carrying out and identifying an organisation’s value systems – goals, visions and requirements. In addition, such analysis often facilitates selection of the company’s products and / or services. *Strategy* also helps determine the best marketing strategy to reach the company’s customer base, identify the most optimal business processes and consequently select and implement the required IT infrastructure (Laudon & Laudon, 2007).

*Strategies* are often changed based on pressures to reduce costs, improve quality or to increase product range. *Strategies* may also be changed based on needs to make improvements in design, business processes or optimisations with the goals to make improvements in company’s performance (Singh, Garg, & Deshmukh, 2006).

It is important to note that *Strategies* are often formulated with the aim to achieve organisational purposes. Once an organisation’s purpose has been changed this will have a direct impact on the company’s vision, focus, mission, goals, and strategic objectives. The new objectives will often require change in corporate, business,
functional, and process design strategies to achieve new purposes (Waterman Jr, 1982).

Today, as aims, goals and objectives of the organisations are constantly changing a successful *Strategy* requires an organisation to engage in an active role in which learning and feedback are important indicators of how best to set and implement optimal *Strategy* (Cunha & Cunha, 2006).

*Strategy* of the company is closely related to the company’s competitive advantage which is directly related to the company’s customer segments, most beneficial suppliers, close competitors and most benefiting market segments (Stutely, 1999). Consequently, a company that is better than the general competition and has the competitive advantage will have goals that help them achieve and deliver better than their competitors. In such companies, their *Strategy* is directly reflected in their value chain and operations. *Strategy* of such companies defines well what they do and has a sense of continuity, improvement and direction (Porter, 2001). In addition, a company that has a successful *Strategy* can easier differentiate themselves from the competition through research, economies of scale and / or scope, superior services and customer support, well planned marketing and outstanding management and information processing.

So that *Strategy* can be periodically revised and new improvements implemented, it is important that an eTransforming organisation is ready and open to change and innovation. To overcome possible barriers to change and uncertainties it is necessary to deal with fears an eTransforming organisation may have by educating and
convincing staff that change is needed through learning and experience (Carnall, 2003). It is worth noting however, that changes will not always automatically be positive and successful (Carnall, 2003) and that therefore goals should be carefully planned and failures and achievements noted so that if similar situations are to arise again the organisation knows how to react. In addition, a changing company will need to have support amongst the employees, where managers should ensure that the company is ready for change before undertaking change to help promote positive outcomes.

In addition, this validation helps the Researcher take the notion of change and innovation a step further and follow it through dimensions of Structure and Tasks and Processes. Within Structure the Researcher identifies that functions and divisions may need innovative perspectives and change while in Tasks and Processes the Researcher acknowledges that ability and willingness to change play important roles in future success.

Therefore, once the Strategy has been set it will start to have a direct impact on the company’s performance and therefore it needs to be aligned with the company’s business model (Lai & Wong, 2005) which will also include changes in Structure, Tasks and Processes and IT Tools and Systems Dimensions.

Within the eT Guide, the Researcher acknowledges that a successful Strategy requires the company to know its environment and competition well, to have skills and knowledge to set and achieve future goals, to plot and outline visions and
aspirations that are currently attainable, and to produce, market and deliver innovative products and/or services to its customers.

Once **Strategy** has been set, it is necessary to identify appropriate organisational **Structure**. In order for the **Structure** to be defined, it is important to review **Strategy** and select what type of management and power control would suit the organisation the best. While conducting this analysis the organisation should consider if their organisation should be centralised or decentralised, global or local, efficient or effective, changing or stable (Carnall, 2003).

According to Meijaard et al. (2002), a number of authors studied organisational **Structure**. While doing so they have identified that the way power within the organisation is distributed and decisions are made plays an important role and determines the organisation’s operations (Meijaard, Brand, & Mosselman, 2002). It also indicates that organisations should consider how specialised they should be in terms of the products or services they are delivering, and or the customer base they are serving, and what type of formalisation the company should follow in order to achieve set goals. Studies investigating organisational structure are summarised in Table 6.7.
Many organisations achieve their best performance once they are able to balance between competing forces such as, for example, between centralisation and decentralisation. For some however one force may dominate. To achieve the maximum and select the most appropriate organisational **Structure** it is beneficial to have management who is willing to support innovation and who has the skills required to lead the organisation towards its set **Strategy** (J. Martin, 2005). In addition, according to Deal and Kennedy (1982) managers should have skills to select the optimal ways in which a company should be presented to the rest of the world by identifying the company’s standards and unique characteristics that will allow them to lead the company towards success [Deal and Kennedy,1982 cited in (Carnall, 2003)].

To be able to define a company’s **Structure** it is necessary to review **Strategy**, jobs that need to be done, the authority to do those jobs, the grouping of the jobs into departments or divisions and to identify management’s span of control and mechanisms of coordination (Waterman Jr, 1982). The ability to achieve set goals in the very dynamic business environment of today will require reduction in hierarchical layers and lower the degree of formalisation. Furthermore, businesses
should consider modifying their Structures to allow for smoother communications and interactions across the supply chain to happen. SMEs however in particular should consider giving decision powers to employees with the aim to increase creativity and innovation (Liu & Bei, 2007).

Within the Structure Dimension of the eT Guide it was identified that it is important to take into consideration managerial structure, functional and divisional operations and identify the extent of formalisation. In addition, as identified above within the eT Guide the Researcher also stressed the importance of including employees in decision making processes to increase innovation and gain competitive advantage.

After Strategy and Structure have been identified, Dimension of Tasks and Processes was reviewed. The Tasks and Processes Dimension is directly linked to Strategy as in Strategy business goals are set while through Tasks and Processes they are achieved. Therefore, to be able to do this it is necessary to review set goals and identify activities, tasks and processes that need to be completed. Furthermore, detailed job analysis should be conducted to allow later on for the information system supporting the set business process to be put in place (Vasconcelos et al., 2001). So, to know that the company has the appropriate Tasks and Processes it is necessary for the organisational workflow to be assessed to allow the SME to prioritise what needs to be done and how.

Today, in the constantly changing environment it is expected that changes in visions, goals and plans will require tasks to be changed, eliminated or automated (Jansen-Vullers, Netjes, & Reijers, 2004) and or processes to be improved, redesigned or
completely re-engineered (Harmon, 2003). This re-alignment needs to be carried out continuously so that the organisation can easily adjust to global needs and demands.

Evaluation of the eT Guide’s *Tasks and Processes* Dimension corresponds very closely to the Capability Maturity Model developed in 1989 by Watts S. Humphrey of Carnegie-Mellon (Harmon, 2003). According to this model at the initial stages, the process is ad hoc and success depends on individuals striving to do the job in any way possible. This relates to the notion of survival and bare existence, which is a characteristic of most companies at eT Guide Stage 1. Such organisations are often reluctant to change and their activities are often independent of one another. At the next development stage organisations look into ways how to organise and computerise their business processes. This can be related to streamlining, removal of repetitive tasks and improvements in operations within the eT Guide (Stage 1-2).

Future developments according to the Capability Maturity Model (Harmon, 2003) are seen when processes are standardised and documented and closely linked to a company’s *Strategy* goals, visions and management objectives. Within the eT Guide this is presented through the creation of integrated tasks and processes across organisations’ departments and hierarchies. Further development of this leads within the eT Guide into the creation of an enterprise wide architecture (Stage 3-4).

The final stage within the Capability Maturity Model (Harmon, 2003) is seen as an optimisation stage, which is represented as a continual process of monitoring that aids piloting of new ideas and improvements. This notion is closely correlated with the Six step Process Improvement Model (Tenner & DeToro, 1997) which stresses that it is crucial to understand the customer, assess efficiency, analyse the process,
improve the process, implement changes and standardise and monitor undertaken improvements.

Within the eT Guide this notion is seen at Stage 4 which requires continuous reassessments of current tasks and processes to be carried out by observing and taking into consideration environmental needs and requirements.

According to Ivancevich (1992) to be able to identify what is needed and required for a changing organisation it is necessary to conduct functional and positional analysis (J. Martin, 2005). Functional analysis often helps identify employee activities relevant to data, people and jobs. In addition, it also helps identify methods and techniques as well as machines, tools and equipment used by the worker. To complement this, positional analysis identifies sources of information necessary to do the job, make decisions, decide on schedules, responsibilities and location and decide on appropriate communication requirements so that the job can be done (J. Martin, 2005).

The validation and the review of the above data helped the Researcher identify a strong link between the Business Tasks and Processes and IT Tools and Systems Dimension, discussed next, – required for the selected tasks and processes to be completed so that the set goals can be achieved.

The final Dimension reviewed was IT Tools and Systems Dimension. This Dimension is by its nature very closely linked to Strategy where goals are set, Structure that determines how the organisation is managed and Business Tasks and
**Processes** that identify tasks and processes required for the set goals to be achieved. Therefore, it was identified that to set properties of the **IT Tools and Systems** Dimension adequately it is essential for the **Strategy**, **Structure**, and **Tasks and Processes** to be aligned.

As identified through research earlier (Please, see Chapter 4 for more details on models used to measure effectiveness of ICT) Balanced Scorecards are very often used to allow companies to identify the value IT will bringing to the organisation once it is implemented. According to the Balanced Scorecard (Epstein & Rejc, 2005) it can be identified that IT is often implemented with the aim to increase growth and revenue which supports the previously identified finding that **Strategy** will govern the way an organisation decides to carry out business. Furthermore, companies may implement IT to improve sales, quality and increase production, which will consequently lead to improved **Business Processes**. IT is also utilised by the companies to gain competitive advantage by introducing novel business **Structures** and delivering or producing innovative products / services. To be able to achieve all these a company will need to have staff that has skills and knowledge required to select, implement, use and manage **IT Tools and Systems**.

Similar is depicted within the Drivers and Constraints of the IT Project Configuration model which conceptualise IT implementation as a strategically directed learning process through which project resourcing plans, methodology and technical architecture need to be specified to allow the company to satisfy environmental requirements and consequently adopt the necessary technologies (A. Martin, 2003).
In addition, the structures and processes of companies today can be faster and easier to modify and adapt to meet particular operational requirements, due to the capabilities offered by IT and its effective implementation (Fidock, 2006). However, it is important to take into consideration that changes within one Dimension will again create changes in the others. According to the Structurational Model of Technology, technology is designed and introduced by humans, the employees, who determine how technology is used within the organisation. This consequently influences organisational properties (Structure, Tasks and Processes). In turn, organisational properties influence the way employees use and interact with the technology. The model also stresses that in some instances the use of technology may require organisational properties to change (Orlikowski, 1992). This once again supports the notion that it is necessary to periodically assess and analyse eTransformation Dimensions so that appropriate changes can be carried out and so goals and objectives of the companies can be met.

The IT Tools and Systems Dimension within the eT Guide is closely related to the eTransformation Road Map where at Stage 1 the organisation predominately has stand alone tools and applications, a static website and limited IT management and support (Ginige, Murugesan, & Kazanis, 2001). At this Stage the organisation also has an Office and File management system and basic security implemented (Ginige, Murugesan, & Kazanis, 2001).

At Stage 2 the organisation uses networked applications, often has an Interactive website and usually has some ongoing IT support (Ginige, Murugesan, & Kazanis, 2001). At this Stage organisations have Operational Systems with identified
authentication rights and well set up and monitored proxies and firewalls (Laudon & Laudon, 2007).

At Stage 3 tools are fully integrated, the organisation has a fully functional eCommerce site and has a basic IT department (Ginige, Murugesan, & Kazanis, 2001). At this Stage basic knowledge and decision support systems are forming. Full eCommerce operations require network traffic to be encrypted using SSL, TLS or other security protocols.

At Stage 4 the enterprise is fully integrated and convergence is present. A company at this stage has a fully functional IT department (Ginige, Murugesan, & Kazanis, 2001). In addition, at this level, a company often has enterprise wide systems developed. Furthermore, its operations are fully secure and the company has systems that would allow it to recover and retrieve its operational system data in case of an emergency (Laudon & Laudon, 2007).

In summary, a review of the *IT Tools and Systems* Dimension closely corresponds to the findings that helped identify important characteristics of the eT Guide.

Via the eT Guide’s *Tasks and Processes* Dimension, activities, tasks, processes and associated changes, modifications and resources are studied and through *IT Tools and Systems* the ability to use tools and systems to complete, speed up, automate and as a result deliver products and / or services quicker and in a more reliable manner is studied.
Validations of the finding and assessments of the *Known - Knowables* through the literature review helped the assessment of the collective knowledge that does not belong to one individual but is a holistic multi disciplinary concept (Kurtz & Snowden, 2003). The ability to review findings and validate it through the literature across disciplines helped the Researcher validate the eT Guide’s concepts and principles. Furthermore, with the time and the effort the Researcher invested in the study, *Knowables* and expert knowledge were move closer to the areas of *Known* (Snowden & Mark, 2006). Following this identification, the Researcher continued studying the eT Guide by testing it and applying it to the eTransforming SMEs.

### 6.5 Model Testing: Manual Reports

After the validation of the eT Guide was done the Researcher decided to test the eT Guide through the experiment by applying the guide to 30 SMEs within the Penrith Valley Region. To ensure participants were blind to the eT Guide questions and final outcomes it was confirmed that none of the 30 companies had prior exposure to the study and that they were not involved in the model design and development.

Before participation in the study subjects were asked to consent to participate and were informed that if they wished not to participate they could withdraw at any time.

The interviews conducted were structured. The questions asked came directly from the previously developed eT Guide model. During the study, the Researcher conducted the interviews while a CEO or a Managing Director was answering questions. Based on the answers given the next question was asked until the end of
the questions was reached for each of the Dimensions (Appendix 5). The given answers were marked which later on allowed the Researcher to generate manual Reports consisting of Abilities and Recommendations for each of the interviewed companies. A Sample Report is shown in Appendix 7.

After the reports for the 30 SMEs were generated, they were sent to the CEOs or Managing Directors of the interviewed companies. Following this, the companies were invited to an information session during which the background to the study was given. Following this, companies were asked to comment upon the reports. Generally, participants were pleased and happy with the reports. Many of them stated that this was the first time that they were given a holistic guidance to eTransformation. In addition, a number of the companies stated that the report allowed them to see that there are many non-IT factors playing a role in eTransformation. In addition, many companies stated that they have been overlooking many issues, in particular issues related to company **Strategy** and **Structure**.

The organisations given reports were positive about the progress made. After discussing the reports with the companies involved the Researcher asked organisations if they had any suggestions or comments about the reports so that readability and understanding could be enhanced. The majority of the companies stated that they were happy with the current presentation of the Report. A couple of companies however suggested that they would appreciate it if the data presented in the report could be sorted via both Categories and Stages. Suggestions given were taken on board.
After the data collections and analysis, Dimensions and their Categories of eTransformation were reviewed. The summarised data including a new Category – Security for *IT Tools and Systems* Dimension is presented in Table 6.8. The new added Category – Security, points out that companies while identifying appropriate technologies and using them also parallel need to invest into required back up and security measures to assure their data, information and systems do not get misused, manipulated, stolen or damaged.

<table>
<thead>
<tr>
<th>Dim</th>
<th>Category</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Environment</td>
<td>1.1 SMEs competitors awareness</td>
<td>1.2 Competitors – products &amp; services</td>
<td>1.3 Matching competition</td>
<td>1.4 Be better than competition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plans &amp; Visions</td>
<td>2.1 Meet essential deadlines</td>
<td>2.2 Meet all deadlines</td>
<td>2.3 Create improvements</td>
<td>2.4 Vision for the future</td>
</tr>
<tr>
<td></td>
<td>Customers</td>
<td>3.1 SMEs Customers awareness</td>
<td>3.2 Customer requirements</td>
<td>3.3 SMEs marketing</td>
<td>3.4 SMEs learn from Systems</td>
</tr>
<tr>
<td></td>
<td>Products &amp; Services</td>
<td>4.1 Standards &amp; certifications</td>
<td>4.2 Marketing strategies</td>
<td>4.3 Support &amp; guarantee for customers</td>
<td>4.4 New improved products &amp; services</td>
</tr>
<tr>
<td></td>
<td>Employees</td>
<td>5.1 Knowledge requirements</td>
<td>5.2 Education and new ideas</td>
<td>5.3 Employees &amp; Future</td>
<td>5.4 Innovation</td>
</tr>
<tr>
<td></td>
<td>Goals</td>
<td>6.1 SMEs goals</td>
<td>6.2 Reality VS goals</td>
<td>6.3 Strategy VS goals</td>
<td>6.4 Skills &amp; resources VS goals</td>
</tr>
<tr>
<td>Structure</td>
<td>Centralisation / Decentralisation</td>
<td>1.1 Decision – CEO</td>
<td>1.2 Decision- Managing director</td>
<td>1.3 Decision - Some employees</td>
<td>1.4 Decision- Whole organisation</td>
</tr>
<tr>
<td></td>
<td>Functions / Divisions</td>
<td>2.1 Operations fixed</td>
<td>2.2 Diversification present</td>
<td>2.3 Operations can be changed if needed</td>
<td>2.4 SMEs adaptable to new circumstances</td>
</tr>
<tr>
<td></td>
<td>Formalisation</td>
<td>3.1 Business functions / operations</td>
<td>3.2 SMEs Focus</td>
<td>3.3 Global needs</td>
<td>3.4 New ideas, innovation and future</td>
</tr>
<tr>
<td></td>
<td>Tasks and Processes</td>
<td>2.1 Removal of repetitive tasks</td>
<td>2.2 Improvement in operations</td>
<td>2.3 Improvement in profitability</td>
<td>2.4 Reassessment of existing processes – fit</td>
</tr>
</tbody>
</table>

180
<table>
<thead>
<tr>
<th>IT Tools and Systems</th>
<th>Task &amp; Process Streamlining</th>
<th>Task &amp; Process Integrations</th>
<th>IT Tools</th>
<th>Tool Users</th>
<th>Internet</th>
<th>Website</th>
<th>IT Support</th>
<th>IT Systems</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.1 Avoid change</td>
<td>4.1 Activities</td>
<td>1.1 Stand alone Tools</td>
<td>2.1 Few employees</td>
<td>3.1 Searching</td>
<td>4.1 Static</td>
<td>5.1 Limited support (internally or externally)</td>
<td>6.1 Office Management – File management</td>
<td>7.1 Antivirus and anti-spyware software</td>
</tr>
<tr>
<td></td>
<td>3.2 Change when essential</td>
<td>4.2 Activities</td>
<td>1.2 Networked – sections, whole integration not present</td>
<td>2.2 All departments not all employees</td>
<td>3.2 Customer Contacts</td>
<td>4.2 Interactive</td>
<td>5.2 Some support – usually ongoing</td>
<td>6.2 Operational Systems – CRM, TPS</td>
<td>7.2 User access rights, authorisation and authentication, proxies and firewalls</td>
</tr>
<tr>
<td></td>
<td>3.3 Change for benefits</td>
<td>4.3 Activities</td>
<td>1.3 Networked-Partially integrated</td>
<td>2.3 All employees</td>
<td>3.3 Advertising</td>
<td>4.3 eCommerce</td>
<td>5.3 Basic IT Department</td>
<td>6.3 KMS, DSS – emerging</td>
<td>7.3 Network traffic encryption (SSL, TLS)</td>
</tr>
<tr>
<td></td>
<td>3.4 Change for innovation</td>
<td>4.4 Activities</td>
<td>1.4 Enterprise wide network – fully integrated</td>
<td>2.4 All employees &amp; some stakeholders</td>
<td>3.4 External &amp; business contacts</td>
<td>4.4 Convergence</td>
<td>5.4IT Department fully operational</td>
<td>6.4 ERP, DSS, ESS</td>
<td>7.4 System monitoring (intrusion detection, full system disaster recovery plan)</td>
</tr>
</tbody>
</table>

Table 6.8 eT Dimensions and Categories across Stages

This chapter explained how eTransformation Dimensions and Categories were identified. Furthermore, it elaborated on how the eT Guide model was developed, tested and analysed and how its outcomes helped SMEs follow their eTransformation journey.
### Approaching Knowable

| Sense | - Based on the 7 S Model data was collected via the 17 semi-structured interviews.  
- Collected data was analysed using the systems thinking approach. |
|---|---|
| Analyse | - Organised data was categorised using the structured data analysis so that eT Dimensions and their properties can be identified.  
- Data collected was validated by applying it to the 17 SMEs.  
- Further studies lead to the identification of the Dimensions’ Categories and their Characteristics across eT Stages.  
- eT Guide was developed and its questions, abilities and recommendation identified.  
- The eT Guide was validated using the multi disciplinary literature and expert knowledge.  
- eT Guide was tested manually. The Researcher interviewed 30 SMEs and collected eT answers after which data was used to generate the eT Reports.  
- The eT Guide testing helped sharpen questions, abilities and recommendations as well as the presentation of the eT Report. In addition, it helped clarify the appropriateness of the eT Guide.  
- Further validation was conducted with 8 IT companies. Data gathered helped justify and strengthen IT Tools and Systems Dimension. |
| Respond | - eT Guide’s Dimensions, Categories their Characteristics, Questions, Abilities and Recommendation were identified.  
- As a result the eT Guide was developed. The eT Guide can now be applied to the eTransforming SMEs. By answering the eT Guide questions with the experts assistance eT Reports can be generated. |

Table 6.9 Passages through Knowable Domain

In the next chapter, Researcher further explores how *Knowable* expert understood data, could be transformed into the *Known* domain of the eTransforming SMEs. To do this the Researcher explores the use of an Electronic Web Based System by trying to identify the most adequate way in which a web based eT Guide could be developed so that SMEs could now monitor, track and guide their eTransformation journey using the system themselves.
Chapter 7 - Online System to Guide eTransforming Organisations - eT Guide: In The Calm Waters of Known

In the previous chapter the Researcher discussed the *Knowable* domain and explained how eT Model data can be used to produce eT Reports that eTransforming companies can use to identify their current eTransformation stage. In addition, the reports can pinpoint the dimension in which they would need to make future investments in order to successfully continue their eTransformation journey. For the data needed for the eT Reports to be produced, expert knowledge and guidance was required.

In this chapter the Researcher explores the ways in which expert data can now be transferred into an Electronic Web Based System and the online eT Guide developed and implemented so that it can be used by eTransforming SMEs. This corresponds to the *Cynefin* transfer of the *Knowable* into the *Known* domain (Snowden & Mark, 2006). To be able to achieve this, it is essential for the actions of *Sensing*, *Categorising* and *Responding* to be carried out (Snowden & Mark, 2006).
To be able to develop a system that will allow SMEs to track, measure and guide their eTransformation journey without the need of an expert on site, it was essential to identify the system needs and requirements so that the appropriate system specifications can be determined.

Action of **Sensing and Categorising** identified that the eT Guide will be an electronic system developed on the basis of manually derived eT Reports. The system in its initial design was perceived as a simple questionnaire tool that companies could use to make decisions. After initial prototype testing it was determined that a number of other specifications needed to be taken into consideration in order for the system to be able to perform as required. System Analysis and Design are briefly summarised in the following section.

### 7.1 System Analysis and Design

In this section the Researcher briefly explains the criteria used to develop the eT Guide – the action of **Categorising** and identifying system specifications and requirements. The eT Guide Users were identified to be: eT Guide Administrator – a person or a group responsible for the design, development and maintenance of the System. This group of users is able to create a survey for each of the dimensions, based upon dimensions categories, add questions and allocate corresponding answers as well as associate abilities and recommendations to each question.

Within a company it was identified that there may be two different types of user accesses namely: Company Administrator and Company General User. Company
Admin is able to allocate users (Company General Users and other Company Administrator for their organisation) as well as add specific data for the organisation. On the other hand the company participant (Company General User) is only be able to answer eT Guide questions and review system outputs.

The following Use Case diagram demonstrates relationships between system users of the eT Guide.
7.2 eT Guide Use Case Diagram

![Diagram of eT Guide Use Cases](image)

Figure 7.1 eT Guide Use Cases
In the following sections of this chapter the use and functionality of the system is explained through the application of the developed eT Guide to the creation of the survey by the eT Admin and use of the eT Guide survey functions by eTransforming SMEs. By doing this, the Researcher explains main functions mentioned within the use case diagram and elaborates on them through examples to demonstrate use and application of the eT Guide. Before this is done however, the Researcher explains how the system was developed, coded, tested and implemented.

7.3 Development of the eT Guide

Development of the eT Guide was complex. Initially developments commenced with prototyping. Early prototypes were developed as online Yes/No surveys. Testing and use of the prototypes indicated that a simple survey design would not be sufficient for the correct performance of the eT Guide, therefore it was decided that further assessments be carried and more detailed system documentation developed.

Documentation indicated that the eT Guide should be able to:

- Adjust to the needs and requirements of the SMEs environment
- Be flexible and dynamic
- Be able to provide outputs based on users selections, inputs and requirements
- Be able to incorporate various parameters and dimensions of eTransformation and account that in the years to come these parameters may need to be changed due to new circumstances
The above findings correlate with Costabile, Piccinno, Fogli, & Marcante (2006) who found that interactive systems need to be adaptable to the requirements of the environments and their users. Furthermore, they support the notion of personalisation and adaptability. In addition, they state that there is a sense of co-evolution between users and systems (Costabile, Piccinno, Fogli, & Marcante, 2006). The above stated ideas have been taken into consideration throughout all stages of the eT Guide development primarily because the eT Guide represents the link between a changing environment and the growing needs of SMEs. In the next section, the Researcher further elaborates on eT Guide coding, implementation and testing.

7.4 System Coding, Implementation and Testing

To develop the web based system the Researcher decided to use Component Based eApplication Development System (CBEADS) as using this system means that customisable applications can easily be developed (AeIMS, 2006). CBEADS is an open source framework built on Perl running on an APACHE server. The system is built of components that consist of two sub systems. The main system is the CORE CBEADS system, consisting of a security module, system components, system database and a workflow component. The other system is the system designed to support applications. Special functions within the components of the CBEADS system can be used to create functions which makes CBEADS adaptable which allows the system to expand and be modified as required (Ginige, 2003).

The eT Guide is currently running on the AeIMS servers. To develop the eT Guide smoothly and in the required time groups of programmers were hired to speed up coding and testing.
Due to the component building architecture, when developing the eT Guide it was possible to take a systematic approach to design and develop components and when needed independently at various stages conduct reviews and testing. The Researcher was continuously involved within this activity to ensure the system was developed as required. Each component was tested through a number of iterations to help the final outputs reflect the system purpose.

After required modifications to the components were made and all system components developed, the system was tested and validated using previously collected data via the manual eT Reports.

Accounts for the 30 SMEs were created and data as per initial questionnaires entered into the system. This allowed for the electronic eT Reports to be developed and compared with the reports developed manually which signified the Cynefin action of Response.

Once the eT Guide was tested and validated, the 30 SMEs that were previously engaged in the study were given access to the system. Organisations are now able to view their reports online and also able to go through the series of questions and find answers and guides for their eTransformation journey. Furthermore, the SMEs were now able to use the system without the experts’ help. In Cynefin principles the eT Guide has now moved from Knowable to Known where Actions (activities) have now become Known and repeatable for the SMEs who now know how to use the system and what to expect from it as an output (Snowden & Mark, 2006).
SMEs were now able to track, guide and measure eTransformation regularly and this was slowly becoming a part of the company’s guides and procedures (Snowden & Mark, 2006). It is expected that once business day to day best practices are in the place, predefined procedures and formal ways in which a company can control their eTransformation progress will be developed and integrated into the company’s day to day operations (Snowden & Kurtz, 2002).

It is also important to note that the eT Guide takes into consideration constant change of the environment and SMEs’ requirements for better performance and consequently eTransformation. If change occurs, over reliance on best practice may become a problem, therefore companies today cannot purely rely on their Known, as in some instances they may need to obtain new knowledge. The eT system will help companies re-evaluate and reassess their best practices periodically taking into consideration changes that have taken place and revaluate their best practice to see if they need to be changed to accommodate new circumstances (Snowden & Boone, 2007).

Functions, development and the use of the eT Guide has now moved organisations from the Knowable to Known domain where SMEs can now easily use the system to track, guide and measure their eTransformation journey themselves. The next section uses examples to elaborate on the use and application of the eT Guide.
7.5 System Use and Application: Known

To demonstrate application of the Use Cases depicted in Figure 7.1, application and use of the eT Guide’s main functions is demonstrated in this section.

7.5.1 eT Guide Admin

The eT Guide Admin has the ability to add users. The users may be other administrators or company (SME) users. To explain functionalities of the eT Guide, the Researcher will focus on surveys and their use.

Figure 7.2 below shows how an eT Administrator can add a company to the system after which they can log in with their own name to answer the allocated survey in this case the survey named: eT Guide_duplicate.

- Set Up Company Admin Access

Figure 7.2 Allocating Company User
Once employees of the SMEs are allocated access they can use the system to identify their eTransformation stage along eTransformation dimensions, as well as monitor and track their progress. Before, the Researcher demonstrates this, she will demonstrate the steps required to create the survey.

Surveys can only be created by the System Admin. System Admin will indicate that they would like to add Survey and they would click the allocated button (Figure 7.3). Once that is done, a new survey will be created and the name “New Survey” will appear at the bottom of the existing survey list. To name the survey the eT Admin needs to highlight the “New Survey” text and type in the appropriate survey name.

- Create Survey (add / modify / delete – questions, answers, abilities, recommendations)

![Figure 7.3 Adding Survey](image)

Once the survey has been named and created, it is now possible to add survey properties by clicking onto the new survey button. After that is completed a
Dimension for the survey can be added and its characteristics specified. Figure 7.4 shows how a System Admin can specify the number of Categories, Stages and Questions per Dimension. Next, the system generates a template based on the admin requirements. All fields can be edited and required data for questions, Abilities and Recommendations added. In addition, it is also required to specify the answer linking to the ability and recommendation as this drives the algorithm and the allocation of the next question depending upon the answers (Figure 7.5)

![Figure 7.4 Identifying Survey Properties](image-url)
As it can be seen from Figure 7.5 above if the System Admin realises that dimensions, categories or questions need adding or deleting available menus allow for those operations to be carried from the survey design screen.

Once all data for the survey is entered, the survey needs to be committed and allocated to the users. All allocated users then have access to it and are able to answer the survey questions.
Figure 7.6 SME Logging In

Figure 7.6 is an example of how an SME participant, the system user will access the system. They will first approach the log in page where they will input their user name and password. Once that is done the user will be able to access the system. Once they have accessed the system they can select one of the available surveys. In this case the user accesses eT Guide_duplicate survey. From this point on, the user will be able to select Dimensions and answer related questions as presented in the Figure 7.7 below.
7.5.2 Company Admin / Participant

- Display Survey and Register Survey Results

Once the user has selected the Dimension to answer, they are presented with the questions per Category. For example; when answering questions within the Strategy Dimension the user will reach Category: Plans and Visions where they will be required to answer questions belonging to that Category such as questions in the Figure 7.8 below.
Once the user has answered questions within the Dimension they are able to view survey results via the eT Report. To generate the company report a company user will need to select the name of the user from the list (note company may have a number of users) that has the answered Dimension questions, the date when the questions were answered as well as the Dimensions for which they would like reports to be generated. In addition, if the eT Position selection box is checked the position for the selected Dimensions can be inserted within the report. Once that is done the eT Report can be produced.
- Generate Report

Figure 7.9 Generating eT Report

Figure 7.10 eT Report showing Abilities for Strategy
Figure 7.11 eT Report showing Recommendations for Strategy

As it can be seen from Figures 7.9 – 7.11 above, the eT Report shows the stage of eTransformation that the SME has reached across Dimensions for each of the Dimension’s Categories. Furthermore, the eT Report shows Abilities – what the company can do with their current resources and the Recommendations – the suggestions for future developments. This indicates that the eT Report can be used as the guide to eTransformation as it indicates the current eT situation as well as indicates possible future directions. A sample of the full Report can be seen in Appendix 7.
- View History

Figure 7.12 eT History

Each time a user answers questions within a Dimension, data is recorded. The records of past access can be viewed via the eT History page. For example from Figure 7.12 above it can be seen that a user accessed the system and responded to questions within the Dimensions of **Strategy, Structure, Tasks and Processes** first and then on the second occasion went through **Strategy, Structure, Tasks and Processes** as well as **IT Tools and Systems**. The History table also indicates the stage a company reached and indicates in percentages how much of that stage has been completed. The eT History can be used to track eTransformation. It shows when the user accessed the system as well as indicate what stage the user reached each time they used the system. By doing this the SMEs can identify their progress and follow progress along the eTransformation journey.
A system user can also view their progress via the eT Position (Figure 7.13) page where they can identify the eTransformation stage they reached as well as identify in percentages to what extent they have successfully completed the stage. The eT Position is used to measure progress along the eTransformation journey. It indicates in percentages stages where progress has commenced, has been completed or is still to be commenced. A percentage value of 100% indicates that the stage has been completed, while for example 83% indicates that there is still 17% to be completed for that stage to be fully reached. It is also important to note that an eTransforming SME will very often commence achievements at various stages at the same time. The eT Position in that case also acts as a guide that signifies in which Dimension an SME should act first. For example, if an SME has fully reached Stage 1 in all Dimensions; Stage 2 in Strategy, Structure and IT Tools and Systems and reached
Stage 3 in *Strategy* but not commenced it yet in any other Dimension, the company should assess Stage 2 first and make changes in the *Tasks and Processes* Dimension.

The eT Guide is a system that can easily be used by eTransforming companies. It gives organisations power to make eTransformation decisions based on the system data and its outputs. It allows organisations to *track* eTransformation using eT History, *measure* and *guide* using the eT Position and make constructive decisions based on the data presented in the eT Report.

### 7.6 Future of the eT Guide

In the future, it is expected that eTransforming SMEs will continue to use the eT Guide. The use of the eT Guide will allow them to be based on their *Known*, to find out their future investment avenues and reach states of *Knowable* that can on demand be easily transferred into *Known*. Furthermore, throughout the eTransformation journey and the use of the system, companies will be able to track and monitor their journey longitudinally. Such data will not only benefit SMEs but also eTransformation researchers. Collected data will allow for the studies of eTransformation based on the location, industry sector and size of the companies. Furthermore, the system will allow for comparisons and close monitoring of SMEs and the success of organisational actions and system recommendations. It is expected that such data will allow for system improvements as well as new research frontiers in the area of eTransformation and Information Systems.
This chapter demonstrated how SMEs can now use an online eT Guide to measure, track and guide their eTransformation journey. The next chapter concludes the thesis and summarises the main findings and outcomes.
Chapter 8 - Conclusion and Future Work

This chapter summarises and reviews the main findings of the thesis. Furthermore, it discusses and assesses the main thesis outcomes as well as elaborates on future research directions and avenues.

As identified in Chapter 1 eTransforming organisations currently do not have the ability to guide, track and monitor their eTransformation journey. The outcomes of this thesis have allowed the proposed research question “How can SMEs guide, track and measure the progress made along the eTransformation journey?” to be answered and have also given power to SMEs to be in a charge of determining their current eTransformation abilities, identifying possible future eTransformation directions, as well as continuously monitoring progress made along the eTransformation journey.

In answering the research question, it was essential to gain a deeper understanding of how SMEs conduct their day-to-day business as well as identify their business needs and requirements. Moreover, it was important to define how SMEs see eTransformation, study its characteristics and features and identify its dimensions
and their characteristics that can be used to track, guide and measure the eTransformation journey.

Figure 8.1 Summary of research findings and outcomes
From Figure 8.1 it can be seen that on the road to answer the research question some of the following research contributions were also discovered:

- **Issues and Challenges of eTransformation**
- **Review of how companies deal with new innovations**
- **Identification that eTransformation is staged and multidimensional**
- **Identification of Key Features of eTransformation**
- **Identification of eTransformation Dimensions and their Characteristics**
- **Development of the eT Guide Model**
- **Online eT Guide System**

The journey to the research outcomes is presented in the following sections of this chapter.

**8.1 eTransformation**

eTransformation is an important element of business’ ability to remain in the global market and sustain pressures of the environment. Today, SMEs’ survival and existence is determined by how well SMEs can implement and use ICT to its best potential. Research conducted indicates that organisations cannot continue relying on manual tasks as they did in the Industrial era. Today, businesses are required to act swiftly. They need to have skills to change quickly and successfully meet demands of their customers and stakeholders.
Therefore, to be able to eTransform successfully the Researcher developed an Online eT Guide to help SMEs navigate the eTransformation journey. Navigation of the eTransformation journey is explained through the use of a Cynefin framework and its domains.

Through this research, it was identified that an important component of change and transformation is SMEs’ ability to deal with variables of Knowable, Complex and Chaos by continuously monitoring and assessing their performance. Furthermore, it was identified that SMEs need to be aware that the environment surrounding them plays a crucial role in determining their business Strategy and survival. Consequently, this is one of the essential factors that businesses should look into when trying to identify and make appropriate decisions while positioning themselves in the global marketplace.

Once an SME’s Strategy has been identified, the organisation is required to pinpoint the optimal Structure with which the organisation will be able to achieve the set business goals. The set goals should allow the company to determine what the required Tasks and Processes for the company should be so that the company can successfully reach the set objectives. Following this, the company should look into selecting the appropriate IT Tools and Systems that will allow it to complete identified Tasks and Processes.

The decisions businesses need to make however will not always be straightforward. In some instances, companies will be required to explore Complexities where it will
be necessary to use sense making tools, reports and environmental analysis to pinpoint *Knowables*.

For example, this may happen in a period when an SME may be searching and trying to identify essential ICT resources so that the company can perform successfully. Once the company has identified the ICT that could bring the company benefits, they have dealt with complexities and have found themselves on the doorstep of *Known*. However, the company will only reach *Known* after they have successfully implemented selected technologies and have gained skills and knowledge on how to manage and make optimum use of the selected technologies.

So that the research question could be answered and possible solutions to it identified, the Researcher studied eTransformation of SMEs by applying the *Cynefin* framework as the research method. Summaries of the findings lead into new knowledge and insights during which the eT Guide Model and the Online eT Guide System were developed. Developments allowed the Researcher to pack the knowledge gained into a solution namely: The Online eT Guide which SMEs can now use to respond to various challenges that they face in a global economy. Detailed findings are explained in the following sections.

### 8.2 The Findings: The eT Guide Model and The Online eT Guide System

The Researcher travelled through four main domains of the *Cynefin* framework namely *Chaos, Complex, Knowable and Known*. At each domain, new findings were reached which allowed for the creation of new knowledge and the developments of
the eT Guide Model and The Web Based Online eT Guide System. Developments are presented in Figure 8.2 below.

Figure 8.2 Research Leading to the Development of the eT Guide Through Cynefin Domains

Detailed elaborations of the developments for each domain are explained in the following two sections.

8.2.1 Towards the eT Guide Model

The journey across the Cynefin domains began when the Researcher identified that today in the Information era ICT is one of the important business enablers. To utilise the technology however it was essential to address SMEs’ lack of ICT knowledge,
lack of funds and the fact that many SMEs’ customers have gone overseas due to quicker response times and cheaper labour. To help companies combat the market of the Information era the Researcher identified that it is essential to study the eTransformation of the SMEs.

While within Chaos, the domain where there was no known solution for the SMEs, the Researcher studied current Knowables to identify how best to approach the study. During this time, Initial Case Studies carried out with Toolmakers and IT Cluster companies helped identify crucial Issues and Challenges of eTransformation:

- Resistant to change from what is known and familiar
- Not quick to respond and deliver as competition
- No uniform system present
- Current workflow is insufficient and is limiting operations
- Operations expensive compared to those overseas
- Business going overseas and declining at home
- Lack of time, resources, monitoring systems, standards and trust

Furthermore, while in the Chaos domain the Researcher drew analogies: what influenced business transformation in the past and what is influencing it at the present. Following this investigation the Researcher identified how organisations tend to deal with new technologies:

- Change the way business is done
- Change the organisational structures
- Ensure business activities are redistributed to maximize production output
- Ensure that skills and knowledge are adequate to deal with the innovation
- Face problems and issues caused by the invention

- Life through resistance and rejection of the invention

Following the investigation, the Researcher continued to study eTransformation of SMEs. During the study, the Researcher conducted seminars and workshops to increase SMEs ICT awareness so that SMEs can come up with eTransformation initiatives that were later on taken by the Researcher. This brought the investigation into the Complex domain. Within this domain, Models of the Organisational Change were studied. Studies of the eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001) identified that the Road Map consists of one dimension, the dimension of **IT Tools and Systems** that is sufficient in pinpointing companies’ technology however not in measuring eTransformation progress.

Studies including a range of other models helped identify that eTransformation is staged and multidimensional.

Following this, studies of how eTransformation could be measured were conducted. Analysis of the studies indicated that Valuation models are not sufficient to measure eTransformation as eTransformation is multidimensional and often intangible.

Therefore, it was considered that in order to measure, track and monitor eTransformation it was necessary to identify eTransformation dimensions. To aid this study the Researcher reviewed case study data and identified **Key Features of eTransformation**:

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- Improvements to Organisational Performance by Automating Task
- Improvements in Transactional Efficiency
- Ability to Adapt to Changing Environment
- Ability to Capture and Use Organisational Knowledge

Following this investigation, the Researcher compared already eTransformed organisations and those that were just starting the eTransformation journey. Studies identified that organisations, which have eTransformed, are process based and those that have not yet transformed are predominately task based. This highlighted that to study eTransformation it was essential to take into consideration changes that happen along the dimension of **Tasks and Processes**.

Through follow up studies, it was found that **IT Tools and Systems** and **Tasks and Processes** play a role in eTransformation. To identify if there were any other Dimensions important to eTransformation, the Researcher decided to conduct a more detailed study of the models of Organisational Change. Studies identified the 7S Model (Waterman et al., 1980) as the most comprehensive model of the models studied. Following this, further studies were conducted through 17 semi-structured interviews and data categorisation. Studies found that in addition to the previously identified dimensions of eTransformation it was also essential to take into consideration dimensions of **Strategy** and **Structure**.

Following this, Researcher used eTransformation Road Map (Ginige, Murugesan, & Kazanis, 2001) to group companies in accordance with their eTransformation development Stage along the **IT Tools and Systems** Dimension. The study helped
identify preliminary characteristics of the companies for each stage and corresponding dimension. It also helped identify that companies do not always progress equally across all dimensions.

Preliminary studies conducted with the 17 SMEs helped identify the eTransformation Stage for each of the interviewed companies along four identified eTransformation dimensions. The study also helped identify which dimension the company should be investing in next to improve its eTransformation position. Following the preliminary study data collected via interviews was further categorised. Findings helped identify dimensions and their categories. Summarised data is presented in Figure 8.3 below.

Figure 8.3 eT Guide Model: Dimensions and their Categories
Following the identification of eTransformation dimensions and their categories’ categories across eTransformation Stages were defined. Based on this, the eT Guide Model was developed.

The eTransformation model is built on four dimensions. Each dimension of the model has its own categories with various characteristics that identify progress along eTransformation Stages for a specific dimension. Each Stage is a measure of the company’s eTransformation progress. This has brought the investigation into Knowable.

Once all dimensions, categories and category characteristics were identified the Questions for the eT Guide were formulated based on the progression of each dimension’s categories across Stages. Following the identification of Questions its corresponding Abilities (what the company can do currently) and Recommendations (what the company could do in the future) were developed and each linked to one of the possible answers. If for example, Recommendation was linked to a Yes answer, this meant that the Ability was linked to a No answer. Or vice versa.

Based on the Answers to the proposed questions, yes or no, the progress within the Guide was determined. For the companies that progress is displayed based on the answers given in terms of Abilities and Recommendations within the eT Report.

Following the identification of the model and its properties, the eT Guide Model was validated based on the literature and tested with 30 structured interviews of SMEs.
who prior to this were not exposed to the study. Interviews were conducted based on the identified Questions, Abilities and Recommendation.

Following the interviews based on the companies answers 30 eT Reports were developed manually. These eT Reports were positively welcomed by the companies. The feedback given by the companies helped shape further developments and the presentation of the eT Report.

The eT Report now allowed companies to know their current eTransformation Stage along four dimensions of eTransformation in terms of Abilities, and identify what Dimension and Category of that Dimension they should be investing in next in terms of Recommendations. To allow the companies to monitor eTransformation themselves further studies and investigations were conducted which helped bring this research into the area of Known and the development of the Web Based eT Guide System discussed in the following section.

**8.2.2 Towards the Online eT Guide System**

Developments of the eT Guide Model and the ability to run questions manually to develop eT Reports allowed for the findings to be automated and the web based Online eT Guide to be developed. While designing and developing the eT Guide it was essential to take into consideration SMEs’ requirements. It was found essential to ensure that SMEs using the system will be able to do the following:
- Identify their current eTransformation stage.
- Know what they can do with the ICT they already have in terms of eT Abilities.
- Identify options they have for the future in terms of eT Recommendations.
- Track, guide and measure their eTransformation journey in terms of eT Position, eT History and the eT Report.

So that SMEs can successfully complete these the eT Guide required SMEs, as the system users, to enter general company data and answer eT Survey questions by providing yes or no as the answer. Each time an SME answered a question data per Dimension is recorded in the system’s history. Once all questions selected by the eT Sequence for the dimension have been answered the SME is able to access their eT Reports and review their eTransformation Stage, Abilities and Recommendations for that dimension. In addition, the SME is also able to compare their current eT Reports with previous ones and track their eTransformation progress. Table 8.1 below summarises Components of the eT Guide developed for the SMEs

<table>
<thead>
<tr>
<th>Components of the eT Guide Aimed at SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company Snap Shot</strong></td>
</tr>
<tr>
<td>Size</td>
</tr>
<tr>
<td>Industry Sector</td>
</tr>
<tr>
<td>Location</td>
</tr>
<tr>
<td>Company Users</td>
</tr>
<tr>
<td><strong>eT Survey per Dimension</strong></td>
</tr>
<tr>
<td>Data input through series of yes, no answers</td>
</tr>
<tr>
<td><strong>Outputs for SMEs</strong></td>
</tr>
<tr>
<td><strong>Monitoring and Tracking Data</strong></td>
</tr>
<tr>
<td><strong>Reports</strong></td>
</tr>
<tr>
<td>- eT Stage per Dimension and its Categories</td>
</tr>
<tr>
<td>- eT Ability per Dimension and its Categories</td>
</tr>
<tr>
<td>- eT Recommendation per Dimension and its Categories</td>
</tr>
</tbody>
</table>
Table 8.1 Components of the eT Guide aimed at SMEs

<table>
<thead>
<tr>
<th>Historical Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>- For a duration</td>
</tr>
<tr>
<td>- On a particular date</td>
</tr>
<tr>
<td>eT Position</td>
</tr>
<tr>
<td>- Percentage achieved for each Stage per Dimension</td>
</tr>
</tbody>
</table>

Initial system testings were completed with the data collected when interviewing 30 SMEs from Penrith Valley. Furthermore, Penrith Valley companies were given access to the system, which has allowed them to explore system functionalities. Comments and suggestions from the users were taken into consideration and were implemented into the new system version.

The Online eT Guide was designed with flexibility in mind so that when necessary the system can be updated or modified. This is due to the component based design which easily allows system managers to add, change or modify components, methods or functions. It is expected that future research findings and new business needs and circumstances will require system to change to continue living as a flexible adaptable system of the Information era.

8.3 Research Limitations

This study was conducted with a group of SMEs who were continuously monitored, observed and guided by experts in the field therefore SMEs knowledge, experience and exposure to the eTransformation effect might have contributed to the use and acceptance of the eT Guide. Furthermore, use and application of the eT Guide in the future will be done by SMEs who may not have first hand access to eTransformation...
experts which may mean that before companies are able to use the system they may need to get training or support in the early days of system use.

This study was conducted with companies from a wide range of industry sectors however to establish the representativeness and significance of the dimension variations for different industry sectors further investigations may be required.

8.4 Future Work

The research conducted for the thesis is a part of a bigger research project carried out by the AeIMS (Advance enterprise Information Management Systems) Research Group of the University of Western Sydney. The AeIMS research group commenced studies in the area of eBusiness and eTransformation in 2000. It consists of a number of senior academic staff and research students particularly higher degree research students. The research group studies issues of eTransformation into which this research belongs but it is also investigating issues surrounding eApplications and Emerging Technologies.

Initially studies conducted by AeIMS were focused on the Greater Western Region, its businesses particularly SMEs and their operations while later on studies were extended to other regions within Australia.

This research looked at SMEs within the metropolitan NSW region of Australia. In particular, this study benefited SMEs who participated in the research as well as
Local Government Regions of Greater Western Sydney. It is expected that the further research will continue to bring benefits to the region and beyond.

Moreover, SMEs’ eTransformation research will continue to expand, prosper and make a difference for the SMEs, their communities and the global business. Continuations from this research in particular will help shape and guide eTransforming SMEs and will help them navigate the eTransformation journey by identifying and creating the ecosystem that will bring technology into the SMEs’ culture and will aid ICT providers to help them research and identify the best possible technologies that will allow this to happen.

After the development of the eT Guide and its implementation, AeIMs the Research Group will continue studies within Penrith Valley to further educate ICT providers, allow them to collaborate in cutting edge research to gain essential skills and knowledge so that they can assist eTransforming SMEs.

Furthermore, this research will have inputs into two recently established projects. One of these projects is the SMART SMEs project, which will be an Australian based study of SMEs their eTransformation, cluster formations across and within industry sectors and eCollaboration specifically aiming to develop an eCollaboration framework. Application for the Australian Research Council (ARC) grant has been submitted in November 2008. The other project is the Research Node Study that aims to combine expertise in the areas of Business Process Re-engineering, Optimisation, Management and Information and Communication Technologies to study and support Business Process Evolutions.
In the future, it is anticipated that the research outcomes gained through this research will be used for future investigations. It is expected that the Online eT Guide will be used by a large pool of companies which will allow the Researcher to get a holistic view of the eTransforming companies and as a result identify specialised industry specific extensions to The Online eT Guide via the SMART SMEs project.

Furthermore, continuation of the study with 30 Penrith Valley SMEs will allow the IT providers to be educated based on the findings and given knowledge and tools for how to explore eTransformation and its implementation within a constantly changing environment. In addition, the Research Node study will help identify the most appropriate tools for modelling, studying and assessing organisation’s Tasks and Processes.

The eTransformation Guide will continue to grow and expand. The initial design and planning that has gone into designing the system which is aimed to serve the complexities of the Information era, ensure that the system can easily be maintained, upgraded and managed due to use of a component based development approach.

The next system version will not only include essential data for the researchers but will also include hints, pointers, examples and I (information) help pointers and menus for the users.

Overall, this research has taken a holistic multidisciplinary approach and has indicated that in order for the SMEs to eTransform they are required to take into consideration four main dimensions of eTransformation namely: Strategy that
determines business directions and sets business goals and objectives relevant to the environment; **Structure** essential to determine the nature of the business and distinguish how the business is going to be organised in terms of departments and locations; **Tasks and Processes** identifying the main activities that need to take place so that the company can reach set goals and objectives; and finally the **IT Tools and System** dimension required to identify the ICT that will be required to complete set activities and reach planned goals and objectives in a complex business environment.

In summary, this research work has benefited the field of ICT in particular through the development of the eT Guide Model and the Online eT Guide.

The Online eT Guide in particular has given power to the SMEs in the Information era. The SMEs now have tools to help them sail waters of complex, constantly changing and unpredicted waters. Today, they are equipped with the know-how that will lead them on a well planned and securely equipped colourful journey of eTransformation.
Reference List


Khandelwal, V. K., Ginige, A., Curry, J., Bajaj, K., Lan, Y., & Schmid, R. (2003). Information Technology in Western Sydney - Status and Potential Sydney, Australia: School of Computing and IT, University of Western Sydney, Australia.


Bibliography


<table>
<thead>
<tr>
<th>Glossary</th>
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</thead>
<tbody>
<tr>
<td><strong>Balanced Scorecard</strong></td>
</tr>
<tr>
<td>Method that evaluates the overall health of organizations and projects by looking at metrics in finance, customers’ view of the organisation, internal business processes and ability to change and expand.</td>
</tr>
<tr>
<td><strong>Best Practices</strong></td>
</tr>
<tr>
<td>In an organisation the best methods for solving problems.</td>
</tr>
<tr>
<td><strong>Business Process</strong></td>
</tr>
<tr>
<td>A collection of activities performed to accomplish a clearly defined goal.</td>
</tr>
<tr>
<td><strong>Business Process Reengineering</strong></td>
</tr>
<tr>
<td>A methodology for introducing a fundamental and radical change in specific business processes.</td>
</tr>
<tr>
<td><strong>Customer Relationship Management</strong></td>
</tr>
<tr>
<td>The entire process of maximising the value proposition of the customer through all interactions, both online and traditional.</td>
</tr>
<tr>
<td><strong>Component Based eApplication Development System</strong></td>
</tr>
<tr>
<td>An open source framework built on Perl running on an APACHE server that can be used to create functions.</td>
</tr>
<tr>
<td><strong>Cynefin Framework</strong></td>
</tr>
<tr>
<td>A sense making framework that can be used as a methodology to solve problems.</td>
</tr>
<tr>
<td><strong>Decision Support System</strong></td>
</tr>
<tr>
<td>A computer based information system that combines models and data in an attempt to solve semi structured problems with extensive user involvement.</td>
</tr>
<tr>
<td><strong>Document Management System</strong></td>
</tr>
<tr>
<td>System that provides decision making with information in an electronic format and usually includes computerised imaging system that can result in substantial saving.</td>
</tr>
<tr>
<td><strong>Electronic Commerce</strong></td>
</tr>
<tr>
<td>The process of buying, selling, transferring or exchanging products, services or information via computer networks.</td>
</tr>
<tr>
<td><strong>Enterprise Resource Planning</strong></td>
</tr>
<tr>
<td>Software that integrates the planning, management and the use of the resources in the entire enterprise.</td>
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<tr>
<td><strong>eTransformation</strong></td>
</tr>
</tbody>
</table>
| A change ICT can bring to organisations and enable them to succeed in the globally
<table>
<thead>
<tr>
<th><strong>Term</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>etTransformation Guide</strong></td>
<td>A guide SMEs can use to track, monitor and guide their etTransformation journey.</td>
</tr>
<tr>
<td><strong>Executive Support System</strong></td>
<td>A system aimed at executives that includes analytical and communication capabilities.</td>
</tr>
<tr>
<td><strong>File Transfer Protocol</strong></td>
<td>An Internet standard for the exchange of files between two computers connected to the Internet.</td>
</tr>
<tr>
<td><strong>Information System</strong></td>
<td>A physical process that supports an organisation by collecting, processing, storing and analyzing data and disseminating information to achieve organizational goals.</td>
</tr>
<tr>
<td><strong>Information Technology</strong></td>
<td>The technology component of an information system or the collection of the computing tools and systems in an organization.</td>
</tr>
<tr>
<td><strong>Intangible Benefits</strong></td>
<td>Benefits that are hard to place a monetary value on.</td>
</tr>
<tr>
<td><strong>Internet Open Trading Protocol</strong></td>
<td>A set of standards that makes all electronic purchase transactions consistent for customers, merchants, and other involved parties, regardless of payment system.</td>
</tr>
<tr>
<td><strong>Internet Service Provider</strong></td>
<td>A company that provides Internet accounts and connections to individuals and businesses.</td>
</tr>
<tr>
<td><strong>Knowledge Management System</strong></td>
<td>A system that organizes, enhances and expatiates intra- and inter – firm knowledge management.</td>
</tr>
<tr>
<td><strong>Local Area Network</strong></td>
<td>A computer network that connects computers in an limited geographical area.</td>
</tr>
<tr>
<td><strong>Secure Electronic Transaction</strong></td>
<td>Transmission security method that assures transactions are secure and legitimate.</td>
</tr>
<tr>
<td><strong>Secure Sockets Layer</strong></td>
<td>Creates secure and private connection between a client and a server computer; encrypts the information; sends the information over the internet.</td>
</tr>
<tr>
<td><strong>Small to Medium Enterprises</strong></td>
<td>Businesses having 1 to 200 employees.</td>
</tr>
<tr>
<td><strong>Transaction Processing System</strong></td>
<td>An information system that processes an organisation’s basic business transactions such as purchasing and billing.</td>
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<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Transport Layer Security</strong></td>
<td>A protocol that ensures privacy between communicating applications and their users on the Internet.</td>
</tr>
<tr>
<td><strong>Virtual Private Network</strong></td>
<td>A way to use the public telecommunication infrastructure to provide secure access to an organisations’ network.</td>
</tr>
<tr>
<td><strong>Wide Area Network</strong></td>
<td>A commercial data network that provides data communications services for businesses and government agencies.</td>
</tr>
</tbody>
</table>
List of Appendices

Appendix 1 - Ethics Approval
Appendix 2 - Information Sheet
Appendix 3 - Consent Form
Appendix 4 - Guide for Semi structured Interviews with 17 SMEs
Appendix 5 - Manual Report – Questions
Appendix 6 - Manual Report – Abilities and Recommendations
Appendix 7 - Sample Report Produced Manually
Appendix 1 - Ethics Approval

23 July 2007

Ana Hol, Dr Robyn Lawson, Professor Athula Ginige
School of Computing and Mathematics
University of Western Sydney
NSW 1797

Dear Ana,

HREC Number 07/148 Moving business online

The Committee has reviewed your application for the above mentioned project and has agreed to approve the project.

You are advised that the Committee should be notified of any further change/s to the research methodology should there be any in the future. You will be required to provide a report on the ethical aspects of your project annually and at the completion of this project. The report form is located on the Research Services Ethics Web Page.

The Protocol Number HREC 07/148 should be quoted in all future correspondence about this project. Your approval will expire 30 June 2008. Please contact the Human Ethics Officer, Kay Buckley on tel: 02 47 361 883 if you require any further information.

The Committee wishes you well with your research.

Yours sincerely,

[Signature]

Associate Professor Christine Halse
Chairperson
UWS Human Research Ethics Committee

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Information Sheet

Ana Hol, Dr. Robyn Lawson and Prof. Athula Ginige are Chief Investigators from the University of Western Sydney participating in research entitled: “Moving Business Online”.

The project will focus on how studied businesses can use Information and Communication Technologies (ICT) to gain business benefits.

The aim of this project is to observe eTransformation and to move businesses online. The study will examine current eTransformation stage for each of the companies and will give them recommendations for the future.

In order for the study to be conducted members of the project team will visit and interview the CEOs / Managing Directors of the participating companies. The attached questionnaire questions will be used to collect data. Data will be stored on the secure servers of the School of Computing and Mathematics. Only chief investigators will have the access to the data. After five years from the date of the original data collection questionnaires will be destroyed and the computer files deleted. The record of research results however will be kept.

Participation in this study is voluntary and there are no disadvantages/ penalties/ adverse consequences to not participating, or of withdrawing from the research. Please note, that at any point in the research process you can withdraw your consent.

Confidentiality and anonymity of the participants will be maintained in publication of results by the project team. Results will be distributed as conference presentations and journal articles or other research publications.

If you have any questions regarding this research please contact any of below listed chief investigators.
Ana Hol (a.hol@uws.edu.au or tel: 02 9685 9615);
Dr. Robyn Lawson (r.lawson@uws.edu.au or tel: 02 9685 9242),
Prof. Athula Ginige (a.ginige@uws.edu.au or tel: 02 9685 9097).

Chief Investigators:

Ana Hol           Dr Robyn Lawson           Prof. Athula Ginige
Appendix 3 - Consent Form

Consent Form

I have read the Information Sheet and the researchers have explained the aim of the research project to me.

I understand that participation in this study is voluntary and confidential, and that there are no disadvantages/ penalties/ adverse consequences in not participating, or of withdrawing from the research.

I agree to participate in the research by:
- being interviewed or asked to fill out questionnaires by the researchers, and
- allowing the researchers to observe the business processes, document flow and decision making process of my organisation.

CEO / Managing Director Name: ___________________________
CEO / Managing Signature: ______________________________
Company Name: ______________________________
Appendix 4 – Guide for Semi structured Interviews with 17 SMEs

Company Name:

CEO/Managing Director:

URL:

Location:

Phone:

e-mail:

Date:

- **History:**
- **Technology**
  - Hardware
  - Software
- **Is ROI measured and if so how?**

- **Internet**
  - Use of Internet

- **Systems**
  - Has company got a website?
  - How is the website used?
  - Has the Company Got an Extranet?
  - Has the Company Got an Extranet Intranet?
  - How is the product ordering done?
  - Is company using electronic tracking?
  - How are payments handled?
  - What Systems has the company got?
  - What are companies major business processes?

- **Strategy**
  - What is company doing to achieve competitive advantage?
  - What is company’s Strategy?
  - What type of marketing is company involved in?
  - What are company’s goals and objectives?

- **Structure**
  - What is company’s current Structure?
Do you think company’s structure would need change if so how and why?

- **Style**
  - What is company’s leadership Style?

- **Staff**
  - What staff are required for the company jobs to be completed?

- **Skills**
  - How educated are the employees?
  - Are employees trained on job or are required to have skills before employment?

- **Shared Values**
  - What are some of the company’s Shared Values?
  - What is company planning to do in the future?
  - What are some of the problems company is currently facing?
Appendix 5 – Manual Report – Questions

Date:

Report Taker:

Business Name:

Contact Name:

Address:

Postcode:

Phone:

e-mail:

Website:

Industry Sector:

About the Company:

STRATEGY

Strategy - States

1 – States

S1.1 Do you know who your competitors are?

Y - S1.2 – A1.1  N - S2.1 - R1.0

1 – States

S1.2 Do you know what types of products or services you competitors offer?

Y - S1.3 – A1.1,2  N - S2.1 - R1.1

1 – States

S1.3 Can you match your competitors’ products or services?

Y - S1.4 – A1.1,2,3  N - S2.1 - R1.2

1 – States

S1.4 Can you come up with better more enhanced products or services than those you currently offer?

Y - A1.1,2,3,4, CsI – S2.I  N - S2.1 - R1.3
### Strategy - States

<table>
<thead>
<tr>
<th>2 – States</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S2.1</strong> Can you do daily activities essential for business operations smoothly using current IT?</td>
<td></td>
</tr>
<tr>
<td>Y - S2.2 - A2.1</td>
<td>N - S3.1 - R2.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 – States</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S2.2</strong> Are you able to meet all set deadlines?</td>
<td></td>
</tr>
<tr>
<td>Y - S2.3 – A2.1,2</td>
<td>N - S3.1 - R2.1</td>
</tr>
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<table>
<thead>
<tr>
<th>2 – States</th>
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</thead>
<tbody>
<tr>
<td><strong>S2.3</strong> Do you feel that some tasks and processes should be improved with IT?</td>
<td></td>
</tr>
<tr>
<td>Y - S2.4 – A2,1,2,3</td>
<td>N - S3.1 - R2.2</td>
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<table>
<thead>
<tr>
<th>2 – States</th>
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</thead>
<tbody>
<tr>
<td><strong>S2.4</strong> Do you have a plan outlining future business directions for your organisation?</td>
<td></td>
</tr>
<tr>
<td>Y - <strong>A2.1,2,3,4, Cs2 - S3.1</strong></td>
<td>N - S3.1 - R2.3</td>
</tr>
</tbody>
</table>

### Strategy - States

<table>
<thead>
<tr>
<th>3 – States</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S3.1</strong> Do you know who your customers are?</td>
<td></td>
</tr>
<tr>
<td>Y – S3.2 – A3.1</td>
<td>N – S4.1 – R3.0</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>3 – States</th>
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</thead>
<tbody>
<tr>
<td><strong>S3.2</strong> Do you know what your customers’ requirements are?</td>
<td></td>
</tr>
<tr>
<td>Y - S3.3 – A3.1,2</td>
<td>N - S4.1 - R3.1</td>
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<table>
<thead>
<tr>
<th>3 – States</th>
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</thead>
<tbody>
<tr>
<td><strong>S3.3</strong> Do you market your products to particular groups of customers?</td>
<td></td>
</tr>
<tr>
<td>Y - S3.4 – A3.1,2,3</td>
<td>N - S4.1 - R3.2</td>
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<table>
<thead>
<tr>
<th>3 – States</th>
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<tbody>
<tr>
<td><strong>S3.4</strong> Do you ever look into new ways of how you could reach new customer segments (eg. Use CRM systems, search for new segments).</td>
<td></td>
</tr>
<tr>
<td>Y - <strong>A3,1,2,3,4, Cs3 - S4.1</strong></td>
<td>N - S4.1 - R3.3</td>
</tr>
</tbody>
</table>
### Strategy - States

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<tbody>
<tr>
<td><strong>4 – States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S4.1</strong> Are your products or services of a certified standard?</td>
<td>Y - S4.2, A4.1</td>
<td>N – S5.1 – R4.0</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>4 – States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S4.2</strong> Do you market your products or services online?</td>
<td>Y - S4.3, A4.1,2</td>
<td>N – S5.1 – R4.1</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td><strong>4 – States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S4.3</strong> Do you provide support and/or customer guarantees for your products or services?</td>
<td>Y - S4.4 A4.1,2,3</td>
<td>N – S5.1 – R4.2</td>
</tr>
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<td></td>
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<tr>
<td><strong>4 – States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S4.4</strong> Do you regularly look at the possibilities of how your products or services could be enhanced?</td>
<td>Y - A4.1,2,3,4 Cs4 S5.1</td>
<td>N – S5.1 – R4.3</td>
</tr>
</tbody>
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### Strategy - States

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<tbody>
<tr>
<td><strong>5 – States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S5.1</strong> Do employees have access to new data and knowledge in terms of production, services, customer requirements?</td>
<td>Y – S5.2 – A5.1</td>
<td>N – S6.1 – R5.0</td>
</tr>
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<tr>
<td><strong>5 – States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S5.2</strong> Are employees encouraged to discuss new ideas (eg. Marketing, design of new products, accessing new customer segments)?</td>
<td>Y – S5.3, A5.1,2</td>
<td>N – S6.1 – R5.1</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>5 – States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S5.3</strong> Are employees familiar with the company’s vision for the future?</td>
<td>Y – S5.4 A4.1,2,3</td>
<td>N – S6.1 – R5.2</td>
</tr>
<tr>
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<tr>
<td><strong>5 – States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S5.4</strong> Is innovation encouraged?</td>
<td>Y – A5.1,2,3,4 Cs5 S6.1</td>
<td>N – S6.1 – R5.3</td>
</tr>
</tbody>
</table>
Strategy - States

6 – States

**S6.1** Do you have business goals?
Y – S6.2 – A6.1  N – R6.0

6 – States

**S6.2** Could you reach these goals with your companies’ current business operations?
Y – S6.3, A6.1,2  N – R6.1

6 – States

**S6.3** Do you have a business strategy that could help you achieve these goals?
Y – S6.4 A6.1,2,3  N – R6.2

6 – States

**S6.4** Do you have essential skills and resources to achieve these goals (staff, skills, tools)?
Y – A6.1,2,3,4 Cs6  N – R6.3

STRUCTURE

Structure - States

1 – States

**S1.1** Decisions are made by a CEO or a managing director.
Y - S1.2 – A1.1  N - S2.1 - R1.0

1 – States

**S1.2** Middle level managers are involved in a decision-making process.
Y - S1.3 – A1.1,2  N - S2.1 - R1.1

1 – States

**S1.3** Employees within the organisation have power to make certain decisions.
Y - S1.4– A1.1,2,3  N - S2.1 - R1.2

1 – States

**S1.4** The company can make decisions on the spot when necessary.
Y - A1.1,2,3,4, Cs1 – S2.1  N - S2.1 - R1.3
### Structure - States

**2 – States**

<table>
<thead>
<tr>
<th>S2.1</th>
<th>Company products or services are stable, they do not change often.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y</strong></td>
<td>S3.1 - R2.0</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>S2.2 - A2.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S2.2</th>
<th>Product or service diversification is present; they change as required by new demands, needs or technology.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y</strong></td>
<td>S2.3 - A2.1,2</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>S3.1 - R2.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S2.3</th>
<th>Tasks, roles and functions are loosely linked as they can be restructured when needed (i.e. To accommodate a project or particular product customisation).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y</strong></td>
<td>S2.4 - A2.1,2,3</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>S3.1 - R2.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S2.4</th>
<th>Organisation can easily adapt to change (customer needs, supplier requirements).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y</strong></td>
<td>A2.1,2,3,4, Cs2 - S3.1</td>
</tr>
</tbody>
</table>

### Structure - States

**3 – States**

<table>
<thead>
<tr>
<th>S3.1</th>
<th>There is formal control centralised around business functions (sales, marketing, production) or there is other type of control.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y</strong></td>
<td>S3.2 - A3.1</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>R3.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S3.2</th>
<th>Are your company activities centralised around products, customers, niche markets?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y</strong></td>
<td>S3.3 - A3.1,2</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>R3.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S3.3</th>
<th>Have you centralised your companies activities based on needs and demands of the global market?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y</strong></td>
<td>S3.4 - A3.1,2,3</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>R3.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S3.4</th>
<th>Is your organisation focused around knowledge, new ideas and innovations?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y</strong></td>
<td>A3.1,2,3,4, Cs3 - S4.1</td>
</tr>
</tbody>
</table>
# TASKS AND PROCESSES

## Tasks and Processes - States

### S1.1 Have you streamlined current business tasks?

<table>
<thead>
<tr>
<th>Y - S1.2 – A1.1</th>
<th>N - S2.1 - R1.0</th>
</tr>
</thead>
</table>

### S1.2 Have manual tasks been automated?

<table>
<thead>
<tr>
<th>Y - S1.3 – A1.1,2</th>
<th>N - S2.1 - R1.1</th>
</tr>
</thead>
</table>

### S1.3 After automation, were you required to create any new tasks and processes to accommodate current business requirements?

<table>
<thead>
<tr>
<th>Y - S1.4 – A1.1,2,3</th>
<th>N - S2.1 - R1.2</th>
</tr>
</thead>
</table>

### S1.4 Do you regularly check whether your existing business tasks and processes fit the requirements placed by the environment (customers, stakeholders, business partners)?

<table>
<thead>
<tr>
<th>Y - A1.1,2,3, Cs1 – S2.1</th>
<th>N - S2.1 - R1.3</th>
</tr>
</thead>
</table>

## Tasks and Processes - States

### S2.1 Have tedious and repetitive tasks been removed?

<table>
<thead>
<tr>
<th>Y - S2.2 – A2.1</th>
<th>N - S3.1 - R2.0</th>
</tr>
</thead>
</table>

### S2.2 Have your operations improved (ie. speed, clarity, error reductions) because of recent changes made to your business tasks or processes?

<table>
<thead>
<tr>
<th>Y - S2.3 – A2.1,2</th>
<th>N - S3.1 - R2.1</th>
</tr>
</thead>
</table>

### S2.3 Have you managed to improve your profitability in terms of product output, customer satisfaction and / or speed of delivery?

<table>
<thead>
<tr>
<th>Y - S2.4 – A2.1,2,3</th>
<th>N - S3.1 - R2.2</th>
</tr>
</thead>
</table>
2 – States
*S2.4* Do you regularly review environmental needs and requirements (customers, stakeholders, business partners)?

| Y - *A2.1,2,3,4, Cs2 - S3.1* | N - S3.1 - R2.3 |

Tasks and Processes - **States**

3 – States
*S3.1* Do you try to avoid change whenever possible?

| Y - S4.1 - R3.0 | N - S3.2 - A3.1 |

3 – States
*S3.2* Do you change when necessary for survival?

| Y - S3.3 – A3.1,2 | N - S4.1 - R3.1 |

3 – States
*S3.3* Do you change when there are obvious benefits for it?

| Y - S3.4 – A3.1,2,3 | N - S4.1 - R3.2 |

3 – States
*S3.4* Do you ever change just because you have a feeling that change may bring new possibilities and open up new frontiers?

| Y - *A3,1,2,3,4, Cs3 - S4.1* | N - S4.1 - R3.3 |

Tasks and Processes - **States**

4 – States
*S4.1* Do you use separate applications to complete different business tasks?

| Y – R4.0 | N - S4.2 – A4.1 |

4 – States
*S4.2* Have related tasks been grouped and sequenced?

| Y - S4.3, A4.1,2 | N - R4.1 |

4 – States
*S4.3* Are processes and their sub processes supported through computerised applications?

| Y - S4.4, A4.1,2,3 | N - R4.2 |

4 – States
*S4.4* Are processes integrated with the organisation’s workflow?

| Y - *A4.1,2,3,4 Cs4* | N - R4.3 |
## IT Tools and Systems - States

### S1.1 Do you use e-mail and document management software (i.e. Office productivity tools)?

| Y - S1.2 – A1.1 | N - S2.1 - R1.0 |

### S1.2 Do you use networked applications such as VPN, FTP, groupware, and scheduling packages?

| Y – S1.3 – A1.1,2 | N - S2.1 – R1.1 |

### S1.3 Are any of your tools integrated with company’s system i.e. Tracking systems – production, employee working hours, CRM systems?

| Y – S1.4 – A1.1,2,3 | N – S2.1 – R1.2 |

### S1.4 Are your company’s tools integrated with company’s systems so that you can track monitor and observe systems’ performances through electronically generated systems reports?

| Y – S2.1 – A1.1,2,3,4 Cs1 S2.1 | N – S2.1 – R1.3 |

## IT Tools and Systems - States

### S2.1 CEO / general managers have access to the company’s IT systems.

| Y – S2.2 – A2.1 | N – S3.1 – R2.0 |

### S2.2 Each department has someone who is authorised to access areas of the company’s IT systems.

| Y – S2.3 – A2.1,2 | N – S3.1 – R2.1 |

### S2.3 All employees can access certain areas of the company’s IT system.

| Y – S2.4 – A2.1,2,3 | N – S3.1 – R2.2 |

### S2.4 Some business partners and stakeholders are authorised to access certain parts of the company's IT systems.

| Y – Cs2 - S3.1 – A2.1,2,3,4 | N – S3.1 – R2.3 |
### IT Tools and Systems - States

<table>
<thead>
<tr>
<th>3 – States</th>
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</thead>
<tbody>
<tr>
<td><strong>S3.1</strong> Do you use Internet for searching?</td>
</tr>
<tr>
<td>Y – S3.2 – A3.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 – States</th>
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</thead>
<tbody>
<tr>
<td><strong>S3.2</strong> Do you use Internet to access customers?</td>
</tr>
<tr>
<td>Y – S3.3 - A3.1,2</td>
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</table>

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<thead>
<tr>
<th>3 – States</th>
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<tbody>
<tr>
<td><strong>S3.3</strong> Do you use other companies websites to advertise your company (ie. Yellow pages, Industry partners or associations’ websites, government websites, websites of the companies you did business with)?</td>
</tr>
<tr>
<td>Y – S3.4 - A3.1,2,3</td>
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<thead>
<tr>
<th>3 – States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S3.4</strong> Do you use Internet to make business contacts and deals?</td>
</tr>
<tr>
<td>Y – A3.1,2,3,4 Cs3 – S4.1</td>
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### IT Tools and Systems - States

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<th>4 – States</th>
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<tbody>
<tr>
<td><strong>S4.1</strong> Do you have a static website or more?</td>
</tr>
<tr>
<td>Y – S4.2 - A4.1</td>
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</table>

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<thead>
<tr>
<th>4 – States</th>
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<tbody>
<tr>
<td><strong>S4.2</strong> Do you have an interactive website or more?</td>
</tr>
<tr>
<td>Y – S4.3 – A4.1,2</td>
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<thead>
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<th>4 – States</th>
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<tbody>
<tr>
<td><strong>S4.3</strong> Do you have an eCommerce website?</td>
</tr>
<tr>
<td>Y – S4.4 – A4.1,2,3</td>
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<th>4 – States</th>
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<tbody>
<tr>
<td><strong>S4.4</strong> Are customisation tools integrated with the eCommerce website?</td>
</tr>
<tr>
<td>Y – A4.1,2,3,4 - Cs4 – S5.1</td>
</tr>
</tbody>
</table>
### IT Tools and Systems - States

| 5 – States |  
| S5.1 | Organisation has a contractor or someone from the company that looks after company’s IT systems.  
Y – 5.2 – A5.1  
N – S6.1 – R5.0 |
|  
| S5.2 | There is a set group that looks after IT systems.  
Y – 5.3 – A5.1,2  
N – S6.1 – R5.1 |
|  
| S5.3 | Organisation has an IT department that looks after IT Systems. (eg. Some activities may be outsourced).  
Y – S5.4 – A5.1,2,3  
N – S6.1 – R5.2 |
|  
| S5.4 | Organisation has a fully integrated IT department that looks after company’s IT systems, required software, hardware and user support.  
Y – A5.1,2,3,4 Cs5 – S6.1  
N – S6.1 – R5.3 |

### IT Tools and Systems - States

| 6 – States |  
| S6.1 | Organisation has an office system that allows for information manipulation, storage and retrieval (spreadsheets, databases).  
Y – S6.2 – A6.1  
N – R6.0 |
|  
| S6.2 | Operational level system is emerging. Such system may be composed of: Systems that support production – product tracking, sales and finance monitoring-transactions (TPS) and customers requirements and advertising (CRM).  
Y – S6.3 – A6.1,2  
N – R6.1 |
|  
| S6.3 | Knowledge level systems - KMS and Management Systems - DSS are emerging.  
Y – S6.4 – A6.1,2,3  
N – R6.2 |
|  
| S6.4 | Organisation has fully functional strategic level systems - ERP, ESS.  
Y – A6.1,2,3,4  
N – R6.3 |
### IT Tools and Systems - States

<table>
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<tr>
<th>7 – States</th>
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<tbody>
<tr>
<td><strong>S7.1</strong> Do you use antivirus software and spam filters?</td>
<td>Y–S7.2–A7.1  N–R7.0</td>
</tr>
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<thead>
<tr>
<th>7 – States</th>
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<tbody>
<tr>
<td><strong>S7.2</strong> Have you selected appropriate authorisation and authentication measures for system access and have you implemented appropriate proxies and firewalls?</td>
<td>Y–S7.3–A7.1,2  N–R7.1</td>
</tr>
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<tr>
<th>7 – States</th>
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</thead>
<tbody>
<tr>
<td><strong>S7.3</strong> Is your network traffic encrypted (SSL, TLS)?</td>
<td>Y–S7.4–A7.1,2,3  N–R7.2</td>
</tr>
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<thead>
<tr>
<th>7 – States</th>
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</thead>
<tbody>
<tr>
<td><strong>S7.4</strong> Have you implemented intrusion detection and disaster recovery systems?</td>
<td>Y–A7.1,2,3,4  N–R7.3</td>
</tr>
</tbody>
</table>
Appendix 6 – Manual Report – Abilities and Recommendations

STRATEGY

A dimension a company should first look into is Strategy. Strategy helps companies assess and analyse the environment that surrounds them. This allows them to develop their plans and visions for the future, identify who their customers are and decide what should be their products or services. After making these decisions, the company is able to identify standards, needs and requirements they will meet throughout their operations so that they can achieve their future goals and aspirations.

<table>
<thead>
<tr>
<th>Abilities</th>
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<tbody>
<tr>
<td><strong>Stage 1</strong></td>
</tr>
<tr>
<td>A2.1</td>
</tr>
<tr>
<td>A3.1</td>
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<tr>
<td>A4.1</td>
</tr>
<tr>
<td>A5.1</td>
</tr>
<tr>
<td>A6.1</td>
</tr>
<tr>
<td><strong>Stage 2</strong></td>
</tr>
<tr>
<td>A2.2</td>
</tr>
</tbody>
</table>
for project management.
In addition, the company delivers goods and services when required by the customers.
A3.2
You know your customers and what they require. You can get more detailed information about your customers by analysing existing customer records, surveying them and allowing them to contact the company when needing support.
A4.2
Market offline and online. By marketing your products/services you are assuring interested parties hear/see what you are offering. In addition, this ensures potential customers know how to reach you.
A5.2
Employees that are encouraged to discuss new ideas can share new knowledge with their colleagues. Together members of the organisation can think of new possibilities and can jointly strive to meet global demands.
A6.2
Company’s current operations seem to be efficient for the set goals to be reached. To achieve set goals the organisation is required to constantly monitor its operations and observe the fit of the current business operations, tasks and processes to the set goals.

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<thead>
<tr>
<th>Stage 3</th>
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<tbody>
<tr>
<td>A1.3</td>
</tr>
<tr>
<td>If you can produce products or deliver services at the same level as your competitors you are doing well. This means that you know the marketplace and that you are aware of what customers require. It also means that you have skills to deliver the products/services required.</td>
</tr>
<tr>
<td>A2.3</td>
</tr>
<tr>
<td>The company knows their disadvantages and advantages. Furthermore, the company has the plan outlining how particular tasks and processes could be improved.</td>
</tr>
<tr>
<td>A3.3</td>
</tr>
<tr>
<td>Use your systems ie. Customer Relationship Management (CRM) System or even simple customer database to learn about your customers. Know who purchased what product. Learn who is interested in what type of products. Group customers by their needs, requirements, locations. Market to particular customer segments.</td>
</tr>
<tr>
<td>A4.3</td>
</tr>
<tr>
<td>When you provide support to your customers after they have purchased a particular product/accessed certain service you ensure your services/products quality. In addition, when you provide guarantees for the products or services you build customers’ trust and ensure their willingness to come back.</td>
</tr>
<tr>
<td>A5.3</td>
</tr>
<tr>
<td>Employees that know the organisation’s vision know what direction the company is heading. Such employees can help guide the organisation into the future</td>
</tr>
<tr>
<td>A6.3</td>
</tr>
<tr>
<td>Business strategy should be well thought through. Well planned strategy will help you reach set goals. Consider products/services offered, market</td>
</tr>
<tr>
<td>Stage 4</td>
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<tr>
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<tr>
<td>You have skills and abilities to understand the needs of the environment. You are open to new knowledge and ideas. You are ready to explore new possibilities and have skills and knowledge to produce / deliver new products / services. You have excelled within the market place.</td>
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<table>
<thead>
<tr>
<th>Stage 4</th>
<th>A2.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>You know company’s operations well. You have set visions and plans for the future and you are working towards the set goals.</td>
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<table>
<thead>
<tr>
<th>Stage 4</th>
<th>A3.4</th>
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</thead>
<tbody>
<tr>
<td>Learn through data that you collect via CRM and other organisational systems such as KMS (Knowledge Management System), TPS (Transaction Processing System). Monitor customer segments – customers with particular needs, customers that have purchased particular products, customers belonging to a particular group. Explore new possibilities of how to reach customers.</td>
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<tr>
<th>Stage 4</th>
<th>A4.4</th>
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</thead>
<tbody>
<tr>
<td>Your existing products / services require continuous enhancements and improvements. Therefore it is essential you explore these possibilities and act upon them.</td>
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<thead>
<tr>
<th>Stage 4</th>
<th>A5.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>By encouraging innovation the company is assuring its position in the global market. The company that would like to have a competitive advantage over other companies in the market place needs to assure its uniqueness. This can be achieved through innovation and new inventions.</td>
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<table>
<thead>
<tr>
<th>Stage 4</th>
<th>A6.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is crucial you have essential skills and resources that will help you achieve set goals. Consider staff, skills, tools and materials.</td>
<td></td>
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</tbody>
</table>

### Recommendations

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>R1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Try to understand the business environment. Assess who your competitors are. Do the SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis. Evaluate your options. Evaluate how you compare to your competitors.</td>
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</table>

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>R2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>The company needs to learn how to prioritise tasks and activities. It also needs to assess what are the essential tasks for day-to-day operations. In addition, the company needs to ensure they can smoothly and without interruptions carry out these activities.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>R3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn who your customers are. This will help you identify: - Whose needs you need to meet? - What products / services you should be producing / delivering? - How and where to market those products / services?</td>
<td></td>
</tr>
</tbody>
</table>
### Stage 2

| R1.1 | See and evaluate how your products / services compare to those delivered by the competition.  
Assess the need for produced products / delivered services.  
Make a decision on what products / services you should be delivering. |
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<thead>
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<tbody>
<tr>
<td>R2.1</td>
<td>The company needs to invest in project management. The company needs to learn how to organise time and how to meet deadlines. Once the company is able to manage time effectively it will be able to deliver to customers on time.</td>
</tr>
</tbody>
</table>
| R3.1 | Try to get more information about your customers.  
Survey them.  
Collect data through online forms.  
Collect data through call centres / support centres.  
Monitor who accesses your website and what pages get highest hits. |
| R4.1 | Market your products offline and online.  
Ensure potential customers know you exist. Also, make sure they know how to contact you. |
| R5.1 | Encourage employees to discuss new ideas and share knowledge.  
Together members of the organisation can look into possibilities that will allow them to reach global markets and meet customers’ demands. |
| R6.1 | Ensure you can reach your goals with current business operations.  
Ensure you have required tasks, processes, goals and aspirations. |

### Stage 3

| R1.2 | Can you produce / deliver same as the competition?  
What would you need to do to match them?  
Have you got essential skills?  
Do you have essential materials / tools?  
Work on meeting your competition. |
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<tbody>
<tr>
<td>R2.2</td>
<td>The company needs to know how to assess their operation. The company needs to be able to outline its current advantages and disadvantages and pinpoint its plans. After the company has done these, it will be able to develop company strategy and plan for the task / process improvements.</td>
</tr>
</tbody>
</table>
R3.2
Use your CRM system or even simple customer database to:
- Learn who purchased what products.
- Group customers by their interests, needs, requirements and locations.
- Market to particular customer segments.

R4.2
Provide ongoing support to your customers.
Have call centres that customers can ring to get help and instructions.
Have FAQ and troubleshooting guides online.
Give guarantees with the purchased products / services.
This assures your products quality and builds customers trust. Trusting, satisfied customers are more likely to come back.

R5.2
Ensure employees know the company’s vision. Assure the company’s vision is reflected through the company website, published data, and marketing.
Make sure employees know what direction the company would like to go.
This will help employees use skills and knowledge they gather to guide the organisation into the future.

R6.2
Plan your business strategy well.
Consider:
- products / services offered - market sectors you would like to reach, -
your competitions’ goals,
- your customers’ requirements, and
- your employees’ satisfaction.

Stage 4

R1.3
To have the competitive advantage in the marketplace you will need to learn how to act before the competition.
Listen to the environment.
Learn, observe. Use knowledge and skills to come up with new inventions.
Try to enhance products / services you have or attempt to produce / deliver something new.

R2.3
A plan outlining company direction and set objectives for the future is very important. Evaluate your goals and objectives. Where would you like to see the company in next year, next five years? Develop a step by step plan how are you going to achieve those goals.

R3.3
Learn through CRM (Customer Relationship Management System), KMS (Knowledge Management System), and TPS (Transaction Processing System) reports.
Collect data about customer segments – customers with particular needs, customers that have purchased particular products, customers belonging to a particular group. Explore new possibilities on how to reach customers.

R4.3
Try to enhance and improve your existing products / services. Monitor company’s systems, produce system reports and learn from them.
R5.3
Encourage innovation.
Encourage new ideas.
Encourage development of new products / delivery of new services.
This will ensure your position in the market place.
R6.3
Do you have essential skills and resources to reach your goals?
Do you have required knowledge?
Do you have skilled staff?
Do you have essential tools, machinery, materials?

STRUCTURE

After the company has identified their Strategy and they know what goals and visions they would like to follow, the company can look at their Structure. Structure identifies the company’s construction. It represents the building blocks that identify formal controls of the organisation’s departments, operations and business functions that are required to meet goals set in Strategy. Structure also helps companies identify needed decision makers, management and leadership roles.

<table>
<thead>
<tr>
<th>Abilities</th>
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</table>
| **Stage 1** | A1.1  
CEO / managing director is able to make decisions. |
| | A2.1  
It is important to have products which can change when required. In the electronic world needs and demands change quickly therefore a company should be able to respond to such needs and demands and deliver accordingly. |
| | A3.1  
Company’s activities are focused around main business functions. The company places importance on main processes and day-to-day activities. This may include sales, production, marketing, financing. To excel the company should learn how to differentiate itself from the competition. |
| **Stage 2** | A1.2  
It is good that middle level managers are involved in decision-making processes. They are the ones that know the situation within the departments and teams. Furthermore, they often know staff they supervise much better than the CEO or a managing director. Therefore, they can help staff voice concerns, deal with possible issues or problems, and even advance and streamline their careers. Involving managers in decision-making processes brings benefits, and in this way effects of possible changes and their results can be easily monitored. |
| | A2.2  
Products and services should be able to reflect customers’ needs and requirements. A company that is able to meet new needs and demands has skills to live in the electronic world and is able to compete in the electronic marketplace. |
A3.2
The company is looking into new business avenues. These may include:
looking into focusing activities on products – such as product
customisation, new technology to produce products or customers
assessments of various customer segments and their needs, requirements or
niche markets.

Stage 3
A1.3
Employees that are able to make decisions about the activities they are
responsible for are important assets to the organisation. This allows
managers and CEOs to concentrate on more strategic decision-making.
Employees in turn feel important and they know that their skills and
abilities are highly regarded by the company, as they are essential for
smooth day-to-day operations.
A2.3
Tasks, roles and functions need to be customisable. Ability to have tasks
and processes that can be re-organised to suit needs and demands of the
environment is beneficial to the organisation. This also allows for the
networks within the organisations to form dynamically as needed. For
example, processes may be organised to fit a particular project, certain
innovation group or needs of a particular customer.
A3.3
Ability to centralise activities based on the needs and demands of the
environment gives the company a competitive advantage. For a company
to be able to reach its full potential it is essential for it to be networked,
dynamic, have a focus and be able to select processes required to meet
given needs and demands.

Stage 4
A1.4
It is important to have the ability to make decisions on the spot when
needed. At this level, employees are often able to make decisions /
suggestions for the activities they are directly responsible for (Note,
managers approval may sometimes be needed). In a global world
situations change quickly and therefore it is not always possible to wait for
a long time to be able to make decisions. It is important to note that a
company should not always act on the spot however, it is equally
important to acknowledge that such skill might sometimes be needed. For
example, you may decide to take a customer who is after a customisable
product knowing that you have machinery and skills to make such product
but have not done it before.
A2.4
The organisation is flexible, organic, adjustable and adaptable. Business
processes and tasks can change quickly and easily. These allow the
company to meet needs and demands of the changing world. In addition,
this can allow the organisation to get the competitive advantage over the
competition.
A3.4
A successful company is the one that is able to change its focus if required.
This allows the company to adapt to the constantly changing environment.
To achieve this, the company needs to look into new knowledge, new
ideas and innovations. Such abilities give strength to the company. They
also allow it to assess the needs of the environment, learn the basis of data
and ideas it collects, makes appropriate decisions and selects appropriate
directions for the company's future.

<table>
<thead>
<tr>
<th>Recommendations</th>
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<tbody>
<tr>
<td><strong>Stage 1</strong></td>
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<tr>
<td>R1.0</td>
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<tr>
<td>R2.0</td>
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<tr>
<td>R3.0</td>
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<tr>
<td><strong>Stage 2</strong></td>
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<tr>
<td>R1.1</td>
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<tr>
<td>R2.1</td>
</tr>
<tr>
<td>R3.1</td>
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</tbody>
</table>
Stage 3

R1.2
You may like to consider allowing particular employees to make certain decisions. Note, that these should be done slowly. You should start small first, and then slowly as confidence and trust increase you may like to allow them to make bigger decisions. Usually these decisions would closely be related to day-to-day operations and would be made by the employees that are closely involved in related tasks and processes. For example, this may be taking the customer order, processing the order, making product design decisions, making contacts with existing employees.

R2.2
Consider allowing organisational tasks, roles and functions to have a degree of flexibility. Flexibility can allow the relationships between tasks, functions and roles to be formed dynamically on a needs basis. With such ability, the company can make links and associations amongst tasks and processes where and when needed. For example, the company may like to organise its processes to fit a particular project, certain innovation group or needs of a particular customer for duration of the project.

R3.2
Look at the needs and demands of the global market. Try to evaluate what type of centralisation would best suit your business. Assess competition. Evaluate their centralisation strategies. Evaluate how best you could meet global needs. You may like to centralise around business functions (sales, marketing, and production) or particular activities that could bring benefits (products, customer segments, niche markets).

Stage 4

R1.3
It is true that it is not always advisable to make decisions on the spot; however, in a busy electronic world you will sometimes realise that if you do not make decisions on the spot chances may simply disappear. So, practice making small decisions first. Once you get the skills and confidence, you can start making bigger decisions. Learn how to make evaluations quickly. To be able to do so know your business processes well. Know your staff, skills and the knowledge you have. Know what you can do and what problems you can handle. Assess your system reports regularly. By doing this you will have skills and be able to make some unplanned decisions much easier. For example, you may be able to take a customer requiring a customisable product, market to a certain segment of customers, or join an international venture.

R2.3
Try to encourage flexibility. The organisation that is organic and is able to adapt and change its processes and tasks as needed is able to meet needs and demand of the changing world. Such skill is essential if organisation is to have the competitive advantage over the competitors.

R3.3
The company living in the global market needs to be able to meet needs and demands of the customers who live within the dynamically changing world. To be able to do so the company needs to be able to open up to new possibilities. Furthermore, the organisation needs to encourage its staff to seek new ideas and knowledge. Such data will help the company formulate the innovation focus and assure that the company has developed its future
direction and can successfully reach global markets with newly designed products and/or services.

TASKS AND PROCESSES

Once Structure has been determined, the company has a stable construction. The company at this stage knows what departments are essential, and what functional areas will be crucial for business operations. Therefore, the company can now look into essential business processes and tasks. Furthermore, they can look into business process integrations and streamlining of essential activities. While doing so the company also needs to ensure that their operations are accurate, swift, and reliable.

### Abilities

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>A1.1</th>
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<tbody>
<tr>
<td></td>
<td>Organisation is able to do tasks quickly and smoothly.</td>
</tr>
<tr>
<td></td>
<td>Related tasks have been grouped and organised.</td>
</tr>
<tr>
<td></td>
<td>Business operations have been streamlined which has improved the organisation’s workflow.</td>
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<tr>
<td></td>
<td>Smaller numbers of employees are required by the organisation to complete repetitive manual tasks.</td>
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<tr>
<td>A2.1</td>
<td>There is a significant reduction in human made errors.</td>
</tr>
<tr>
<td></td>
<td>Organisation performs tasks reliably and precisely.</td>
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<tr>
<td></td>
<td>Jobs such as form filling, document processing, approval giving can now be completed much quicker and smoother.</td>
</tr>
<tr>
<td>A3.1</td>
<td>The company has realised that change is important. Change is also found to be one of the most crucial catalysts required for making new decisions and starting new ventures.</td>
</tr>
<tr>
<td>A4.1</td>
<td>Organisation is able to identify how important it is to group related tasks and activities. Organisation is also realising importance of common data repository and common applications.</td>
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<thead>
<tr>
<th>Stage 2</th>
<th>A1.2</th>
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<tbody>
<tr>
<td></td>
<td>Organisation realises importance of workflow and acknowledges that business tasks and processes may need adjustments to accommodate new requirements.</td>
</tr>
<tr>
<td></td>
<td>Organisation is ready to carry out assessment of new business requirements and act upon them.</td>
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<tr>
<td></td>
<td>Organisation can now complete tasks much quicker than they used to be when those tasks were manual.</td>
</tr>
<tr>
<td></td>
<td>Operations are now more reliable.</td>
</tr>
<tr>
<td>A2.2</td>
<td>Company operates smoothly.</td>
</tr>
<tr>
<td></td>
<td>Human errors are reduced.</td>
</tr>
<tr>
<td></td>
<td>Products are manufactured much quicker due to business process changes.</td>
</tr>
<tr>
<td></td>
<td>Approvals, forms and documents can now be processed much quicker.</td>
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<td></td>
<td>Staff can be sent to trainings.</td>
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</table>
### Stage 3

**A3.2**
You have developed survival mechanism. When you realise change is needed for survival you act. You are more willing to change if there is an trusting authority figure involved and is happy to assist you when undertaking change.

**A4.2**
Company is now able to identify importance of proper sequencing of activities. Appropriate sequencing make sure all activities are completed in time. It also opens possibilities for the utilisation of some parallel activities. Appropriate sequencing leads into successful workflow design and successful organisation.

**A1.3**
Organisation is able to carry out detailed workflow analysis. It can now identify that even automated business processes may need further streamlining. In addition, this allows the organisation to make essential changes so that it can remove multiplications and repetitions. This in turn may help the organisation realise that not all existing processes are required and/or that additional processes may need to be created. Moreover, at this stage the organisation can now identify which processes can be collated together and which ones may need to be completely re-engineered.

**A2.3**
Organisational output has now increased. Increase in output often is positively correlated to increase in profit. Organisation is able to develop a focus and/or specialise its production. Organisation can now use available resources to enhance productions. Organisation can successfully meet customers’ needs and demands.

**A3.3**
Organisation is able to weigh up risks against benefits. It has skills that are essential to carry out risk assessments and it knows how to act cautiously. Organisation knows that change is one of the integral business components with which benefits are often associated.

**A4.3**
Organisation is able to identify processes, their sub processes and related activities. Furthermore, the organisation is able to identify how processes relate to one another and the most optimum way to carry them out. Organisation has got computerised applications that can complete tasks and link sub processes to their processes.

### Stage 4

**A1.4**
Organisation is able to identify importance of internal and external business environment. It acts in accordance with the stakeholders’ (customers, business partners, distributors, suppliers) needs and requirements. It regularly assesses its business tasks assuring they are adequate and can meet stakeholders’ needs and demands.

**A2.4**
Organisation is able to meet needs and demands of their stakeholders.
Organisation is able to keep business relationships. 
Organisation knows how to position itself within the business environment. 
Organisation is able to retain existing customers and attract new ones. 
A3.4 
You know how to sense environmental needs and respond to them accordingly. 
You know how to predict future possibilities. 
You change when opportunities arise. 
You are able to act before the competition. 
You have innovative products and machinery. 
You are eager to introduce new products, market in the ways you have not done before and increase your customer base. 
A4.4 
Organisation is able to identify and determine relationships between tasks, activities, processes and sub processes. 
It can identify how systems and sub systems interrelate within the organisation. 
Organisation at this stage has applications interlinking tasks and processes across organisational systems.

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<th>Recommendations</th>
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<td>R1.0</td>
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<tr>
<td>R2.0</td>
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<tr>
<td>R3.0</td>
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</tbody>
</table>
Be open to new possibilities.

R4.0

Look into grouping tasks.

Look into associating tasks.

See what tasks relate to one another.

Identify what IT application could help you perform some of these tasks.

To identify this, study data you are working with. How similar should the input data be for required tasks to give you outcomes, where is the difference? Could this data be stored in a common database?

**Stage 2**

R1.1

Assess business requirements.

Review workflow and existing tasks and processes.

Are they adequate?

Review data flow.

Assess if manual tasks can be automated.

Make necessary changes.

R2.1

Review workflow?

Assess individual tasks and processes.

What purpose do they serve?

What benefits do they currently bring?

Could they be rearranged so that the organisation can benefit (reduce staff numbers, increase output, increase reliability)?

R3.1

Change allows for both survival and growth.

Explore new avenues.

Start small. Make small changes first. Learn to sense and respond. Act, improve and learn how to make bigger changes.

R4.1

Assure related activities are grouped.

Sequence activities in required order.

Use workflow analysis to help you identify crucial tasks and activities.

To save time some activities may be performed in parallel. Evaluate possibilities.

**Stage 3**

R1.2

Look into streamlining. Review the workflow analysis.

Check for multiplications, repetitions, data flows, activity flows?

Can some activities be collated?

Do you need all existing tasks and processes?

Do you need to redesign or re-engineer some processes to streamline data flow?

R2.2

Review, what could bring a profit?

How could the profit increase?

What are your customers’ needs?

Are you meeting needs and demands of the customers?

Are needs and demands reflected in your current tasks and processes?

Are you delivering products and / or services on time?

Review your workflow and make necessary changes?
<table>
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<tr>
<th>Stage 4</th>
<th>R3.2</th>
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<tbody>
<tr>
<td>If you see that change is possible evaluate it. Consider risks and benefits. If benefits outweigh risks, carefully plan and execute change.</td>
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</table>

| R4.2 |
| Grouped activities should now help the organisation identify crucial processes. Do the workflow analysis. In the workflow you will see that some process outputs may form the inputs for the process that follows. Analyse these processes. See if any tasks within these processes may be completed in parallel. In addition, identify tasks that can be carried through computerised applications. Once you have identified such tasks you may like to implement IT solutions to speed up the operations. |

| R1.3 |
| Assess needs of the environment. Compare your tasks and processes to the needs and requirements placed by your stakeholders (customers, business partners, distributors, suppliers)? Make essential changes to tasks and processes so that you can meet new needs and demands placed by the stakeholders. |

| R2.3 |
| To succeed you will need to continuously monitor changes in the environment. This may include: assessment of your own operations, competition and their products / services, customers and their requirements. Inputs you gather through these analyses should help you identify changes, which you will need to act on before your competition if you are to get the competitive advantage over them. |

| R3.3 |
| Do not always wait for obvious needs to change. Learn to sense and respond to the environment. Consider risks and benefits where possible. Try to predict possible outcomes. Move ahead before your competitors do. Explore new products and services – see if you could bring something new to the market. Explore possibilities to market in the ways you have not done so before. This may help you increase your customer base. |

| R4.3 |
| Look into tasks, activities, processes and sub processes. Determine how they relate to one another. Is there a consistent flow from one process to the other? Are processes parts of organisation’s larger system? Identify what types of applications are needed to link organisational systems and processes? Assure organisation’s workflow is smooth, data travel easy and all inputs and outputs are received and processed in time. |
Finally, after Tasks and Processes dimension has been analysed, the IT Tools and Systems dimension can be assessed. Now, the company has identified what processes and tasks are required. This means that the company can now look into using IT tools and systems to support its operations. Such support is going to include use of the Internet, design and implementation of websites, integration of web based tools and systems throughout the company’s functional areas and departments. Successful integration of IT tool and systems will lead to successful eTransformation.

<table>
<thead>
<tr>
<th>Abilities</th>
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<tbody>
<tr>
<td>A1.1</td>
<td>You have essential hardware and software (office productivity, backup, computers, laptops, printers). You are able to stay in touch electronically, communicate and exchange e-mails and other electronic documents with customers, business partners and employees regardless of the location. You can create, manage and when needed retrieve electronic documents (text, images, graphs, charts, tables) which allows for easy data creation, storage and management.</td>
</tr>
<tr>
<td>A2.1</td>
<td>Managers (this may include other staff within the organisation) are able to use and monitor company’s IT. Managers and some other employees may be able to access data such as e-mail, Internet, basic calendars.</td>
</tr>
<tr>
<td>A3.1</td>
<td>Internet can allow you to search for products, access research data, find business partners, reach customers, find individual or business contact details, identify specialised industry events, find and be in touch with industry associations and government institutions.</td>
</tr>
<tr>
<td>A4.1</td>
<td>Your web site is your company’s electronic presence. Information about the company can now be accessed by potential customers or business partners. The web site of your company could include the following: company location, brief information about the products or services. In addition, it could also include some images to showcase the company to the visitors. Moreover, you have your own domain name. In addition, the company has someone to manage the web content and ensure the site is up to date.</td>
</tr>
<tr>
<td>A5.1</td>
<td>There is someone within the company, an associate or a contractor that can provide some IT help.</td>
</tr>
<tr>
<td>A6.1</td>
<td>Company is able to store and retrieve required data. This can help in decision-making, record keeping and report generations. Company keeps data safe within databases, and has essential software and hardware. It has an appropriate data backup and can access these in case of software or hardware failure.</td>
</tr>
<tr>
<td>A7.1</td>
<td>You have antivirus software installed. This will help you make sure that</td>
</tr>
</tbody>
</table>
Viruses do not destruct or damage your files and systems. If through one of your incoming files you do come across a virus installed software will detect and very often clear the virus completely. In some cases, you may need some additional software to clear the virus however, you will be sure that there was no damage done. Furthermore, you have spyware detection / removal software installed to assure that there is no software installed that could take some or partial control over your system.

<table>
<thead>
<tr>
<th>Stage 2</th>
<th>A1.2</th>
</tr>
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<tbody>
<tr>
<td>Employees and business partners are able to share reasonably large documents, use applications and other resources regardless of their location via the organisation’s networks (LAN, WAN, wireless). Participants from remote locations can carry out discussions, meetings, voting and analysis. With such facilities, company is able to get help from the external experts electronically and get them involved in discussions and analysis via electronic tools. VPN and FTP may be in use.</td>
<td></td>
</tr>
</tbody>
</table>

| A2.2 |
| Activities within the departments can be monitored. This allows departments to take some control over how their department functions. Furthermore, individuals that have access to the system can report to the top manager and raise possible issues and concerns within the department. This allows the top manager to get a more holistic view of how company’s systems are performing. In addition, a company may develop reports and learn on the basis of past experiences. |

| A3.2 |
| By using the Internet, a company may be able to search for potential customers. The company may also be able to find out if there are groups of customers searching for particular products. Such information can also help rethink design of the current products and help distinguish the types of products that should be put on the market. By searching the Internet the company can also find out about existing products, compare such products to their company’s products and be able to determine what products customers may be more likely to purchase. |

| A4.2 |
| An Interactive website can allow your customers to search through catalogues for products or services. It can also allow customers to contact the company via an online form. |

| A5.2 |
| A group is able to do a lot more than one individual. Often a group has expertise in hardware, software and user training. Some help may still be required from outside. |

| A6.2 |
| The company can monitor production and sales by using tracking systems. Such systems can often easily link to CRM – the system that helps monitor customers needs and requirements. Furthermore, the company can make use of TPS for sales and transaction monitoring, production and product tracking. This can allow the company to assess and analyse product requirements and warehouse and manufacturing needs. In addition, the company may have HR, accounting and payroll systems, |
employee hour tracking system, production and warehouse product tracking systems.

A7.2
Your accounts and access to your systems is password protected. Users of the system have been given privileges in accordance to their needs and responsibilities. This means that you have allocated user access rights and selected appropriate measures to determine authorised users and authenticate them. If you have a wireless network you have secured it using WPA authentication. Furthermore, you have set up appropriate proxies to filter incoming and outgoing data and firewalls to prevent outsiders from invading your network.

Stage 3

A1.3
Company is able track production. It can also easily monitor resources required for business operations as well as track the speed of delivery of products. Organisation can also monitor its resources in terms of employee numbers and the tasks they are required to complete; machinery required for company’s operations, and supplies needed for manufacture.

Company has CRM, TPS, and basic tracking systems to track and learn about customers’ behaviours, product and service selection, emerging markets.

A2.3
Company can now keep all records electronically. All data is received as an input to the system. Therefore, all processing can be done electronically. All employees can now be well informed on what is happening within the organisation. Employees, as the system users, can give an assessment of the system from their own perspective. This furthermore allows managers to get the bigger picture of how the system functions.

A3.3
Company can use Internet for advertising not just from the own website but from other sites. You may like to put your data on Yellow pages. You may also like to contact your industry sector or government regulatory business associations for marketing help. Such organisations often have databases of companies with particular characteristics or those that are offering particular products or services. You may also like to talk to your business partners. Both of you could market and showcase projects you worked on together. In the long run this can also help you increase your sites ranking within search engines.

A4.3
At this stage, a company has fully integrated stable and well functioning systems. An eCommerce website allows the company to carry out full electronic transactions. Customers of such organisations can search for the products online, can order products and purchase them online. Payments are often done by Credit Cards. In addition, company systems are reliable and secure.

A5.3
A department can look after all the company’s systems and sub systems. Help primarily comes from within the organisation. Hardware and
software used are closely observed and monitored and users are trained. For specific needs help may come from outside. Such needs are closely monitored and are usually organised per demand or are fully outsourced.

A6.3

The company now has successfully implemented CRM and TPS. At this stage the company should ensure that its newly implemented systems such as KMS and DSS have been integrated with the other systems within the organisation. In particular the company can now use its KMS system to learn based on the past stored data and new inputs. Furthermore, the managers of the company may be able to use DSS to make decisions.

A7.3

Your network traffic is encrypted. You are using protocols such as SSL or TLS (encrypt all data) or similar to secure information transferred over internet. Protocols like these enable client and server computer to manage encryption and decryption during a secure web session. S-HTTP is another protocol but is limited to web documents. Other protocols you may consider: Secure Electronic Transaction (SET), Internet Open Trading Protocol (IOTP).

<table>
<thead>
<tr>
<th>Stage 4</th>
<th>A1.4</th>
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<tbody>
<tr>
<td>Company is able to:</td>
<td></td>
</tr>
<tr>
<td>- track, observe and monitor system’s performance.</td>
<td></td>
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<tr>
<td>- generate reports and learn from them.</td>
<td></td>
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<tr>
<td>- notice system’s drawbacks and act quickly.</td>
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<tr>
<td>- monitor interactions between the systems.</td>
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<tr>
<td>- monitor operations carried through systems applications.</td>
<td></td>
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<tr>
<td>- make required adjustments to assure company’s competitive advantage.</td>
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</table>

System integration make sure there is no duplication within records. Data resides within one uniformed platform which assures speed, accuracy and reliability.

A2.4

Stakeholders and business partners can now access parts of the system. For example, suppliers may be able to get access to their products and numbers in the warehouse.

A collaborating business partner may be allowed access to a particular system or the application for the duration of the project. Furthermore, an outsourcing agency may be given access to particular data and / or applications.

A3.4

The Internet can help make business contacts. Ability to network with other companies can allow the company to learn about other players in the market. Such knowledge is important as it allows each company to learn about their competitors. It can also allow the company to learn about its own strengths and weaknesses. Such knowledge can furthermore allow the company to make necessary adjustments, learn from the other organisations and have skills to make new business deals. Internet and global networks can allow companies to collaborate, work on the projects together, have joint contracts, make use of their combined resources and have abilities to access larger segments of customers.
A4.4
Use of the customisation tools often further extends already existing capabilities of the company’s eCommerce site. Such sites can allow customers not just simply to make selections from the catalogues and purchase products but also to build / design their own customisable products or services. This allows for a wider array of products to be designed and therefore for the needs of the larger segment of customers met.

A5.4
Company has fully functional IT department. Department looks after all systems, subsystems and applications. The department looks after hardware software, networking. Department also provides user help and training.

A6.4
Now the company has fully functional strategic level systems with the subsystems well integrated. At this stage, an organisation would have CRM, TPS, KMS, DSS, ESS and ERP systems. An ERP system would allow the company to plan and allocate resources as needed. Furthermore, the company at this stage would have fully functional management systems ie. DSS – for decision-making and ESS that is there to help manages make plans for the future. All systems of the company at this stage are well integrated so that operations can be carried out and required reports produced.

A7.4
Your system is constantly monitored for potential threats, unauthorised accesses, network disturbances or traffic congestions. In addition, you have implemented Intrusion detection system and positioned its tools at the networks most vulnerable spots to be able to detect any suspicious network activity. You can use such systems to assure security and if needed depending upon its findings partially or even completely shut particular system components to defend it from the intruder. Moreover, your organisation has policies and procedures to ensure system / network security and integrity.

In addition, you have a disaster recovery system so in the case of any unpredicted event / disaster you will not lose system data.

<table>
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<tr>
<th>Recommendations</th>
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<tbody>
<tr>
<td><strong>Stage 1</strong></td>
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<tr>
<td>R1.0</td>
</tr>
</tbody>
</table>

Do you use computers? If not explore possibilities. You could use them for document creation, management, storage and communication. This will help you manage your resources and get more out of your data.

Do you have a printer, small networks?

Do you have an ISP? If not, look into getting one so that you can get e-mails and Internet access. This will help you stay in touch with co-workers, customers and business partners.

Do you know how to use packages you currently have? Explore and study what packages you really need before purchasing them. You may like to go to some training courses.

Once you start creating and managing documents ensure you use appropriate document management systems so that you can save and
retrieve electronic documents and keep various versions of different files. You will also need to make sure your electronic data is regularly backed up.

R2.0
Arrange for managers to have access to company’s IT. This will allow them to monitor activities that are to be done and guarantee jobs are completed successfully. Explore possibilities to allow other staff within the organisation to use IT. Start small. You may start by allowing employees to access e-mail, printing, Internet.

R3.0
You may like to consider using Internet for searching. Explore using search engines like Google or Yahoo. Use keywords to find information. You may start by searching for products, business partners, customers, individual or business contact details, specialised industry events, industry associations and government institutions.

R4.0
Talk to your Internet Service Provider. See if they can host the website for you. You will also need to find someone who will be able to help you design the site. Before you look for someone to design the website, think what should be on the website. What do you think the website will help you do? It is often good to visit the sites of your competitors for ideas. Once you know the purpose of the website, consider the look and feel. Keep in mind that for some individuals access to your website will be the first contact they make with the company. Look at ways of encouraging these organisations to consider doing business with the company. Also, ensure you have your own domain name, there is someone managing your web content and your website is regularly updated. Your ISP may help with these.

R5.0
Ensure there is someone who can provide some IT support or can at least point you in the right direction. It would be advisable to know who can provide what type of IT help. Non-functioning systems may bring huge problems to the companies; therefore, it is crucial the company has stable and reliable IT support.

R6.0
Look into having an office management system. You may like to use databases to store access and manipulate data. Have you got a system backup? Look into getting software and hardware that will help you do regular backups.

R7.0
You should consider installing antivirus software. This could make sure that viruses do not destruct or damage your files or the systems. The installed software will allow you to scan your incoming and outgoing files. If you do come across a virus installed software will help you detect and very often clear the virus completely. In some cases, you may need some additional software to clear the virus however, you will be sure that there was no damage done. Furthermore, you should consider installing spyware detection / removal software. Such software will help you assure that there is no software installed outside of your knowledge that could take some or partial control over your system.
Stage 2

R1.1
Look into possibilities of networking (LAN, WAN, wireless). Link and connect your internal applications particularly those that could allow for smoother and easier communication and decision-making. Furthermore, explore use of files and applications stored on remote servers through FTP and/or VPN. In addition, you may explore use of groupware facilities, web conferencing. Such tools can allow participants from remote locations to carry out discussions, meetings, voting and analysis. In addition, that way a company can search for help from the external experts and involve them in discussions via electronic tools.

R2.1
If at least some individuals from each department have access to the parts of the company’s systems, the company can monitor activities and operations within departments. Furthermore, primary users of the systems will be able to report to the top managers and express their ideas and concerns about the system in operation. This allows for more comprehensive system assessments.
You may like to explore possibilities to allow other staff within the organisation to use the system as well. Start small and slowly expand. For example, you may start by allowing employees to track their working hours, share calendars, book leave online.

R3.1
You may like to explore use of search engines. You may start looking for contact details or companies in particular areas through Yellow pages. You may also like to search for forums and blogs. These are places where current or potential customers may voice their opinions about potential needs, requirements and existing products. Through such sources, you may also be able to access and contact your existing or potential customers. In addition, you may like to search for particular product specifications and compare products you have with the products of your competitors.

R4.1
Try to make your site more interactive so that customers can get the most out of your site. Allow customers to search for products and services. Possibly develop an online catalogue.
You may also like to add web forms to get more information from your customers or just let them contact you.
Keep in mind that for some individuals access to your website will be the first contact they make with the company. Look at ways of encouraging these organisations to consider doing business with the company.

R5.1
Try to form a group within the organisation that could look after basic software, hardware and user training needs. Ensure you also have backup from outside the organisation. Identify a group (ie. organisation, contractor) that could help if need arises. It is much easier to look for who can provide help while systems are working functionally than in the time when there is a problem and they do not perform as expected. Non-functioning systems may bring huge problems to the companies; therefore, it is crucial the company has stable and reliable IT support.

R6.1
You may like to consider implementing systems that could help you
monitor transactions and sales (TPS), production and warehouse management (product tracking systems) and customer needs and requirements (CRM).

The company may look into developing HR, accounting and payroll systems with the possibilities of extending these and introducing systems within other departments.

R7.1
Make your accounts and access to your systems / networks password protected. Depending upon users rights and responsibilities you should give them appropriate access and privileges. You will also need to set up appropriate access controls for the system / network access, authorise and authenticate users.

In addition, if you have a wireless network secure it using WPA authentication.

Moreover, security of your network will require you to set up appropriate proxies to filter incoming and outgoing data and firewalls to prevent outsiders from invading your network.

<table>
<thead>
<tr>
<th>Stage 3</th>
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<tbody>
<tr>
<td>R1.2 Look into expanding your networking capabilities. Allow your systems to be integrated. Look into introducing tracking systems. Tracking systems can help you monitor production, warehouse material use and even employee billable hours and tasks completed. Furthermore, you may like to look into introducing CRM, TPS. Such system will be required to link to the other systems within the organisation. The systems main function is to help you monitor, analyse and assess your current resources (ie. transactions, customers). The system like this one can also be a great learning tool from which you will be able extract information about particular segments of the customers, prioritise their needs and learn how best to market products to different customer segments.</td>
</tr>
<tr>
<td>R2.2 To expand the business it will be essential now to explore possibilities to allow all employees to have some access to the system. Initially this may be for e-mail, hours records, calendars, payslips, and inputs from the production lines. Allowing each employee to have some access to the system you are assuring the company keeps and records all data electronically. Such data may be used for employee records, company records, research analysis, and predictions for the future.</td>
</tr>
<tr>
<td>R3.2 You can use Internet for advertising. You can start by putting your data on Yellow pages. Explore ways of publishing your data on the websites of industry bodies and / or government regulatory agencies. In the long run this may also increase the traffic to your company’s website. After establishing your website you may also like to talk to your business partners. Both of you could market and showcase projects you worked on together on both sites. This can help you increase your site’s ranking within search engines as well as increase the traffic to your company’s website.</td>
</tr>
</tbody>
</table>
### R.4.2
After designing an Interactive site look into connecting your companies systems and subsystems. Once this has been done make sure your systems are stable and reliable. Look into development of a full eCommerce site from which customers will be able to search the catalogue, select particular products and services and directly pay for them online using the Credit Card facilities. Ensure your systems are reliable and secure. Keep in mind that for some individuals' access to your website will be the first contact they make with the company. Look at the ways of encouraging these businesses to consider doing business with the company.

### R.5.2
Look into having a group (small department) that can look after IT needs and requirements of the company. It is recommended the group has the expertise in software, hardware, networking, help desk and user training. This will help you have stable and well functioning IT systems. In addition, also identify where you can get additional support from outside of the organisation if so is required.

### R.6.2
A company should look into developing and integrating Knowledge (KMS) and Management systems (DSS) as well as CRM, TPS. KMS will help the company learn and make sense of the knowledge and data that they have collected over the time and allow it to link that data to the existing new research data. DSS will allow the company to make important business decisions.

### R.7.2
You will need to make sure that your network traffic is encrypted. You should use protocols such as SSL or TLS (encrypt all data) to secure information transferred over internet. Protocols like these enable client and server computer to manage encryption and decryption during a secure web session.
- S-HTTP is another protocol you could use however it is limited to web documents.
- Other protocols you may consider: Secure Electronic Transaction (SET), Internet Open Trading Protocol (IOTP).

### Stage 4
#### R.1.3
Look into developing enterprise wide systems. To be able to implement an enterprise system you will need to have all the company’s tools – inputs and outputs monitored electronically. Furthermore, it is essential the tools are integrated with the company’s system. Try to integrate systems with one uniformed platform on which data will reside. This will produce speed, accuracy and reliability. It will also help minimise data duplications.

If such systems exist, they can help the company do the following:
- track, observe and monitor system’s performance.
- generate reports and learn from them.
- notice system’s drawbacks and act quickly.
- monitor interactions between the systems.
- monitor operations carried through systems applications.
- make required adjustments to assure company’s competitive
R2.3
Allowing parts of the company’s systems to be in some instances shared with stakeholders or business partners can be significantly beneficial. Before doing this however make sure there is appropriate system’s security in place. Ensure only data that is released to the external party is visible by them. The external party should not be able access other parts of the system to which they have not been authorised to access. Allowing collaborating businesses, suppliers and distributors to access particular files or applications may speed up decision-making processes, production and general company operations.

R3.3
Try to learn about your environment as much as you can. Use Internet – the electronic networking and your position within the digital environment to your advantage by observing and learning from the other companies. This will help you establish your strengths and weaknesses. Furthermore, at some stage you may like to use this knowledge to form business partnership, collaborative groups or just simply to make use of combined machinery and business strengths to meet demands of the digital world. This way Internet will help you make new business deals and form new ventures (ie. common web portals, electronic collaboration facilities, united marketing).

R4.3
Look into adding systems to your existing eCommerce site. For example, you could design systems that will help customers make decisions and allow them to customise / build / design their own products or services using the data stored within your product databases. For example, you may like to allow customers to design their own products by selecting the resources the company already has (selections of colour, shapes, designs, images, sizes, capabilities, specifications). This would allow you to access larger segments of the customers, and would furthermore allow customers to gain additional services to help them select products / services they require. For example, Dell allows customers to specify characteristics of computers.

R5.3
Explore possibilities of having a fully integrated IT department that looks after all systems and subsystems of the company. Such department would deal with hardware, software, networking and productivity needs. The department should also be able to provide help and training for staff. If this department however is unable to cater for all company IT needs, it is essential that you know where you can find additional help. You may like to outsource particular activities or have a contract with a particular IT organisation.

R6.3
By now, the company should have CRM, TPS, KMS and DSS systems implemented. After implementing the above listed systems, the company can look into establishing ERP and ESS systems. ERP system could allow the company to plan and allocate the resources as needed. ESS is the management system that can help managers make plans
for the future.
When looking into expanding company systems make sure systems can easily be integrated, required reports produced and business processes carried out.

R7.3
Your system should be constantly monitored for potential threats, unauthorised accesses, network disturbances or traffic congestions. Moreover, you could consider implementing an Intrusion detection system and positioning its tools at the network’s most vulnerable spots. This way you will be able to detect any suspicious network activity. In extreme cases you can even use the Intrusion Detection system to shut parts of the system completely / or partially defend it from the intruder.
Moreover, your organisation should now develop policies and procedures to ensure system / network security and integrity.
In addition, you should have a disaster recovery system so in the case of any unpredicted event / disaster you do not lose any system data.
Appendix 7 – Sample Report Produced Manually

Company Name: ____________

Industry Sector: Manufacturing

Number of Employees: 70

STRATEGY

A dimension a company should first look into is Strategy. Strategy helps companies assess and analyse the environment that surrounds them. This allows them to develop their plans and visions for the future, identify who their customers are and decide what should be their products or services. After making these decisions, the company is able to identify standards, needs and requirements they must meet throughout their operations so that they can achieve their future goals and aspirations.

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Abilities</th>
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<tbody>
<tr>
<td>A1.1</td>
<td>You understand the importance of knowing your environment. You know who your competitors are. You also know how you compare to them in terms of business operations and products / services you offer. This can help you identify your strengths and weaknesses. It can also help you identify potential threats and opportunities.</td>
</tr>
<tr>
<td>A3.1</td>
<td>It is important that you know who your customers are. If you know your customers you will know whose requirements you need to meet, what products / services you should be producing / delivering, how you should market those products / services.</td>
</tr>
<tr>
<td>A4.1</td>
<td>Your products / services are of an acceptable standard. This builds your reputation and encourages customers’ trust and brand loyalty.</td>
</tr>
<tr>
<td>A6.1</td>
<td>Appropriately set business goals will help you determine the future direction. They will also help you plan the journey from your current state to the desired state.</td>
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<thead>
<tr>
<th>Stage 2</th>
<th>Abilities</th>
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<tbody>
<tr>
<td>A1.2</td>
<td>Knowing what products or services your competitors offer is beneficial. It can help you evaluate your own products / services, it can help you determine how your products / services rate in the market place. It can also help you make decisions about investing in what types of products / services.</td>
</tr>
<tr>
<td>A4.2</td>
<td>By marketing your products / services interested parties can hear / see what you are offering. In addition, this means potential customers know how to reach you.</td>
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<tr>
<td>Stage 3</td>
<td>A4.3</td>
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<tr>
<td>When you provide support to your customers after they have purchased a particular product / accessed certain service you ensure your services / products quality. In addition, when you provide guarantees for the products or services you build customers’ trust and encourage their willingness to come back.</td>
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<thead>
<tr>
<th>Stage 4</th>
<th>A4.4</th>
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<tbody>
<tr>
<td>Your existing products / services require continuous enhancements and improvements. Therefore it is essential you explore these possibilities and act upon them.</td>
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### Recommendations

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>R2.0</th>
</tr>
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<tbody>
<tr>
<td>The company needs to learn how to prioritise tasks and activities. It also needs to assess what are the essential tasks for day-to-day operations. In addition, the company needs to smoothly and without interruptions carry out these activities.</td>
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<thead>
<tr>
<th>R5.0</th>
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<tbody>
<tr>
<td>Employees should have access to new data and knowledge. This can help the company prosper and start new business ventures.</td>
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<table>
<thead>
<tr>
<th>Stage 2</th>
<th>R3.1</th>
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<tbody>
<tr>
<td>Try to get more information about your customers. Survey them. Collect data through online forms. Collect data through call centres / support centres. Monitor who accesses your website and what pages get highest hits.</td>
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<thead>
<tr>
<th>R6.1</th>
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<tbody>
<tr>
<td>Ensure you can reach your goals with current business operations. Ensure you have required tasks, processes, goals and aspirations.</td>
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<thead>
<tr>
<th>Stage 3</th>
<th>R1.2</th>
</tr>
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<tbody>
<tr>
<td>Can you produce / deliver same as the competition? What would you need to do to match them? Have you got essential skills? Do you have essential materials / tools? Work on meeting your competition.</td>
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</table>

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<tr>
<th>Stage 4</th>
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<tbody>
<tr>
<td>Prerequisite recommendations are listed above.</td>
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</table>
STRUCTURE

After the company has identified their Strategy and they know what goals and visions they would like to follow, the company can look at their Structure. Structure identifies the company’s construction. It represents the building blocks that identify formal controls of the organisation’s departments, operations and business functions that are required to meet goals set in Strategy. Structure also helps companies identify needed decision makers, management and leadership roles.

| Abilities |
|-----------------|-----------------|
| **Stage 1**     | A1.1 CEO / managing director is able to make decisions. |
|                  | A2.1 It is important to have products which can change when required. In the electronic world needs and demands change quickly therefore a company should be able to respond to such needs and demands and deliver accordingly. |
|                  | A3.1 Company’s activities are focused around main business functions. The company places importance on main processes and day-to-day activities. This may include sales, production, marketing, financing. To excel the company should learn how to differentiate itself from the competition. |
| **Stage 2**     | A1.2 It is good that middle level managers are involved in decision-making processes. They are the ones that know the situation within the departments and teams. Furthermore, they often know staff they supervise much better than the CEO or a managing director. Therefore, they can help staff voice concerns, deal with possible issues or problems, and even advance and streamline their careers. Involving managers in decision-making processes brings benefits, and in this way effects of possible changes and their results can be easily monitored. |
|                  | A2.2 Products and services should be able to reflect customers’ needs and requirements. A company that is able to meet new needs and demands has skills to live in the electronic world and is able to compete in the electronic marketplace. |
| **Stage 3**     | A2.3 Tasks, roles and functions need to be customisable. Ability to have tasks and processes that can be re-organised to suit needs and demands of the environment is beneficial to the organisation. This also allows for the networks within the organisations to form dynamically as needed. For example, processes may be organised to fit a particular project, certain innovation group or needs of a particular customer. |
| **Stage 4**     | Your organisation has not yet reached this stage. |

**Recommendations**

**Stage 1**
As you have all the Stage 1 requirements for this dimension there are no recommendations.
### Stage 2 R3.1
Look at the abilities to allow the company to grasp new knowledge and skills. Furthermore, try to encourage innovations and new ideas. Such ideas should be allowed to influence activities and the company’s centralisation. The company should also be encouraged to be flexible and dynamic so that they can make essential changes to their structures when required. Company may like to look into product customisation, production of specialised products for particular customer segments.

### Stage 3 R1.2
You may like to consider allowing particular employees to make certain decisions. Note, that these should not be strategic decisions. You should start small first, and then slowly as confidence and trust increase you may like to allow them to make bigger decisions. Usually these decisions would closely be related to day-to-day operations and would be made by the employees that are closely involved in related tasks and processes. For example, this may be taking the customer order, processing the order, making product design decisions, making contacts with existing employees).

### Stage 4 R2.3
Try to encourage flexibility. The organisation that is organic and is able to adapt and change its processes and tasks as needed, is able to meet needs and demand of the changing world. Such skill is essential if organisation is to have the competitive advantage over the competitors.

### TASKS AND PROCESSES

Once Structure has been determined, the company has a stable construction. The company at this stage knows what operations are essential, and what functional areas will be crucial for business success. Therefore, the company can now look into essential business processes and tasks. Furthermore, they can look into business process integrations and streamlining of essential activities. While doing so the company also needs to ensure that their operations are accurate, swift, and reliable.

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<tr>
<th>Abilities</th>
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<tbody>
<tr>
<td><strong>Stage 1</strong> A3.1&lt;br&gt;The company has realised that change is important. Change is also found to be one of the most crucial catalysts required for making new decisions and starting new ventures.</td>
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<tr>
<td><strong>Stage 2</strong> A3.2&lt;br&gt;You have developed a survival mechanism. When you realise change is needed you act.</td>
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<tr>
<td><strong>Stage 3</strong> A3.3&lt;br&gt;Organisation is able to weigh up risks against benefits. It has skills that are essential to carry out risk assessments and it knows how to act cautiously.</td>
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<td><strong>Stage 4</strong> A1.4&lt;br&gt;Organisation is able to identify importance of internal and external business environment. It acts in accordance with the stakeholders’ (customers, business partners,</td>
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</table>
It regularly assesses its business processes making sure they are adequate and can meet stakeholders’ needs and demands.

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<th>Recommendations</th>
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<tr>
<td><strong>Stage 1</strong> R1.0</td>
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<tr>
<td>R2.0</td>
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<tr>
<td><strong>Stage 2</strong></td>
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<tr>
<td><strong>Stage 3</strong> R4.2</td>
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<td><strong>Stage 4</strong> R3.3</td>
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</table>
Finally, after Tasks and Processes dimension has been analysed, the IT Tools and Systems dimension can be assessed. Now, the company has identified what processes and tasks are required. This means that the company can now look into using IT tools and systems to support its operations. Such support is going to include use of the Internet, design and implementation of websites, integration of web based tools and systems throughout the company’s functional areas and departments. Successful integration of IT tool and systems will lead to successful eTransformation.

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<tr>
<th>Stage</th>
<th>Abilities</th>
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| Stage 1 | **A1.1**  
You have essential hardware and software (office productivity, backup, computers, laptops, printers). You are able to stay in touch electronically, communicate and exchange e-mails and other electronic documents with customers, business partners and employees regardless of the location.  
You can create, manage and when needed retrieve electronic documents (text, images, graphs, charts, tables) which allows for easy data creation, storage and management.  
**A2.1**  
CEO and / or manager (this may include other staff within the organisation) is able to use company’s IT.  
He or she manages basic spreadsheets, text files, e-mails, Internet communication, and calendars.  
**A3.1**  
Internet can allow you to search for products, access research data, find business partners, reach customers, find individual or business contact details, identify specialised industry events, find and be in touch with industry associations and government institutions.  
**A4.1**  
Your web site is your company’s electronic presence. Information about the company can now be accessed by potential customers or business partners.  
The web site of your company could include the following: company location, brief information about the products or services. In addition, it could also include some images to showcase the company to the visitors. Moreover, you have your own domain name. The company has someone to manage the web content and assure the site is up to date.  
**A5.1**  
A company has a contact person that can be asked for IT help if required.  
**A6.1**  
Company is able to store and retrieve required data. This can help in decision-making, record keeping and report generations.  
Company keeps data safe within databases, and has essential software and hardware. It has an appropriate data backup and can access these in case of software or hardware failure. |

**Stage 2**  
**A3.2**  
By using the Internet, a company may be able to search for potential customers. The company may also be able to find out if there are groups of
customers searching for particular products. Such information can also help rethink design of the current products and help distinguish the types of products that should be put on the market. By searching the Internet the company can also find out about existing products, compare such products to their company’s products and be able to determine what products customers may be more likely to purchase.

A5.2
A group responsible for IT Tools and Systems is able to do a lot more than one individual. Often a group has expertise in hardware, software and user training. Some help may still be required from outside.

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<tr>
<td>Company can use Internet for advertising not just from the own website but from other sites. You may like to put your data on Yellow pages. You may also like to contact your industry sector or government regulatory business associations for marketing help. Such organisations often have databases of companies with particular characteristics or those that are offering particular products or services. You may also like to talk to your business partners. Both of you could market and showcase projects you worked on together. In a long run, this can help increase your sites ranking within the search engines.</td>
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A5.3
A department can look after all the company’s systems and subsystems. Help primarily comes from within the organisation. Hardware and software used are closely observed and monitored and users are trained. For specific needs help may come from outside. Such needs are closely monitored and are usually organised per demand or are fully outsourced.

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<th>Stage 4</th>
<th>A3.4</th>
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<td>The Internet can help make business contacts. Ability to network with other companies can allow the company to learn about other players in the market. Such knowledge is important as it allows each company to learn about their competitors. It can also allow the company to learn about its own strengths and weaknesses. It can furthermore allow the company to make necessary adjustments, learn from the other organisations and have skills to make new business deals. Internet and global networks can allow companies to collaborate, work on the projects together, have joint contracts, make use of their combined resources and have abilities to access larger segments of customers.</td>
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Recommendations

<table>
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<tr>
<th>Stage 1</th>
<th>As you have all the Stage 1 requirements for this dimension there are no recommendations.</th>
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<tr>
<td>Stage 2</td>
<td>R1.1 Look into possibilities of networking (LAN, WAN, wireless). Link and connect your internal applications particularly those that could allow for smoother and easier communication and decision-making. Furthermore, explore use of files and applications stored on remote servers through FTP and / or VPN. In addition, you may explore use of groupware facilities, web conferencing. Such tools can allow participants from remote locations to carry out discussions, meetings, voting and analysis. In addition, that way a company can search for help from the external experts and involve</td>
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them into discussions via electronic tools.
R2.1
If at least some individuals from each department have access to the parts of the company’s systems, the company can monitor activities and operations within departments. Furthermore, primary users of the systems will be able to report to the top managers and express their ideas and concerns about the system in operation. This allows for more comprehensive system assessments.

You may like to explore possibilities to allow other staff within the organisation to use the system as well. Start small and slowly expand. For example, you may start by allowing employees to track their working hours, share calendars, book leave online.
R4.1
Try to make your site more interactive so that customers can get the most out of your site. Allow customers to search for products and services. Possibly develop an online catalogue.
You may also like to add web forms to get more information from your customers or just let them contact you.

Keep in mind that for some individuals access to your website will be the first contact they make with the company. Look at ways of encouraging these organisations to consider doing the business with the company.
R5.1
Try to form a group within the organisation that could look after basic software, hardware and user training needs. Non-functioning systems may bring huge problems to the companies; therefore, it is crucial the company has stable IT support.
R6.1
You may like to consider implementing systems that could help you monitor transactions and sales (TPS), production and warehouse management (product tracking systems) and customer needs and requirements (CRM).
The company may look into developing HR, accounting and payroll systems with the possibilities of extending these and introducing systems within other departments.

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<tr>
<th>Stage 3</th>
<th>R5.2</th>
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<tr>
<td>Look into having a group that can look after IT needs and requirements of the company. Assure the group has the expertise in software, hardware, networking, help desk and user training. This will help you have stable and well functioning IT systems.</td>
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| Stage 4 | Prerequisite recommendations are listed above. |
**Summary of the Business Report**

**The Way Forward**

Summary of the findings for *Business Name* is given below:

**Strategy**
- Learn how to prioritise and manage activities.
- Implement and make use of project management tools.
- Learn about your customers their needs and requirements.
- Learn about your competition.
- Set realistic goals and objectives for the future.

**Structure**
- Encourage flexibility and innovation.
- Change decision making rules.
- Encourage employee responsibility.
- Encourage employees to share and disseminate new knowledge.
- Send employees to trainings and seminars.

**Tasks and Processes**
- Evaluate your current workflow.
- See if tasks can be grouped, streamlined and / or automated.
- Try to implement new business models before your competition.

**IT Tool and Systems**
- Look into possibilities of networking.
- Assess if file sharing may benefit your organisation.
- Make sure individuals within different departments have access to required parts of IT systems.
- Update your website. Introduce interactivity. This may include online quoting, online portfolio or online samples.
- Have a group that can monitor and manage your IT systems.
- You may like to implement systems such as: CRM, TPS and tracking system.