AN EVALUATION OF THE IMPACT OF STRATEGIC INFORMATION SYSTEMS ON THE COMPETITIVENESS OF THE FOOD MANUFACTURING INDUSTRY IN ZIMBABWE

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R067802B

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Graduate School of Management

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Supervisor: Eng. M Manuhwa
DECLARATION

I, Wellington Smoke, do hereby declare that this dissertation is a result of my own investigation and research, except to the extent indicated in the Acknowledgements, References and comments included in the body of the report, and that it has not been submitted in part or in full for any other degree to any other university.

Student Name: Wellington Smoke Signed_______________ Date 16/08/2013

Supervisor: Eng. M. Manuhwa Signed_______________ Date 16/08/2013
ACKNOWLEDGEMENTS

First and foremost I would like to thank The Almighty God for having brought me this far. It was not an easy ride but by the Grace of God I’ve made this far.

I extend my gratitude to Eng. M Manuhwa for his expertise and unwavering support in putting this dissertation together. I am grateful for the knowledge, guidance and moral support he offered me during this period. I was not the best apprentice, but he managed extremely well.

To my dear colleague, Eng. N Shati, you were excellent and a big thank you goes out to you. Your moral support gave me the impetus to finish this program. My gratitude also extends to the Graduate School of Management staff, both academic and non-academic staff members. Thank you for the assistance and profound knowledge I have gained over the past years.

And to my parents, Mr. and Mrs. Smoke, words are not enough to describe your contribution not only to this project but to every facet of my life. The whole family was just an inspiration and pillar of support. Be blessed always.
ABSTRACT

The manufacturing industry forms the backbone of many economies because it is the nerve centre of value creation. The food manufacturing is even more important because besides creating value, it feeds and nourishes the nation. However our manufacturing industry has gone through some challenging years which resulted in the decline of capacity utilisation and fierce competition from foreign manufacturers. Surprising enough, the imported goods which are deemed to be of superior quality, usually come priced at lower price levels than their local equivalent products. This has resulted in the erosion of the local firms’ competitiveness. The Information and Communication Technology (ICT) industry is one of the fastest transforming industries. Organisations struggle to keep pace with the changes and even try to outdo each other in trying to have the technology, more like a technology race.

This research was carried out with the main objective of evaluating the capacity to produce an effect of strategic information systems in the food manufacturing industry. It was also carried out to establish the level of automation of the firms’ processes. The survey established that most of the firms use computerised Information systems in their daily work processes and that IT systems were deemed to have helped the firms in their quest to lower cost, improve efficiency, save time, and ultimately improve profitability of the firms. It was also established that the strategic information systems in place were already having a great improvements on the business processes and therefore ultimately on the competitiveness of the firms. Consequential to that, if the recommended strategies are incorporated, the competitiveness of the firms will greatly improve. The firms will be able to reduce costs, and gain competitive advantage on the price, or even improve on product quality. The end result will be improved revenues, market share and profits.

The literature review brought out the issue of the new trends in IT and business strategy. One such trend is what is termed Digital Business Strategy. Digital business strategy recognises that even thought the IT and business strategies can be aligned, the IT strategy will always be subordinate to the business strategy. The digital business strategy seeks to combine the two strategies into one strategy. This is an area I would recommend for further study to see how such strategy formulation can bring about sustained competitive advantage.
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# Keywords

IT strategy; Business strategy; ICT; Competitive Advantage; IT Alignment; Digital business strategy; IT maturity; strategic information systems; strategic use of ICT.

The key words “firm”, “company”, and “organisation” were used interchangeably to imply a company or organisation.
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CHAPTER ONE

Introduction

1.1 Introduction to the study

Information and communications technology plays a vital role in supporting the activities of all organizations. These activities can be at any level of the organisation ranging from the functional level right up to the strategic levels. Many organizations have varying levels of automation starting from the basic document processing to complex information and control systems. Naturally, the resultant benefits of this investment in Information and Communication Technology (ICT) will also vary from one organization to another. A question can then be asked, if this investment in ICT, which can be very substantial, is worthy to be made. This can only be ascertained by comparing the investment made to the perceived additional benefits. This research seeks to establish the impact of strategic information systems on the competitiveness of firms in general and the food manufacturing industry in particular.

The relationship between Information Systems functions and corporate strategy had not been of much interest to top management of firms and so they had many problems because of failure in achieving strategies. Modern organisations are increasingly seen as knowledge-based enterprises in which proactive knowledge management is important for competitiveness (Holsapple et al, 2000). One of the major factors in the competitive environment of firms is knowledge management and companies for achieving the competitive advantages should concentrate in its Information Systems (IS).

1.2 Background to the study

The Zimbabwean industry went through more than a decade long period of economic decline, triggered by political instability, hyper-inflation, capital flight, human capital flight, sanctions, and the unavailability of foreign currency. This meltdown also coincided with the global financial crisis of the period 2008-2009. This global crisis had the result that even companies’ with headquarters in the developed
world were also failing to access capital. Our own economy was characterised by hyper – inflation, high interest rates, and reduced lending. The last official inflation records of this era were for the month of July 2008 and showed the country’s inflation at over 231 million per cent year on year (Hanke & Kwok, 2009). This was then estimated to have hit 89.7 octillion per cent by mid November 2008 according to (Hanke & Kwok, 2009). These problems were even more pronounced in the manufacturing sector where working capital requirements are very high and access to raw materials is of great importance. In times of crisis, business managers and owners are often so much preoccupied with the day to day and immediate survival issues that they lose sight of the firms’ ultimate objectives.

In 2009 the country adopted the use of multiple currencies, using the United States Dollar as the currency of reference or base currency. At the same time the country also abandoned use of the Zimbabwe dollar. The result was immediately noticed in that inflation was contained and interest rates came down even though they are still high when compared with rates obtaining in our major trading partners. Most importantly, it almost removed the risk associated with exchange rate fluctuations. The political environment has more or less normalized since the formation of the Government of National Unity.

The result is that the Zimbabwe industry is now trying to recover from the slump and trying to compete with foreign manufacturers who had taken over the local market. In the few years leading up to 2009, the country went through a marked phase of economic downturn, characterised by low productivity and capacity utilisation fell to below 10% according to (CZI, 2008). The resultant supply gap was met through imports mainly from South Africa and the Far East. As a result of the inroads made by the foreign firms, 60% of the manufacturing firms now face competition from both home and away, whilst 26% only face domestic competition, the remainder facing only foreign competition and no domestic competition (CZI, 2012).
Now as the economy tries to recover, it is important that the firms in the manufacturing sector increase their capacity utilisation and competitiveness. At the same time they also need to gain and maintain competitive advantage over competitors. As shown above, 74% of manufacturing firms face foreign competition. The competitiveness of companies in the manufacturing sector has never been called into question more than now. In the notes accompanying the OK Zimbabwe half year results for 2012, (OK Zimbabwe, 2012) stated that they imported up to 65% of its grocery merchandise and mostly from South Africa during the period under review. This was despite the fact that the country was in its third successive year of economic growth (CZI, 2011). The current situation obtaining on the ground is that of emerging manufacturing firms trying to compete against each other and against seasoned international producers. It is against this background that this researcher is trying to establish what role Strategic Information Systems (SIS) can play on the attaining and maintaining of competitiveness by manufacturing firms. The aim is to find the impact of the SIS and probably recommend ways to improve the efficacy of the same.

1.2.1 The Food Manufacturing Industry

The food manufacturing industry has gone through the challenges that whole economy went through. These challenges resulted in diminished capital expenditures and recapitalisation of the firms. To add on to that, the food industry feeds mainly from the agriculture industry and agriculture had its own problems.
emanating from teething problems due to the land reform process, poor funding, and consecutive years of poor rainfall.

1.2.2 External Environmental analysis

Business does not operate in a vacuum. It exists within a broader society which exerts its pressures and influences on the businesses thereby affecting the competitiveness and profitability of individual firms. An analysis of the macro-environment in which the food industry players operate in was carried out.

1.2.2.1 PEST Analysis

Political
- Uncertainty in the political environment, Laws and regulations have been changed too frequently making it difficult for an organization to make adequate strategic planning.
- Policy inconsistencies as evidenced by the lack of cohesion in the inclusive government.
- Black empowerment which has resulted in high government support for indigenous small to medium scale enterprises while the multi national corporations face the threat of forced indigenisation if not nationalisation.
- Uncertainty in this post election period while the nation waits for policy direction from the election winners

Economic factors
- The lack of liquidity continues to burden the business as customers often do not have the liquid cash to settle their invoices when they fall due.
- Generally salaries have remained low, resulting in customers having low purchasing power. This is in addition to high unemployment levels that exist in the country and low disposable income as the prices of basic commodities remained high as compared to income levels.
- The economy is on an upward growth path and this is translating to increased business for us. If the trend persists then we are posed for even greater growth.
• One of the major threats facing most businesses is the high rate of corruption. This has a negative effect on the cost of doing business. However, the government and civic society have embarked on major anti corruption drive and we should be seeing positive changes in the short to medium term.

• Our interest rates also remained much higher than interest rates obtaining in our major trading partners.

• The rate of inflation has been contained at single digit levels and since we are using a multi currency regime, exchange rates are not that much of an issue.

Social
• One of the major societal pressures on the industry is the general perception that imports are much better local products in terms of quality, packaging, and even on price.

• The consumers are getting more health conscious and are now preferring wholesome foods which are not over processed.

Technology
• E-mails have made business more efficient as less time spent on communication and its done at reduced costs. There is a significant increase in access and usage of mobile communication technology. This has made it easier to communicate with suppliers and buyers through the cell phone facility. Cell phones are now providing the major tool of connectivity to the internet. However this connectivity is mainly used for social networking and to a lesser extent for business.
1.2.2.2 SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tr>
<td>• Good geographical Location</td>
<td>• High utility tariffs &amp; Unreliable power &amp; water supply</td>
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<tr>
<td>• Reduced exchange rate risk.</td>
<td>• Working capital constraints</td>
</tr>
<tr>
<td>• Agriculture based economy which provides enough raw materials</td>
<td>• Low market growth</td>
</tr>
<tr>
<td>• Natural farming, to provide inputs which are acceptable to health conscious market</td>
<td>• Advertising constraints</td>
</tr>
<tr>
<td>• Highly skilled manpower</td>
<td>• Old and archaic equipment</td>
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<tr>
<td>• Well known brands which are competitive in market</td>
<td>• High taxation &amp; wage bills</td>
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<td></td>
<td>• Liquidity crunch in market</td>
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<td>• Limited ICT infrastructure &amp; processes</td>
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<table>
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<tr>
<th>Opportunities</th>
<th>Threats</th>
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<tr>
<td>• Opportunities for exports</td>
<td>• Political effects due to elections and possible changes in policy direction.</td>
</tr>
<tr>
<td>• Import restrictions to limit foreign competition</td>
<td>• Competition from foreign firms</td>
</tr>
<tr>
<td>• Growing economy leading to increases in consumer spending</td>
<td>• Globalisation has localised international competition.</td>
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Table 1 SWOT Analysis

1.2.2.3 Potter’s 5 forces Model

*Competitive rivalry*

There is fierce competition from regional and international manufacturers who had taken over our local market. They bring in their products which are much cheaper than our products, and they can easily meet the demand of the market. To this end, over 65% of our grocery supplies are imported mainly from South Africa at the expenses of our local manufacturers.

*Buyers*

The bargaining power of the big supermarket chains that dominate our local retail industry has put a squeeze on our local manufacturers who are forced to sell at
reduced profits. The retail industry has a few big buyers with great bargaining power and enough financial muscle to import their own commodities.

**Suppliers**

The food manufacturing industry feeds off the agriculture industry. These suppliers may not always meet their obligation to supply due to circumstances beyond their control. Alternative sources can be found but at higher costs and subject to stringent import controls associated with the importation of agriculture products. A case in point is the government’s stance on the so called GMOs.

**Entry barriers**

Entry barriers mainly consist of the high cost of the capital equipment that is needed to produce at sufficiently high production levels. Contract farming is another way of raising entry barriers as new entrants may fail to source the required raw materials. Strong links to both customers and suppliers may also act as an entry barrier to new entrants.

**Substitutes**

Due to difficulties in the economy buyers have resorted to substitute products and may prove to be difficult to wean the market of those products. As an example powdered milk gained inroads to the detriment of processed liquid milk.

**1.3 Research Problem**

From the discussion and industry analysis that has been carried out above, it is apparent that that the food manufacturing industry faces problems with automation, slow processing and poor IT strategies. The Companies are always in a constant fight for survival and dominance. As the firms compete, they try to outdo each other and try to analyse the actions of competitors to identify the sources of their competitive advantage. If other firms think that a certain action done by one firm is a source of competitive edge, they quickly try to duplicate that action so that they can also get that competitive advantage. As a result, it is possible that many firms made huge investments in IT simply because their competitors made similar investments and seem to be profiteering from them. As shown in the table below, only 25% of the firms surveyed by (CZI, 2012) significantly and effectively used internet for their marketing.
It can be seen from the figure above, that manufacturing firms are not utilising ICT as much as they can possibly can. They are underutilising the capabilities they already have. It is possible that these firms may not have ICT policies and strategies to guide in the use of ICT to help in improving their competitiveness. From the environmental analysis above, it can be seen that the food manufacturing companies may have made some investments into ICT systems but may be failing to reap the rewards. Despite huge investments in Information & Communication Technology infrastructure, not much is known regarding their use in corporate strategy and resulting impact on competitiveness of the food manufacturing firm in Zimbabwe. The companies in the industry continue to face challenges such as perceived low quality products, low or non existent advertising campaigns, low sales, high operational costs, and low profitability.

The efficacy of strategic information systems needs to be ascertained and areas which need to be corrected and improved upon have to be identified and the necessary adjustments made.
1.4 Research Objectives

The research was carried out with the following objectives:
1. To evaluate the efficacy of strategic Information systems in use.
2. To establish the level of automation of the firm’s processes. These include marketing, accounting, sales, production, procurement, human resource management, inbound and outbound logistics, operations and administration and other support services.
3. To establish the optimum levels of connectivity and links to suppliers and customers and technology in use.
4. To determine how best to align its Information Systems strategy with its business strategy and goals?
5. To recommend Strategic Information Systems best practices to the management

1.5. Research Questions

1. What is the level of sophistication of the interdepartmental connectivity and any links with external suppliers and customers?
2. What are the existing information systems being used and how effectively are they being used for strategic purposes?
3. How are the relationships with external business partners being managed?
4. Is the current Information Systems strategy aligned with its business strategy and goals?
5. What are the Strategic Information Systems best practices management should know?

1.6 Hypothesis or proposition

This research was carried out with the following propositions.

1. Increased ICT usage improves business processes and efficiency
2. The strategic use of ICT will enhance competitiveness
1.7 Justification

This study will help companies in the food manufacturing industry assess their Strategic Information Systems process and current position and correctly position themselves in this era of rapid business environmental changes, increased competition and also increased demand for customer satisfaction hence the need for increased organisational performance. This study will also contribute to the existing wealth of knowledge and will contribute in literature on process reengineering and organizational development.

1.8 Scope of Research

The study will focus on the manufacturing industry in Zimbabwe, even though it will zero in on the food manufacturing industry. It will focus on the operations of entire organisations in the post dollarisation period. A survey to be carried out will focus on five randomly selected food manufacturing firms in Harare.

1.9 Ethical issues

The research was carried out in ways designed to avoid risks to participants, respondents, and interviewers. This research also involved handling of sensitive company data, plans, and private information. The researcher made every effort to ensure that sensitive and private information was treated in strict confidence. Any required permissions were sought for in advance.

1.10 Limitations to the study

A totally perfect research project of this nature would require a substantial amount of time, far much more than the time available to undertake this study. The other limitation to this study has been the unavailability of adequate funds to meet the cost of carrying out this research.
1.11 Dissertation Structure

The following chronology gives the layout of the remainder of the dissertation.

→ Chapter Two: Literature review: - Chapter Two was concerned with the literature review on the concepts upon which the researcher had constructed the research objectives. The literature review carried out was primarily to generate and refine research ideas. It looked at work done by various researchers, authors and scholars on the subject of strategic information systems and its impact on the competitiveness of firms. Gaps in the field of research were also identified and they became the main objective of the research.

→ Chapter Three: Research Methodology: - Chapter Three dealt with the research methodology applied in data collection, the target population, the sampling methods applied, the research instruments, and their validation, and the administering of the research instruments in data collection.

→ Chapter Four: Results and Discussion: - Data analysis was carried out in this chapter.

→ Chapter Five: Discussion: - The chapter gave the interpretation of results, comparison, and recommendations.

1.12 Chapter summary

It can be seen from the text that the research is worth carrying out and will be of great importance to companies in the food manufacturing industry and indeed the entire manufacturing industry as a whole. The companies will be able to analyse and formulate business strategy with the aid of their strategic information systems.
CHAPTER TWO - Literature Review

2.0 Introduction

We are living in a fast changing world which is characterized by fierce competition between rival firms. This competition is the one which primarily drives the change in the industry as firms try to outdo each other. As a result, the firms will seek to gain and maintain a competitive edge against others. It is because of this that the researcher seeks to identify if strategic information systems can be used to attain and maintain a competitive advantage over rival firms. This chapter deals with literature review of the concepts applied in the research. (Saunders, Lewis, & Thornhill, 2007) defined literature review as a detailed and justified analysis and commentary of the merits and faults of the literature within a chosen area, which demonstrates familiarity with what is already known.

2.1 Information Systems (IS) and Information Technology (IT)

IS and IT are two terms that are often used interchangeably and are indispensable to the business operation of most modern organizations (Shamekh, 2008). It is important to first of all define what information technology is and what information systems are. Only then can we be able to know what Strategic Information Systems (SIS) is and what is involved in SIS. IS refers to the systems that include computer hardware, software, and people and management policies and procedures, and that systems use the IT to store, manage, and process information which often relies on databases (Shamekh, 2008). (O’Brien & Marakas, 2011) concur with this definition by stating that an Information system can be any organised combination of people, hardware, software, communications networks, data resources, and policies and procedures that stores, retrieves, transforms, and disseminates information in an organization. This definition is almost similar to that of Laudon & Laudon (2006) who define IS as a set of interrelated components that collect or retrieve, process, store, and distribute information to support decision making and control in an organisation. Laudon & Laudon (2006) state that Information technology (IT) refers to all of the computer-based information systems used by organizations and their underlying technologies. According to (Baltzan & Phillips, 2009), Information technology (IT) is any computer-based tool that people
use to work with information and support the information and information-processing needs of an organisation. The National Science Foundation in 1996 defined information technology as representation of the confluence of telecommunication, video, and computing technology or rather technologies which support a diversity of applications such as microcomputer-based specialty software applications, video, multimedia, the Internet and World Wide Web. Davis (2000) also concurred with the above definition but puts in a business manner by stating that the information systems of an organization consist of the information technology infrastructure, data, application systems, and personnel that employ IT to deliver information and communications services in an organization. IS existed and was used in organisations to manage business long before the advent of IT (Ward and Peppard, 2002).

A conclusion can therefore be drawn that IT is a function of IS. Thus, the concept of IS combines both the technical components and human activities within the organisation as well as describes the process of managing the life cycle of organizational IS practices (Avgerou and McGrath 2007). Information technologies and systems are revolutionizing the operation of firms, industries, and markets (Laudon & Laudon, 2006). These changes in the operations of firms, industries and markets brought about by IT & IS are the ones which are being investigated by the author so as to be able to assist the management in their endeavour to attain, retain, and maintain competitive advantage.

2.2 The Fundamental Roles of IS in Business

O’Brien & Marakas (2011) identify three fundamental reasons for all business applications of information technology. They summarise these three vital roles that information systems can perform for a business enterprise as follows:

1. Support of business processes and operations.
2. Support of decision making by employees and managers.

Whilst all these three roles are important, this research will mainly dwell on the third role that of the support strategies for competitive advantage. The gaining of a strategic advantage over competitors requires the innovative application of information technologies (O’Brien & Marakas, 2011). They go on to point out that the information systems can only have a positive impact on business value if they can
enable more efficient business processes and improve decision making by management (O’Brien & Marakas, 2011).

### 2.3 Information Systems Strategy

Information Systems Strategy is defined by (Chen, Mocker, Preston, & Teubner, 2010) as the organizational perspective on the investment in, deployment, use, and management of information systems. Strategic management is the way an organization maps the strategy of its future operations. The term strategic suggests that this mapping exercise will be long-term nature and that there will be a large magnitude of advantages the exercise is expected to give an organisation in competing with rivals (Chen et al, 2010). Chen et al (2010) go on to say that the IS Strategy should not be examined as part of a business strategy, but rather, as a separate perspective from the business strategy that addresses the scope of the entire organisation to improve firm performance. Rogerson and Fidler (1994) say that advances in information provision have led organizations to attempt to develop IS or information technology (IT) strategies which interrelate with their business strategies and which together support corporate missions. This assertion blends very well with that of (Wijnhoven, 2009) that organizations which excel in the management of IT and integrate IT well in the organization will have a competitive advantage.

The relation of Information Systems to company strategy and the attainment of competitive advantage are crucial mix and the subject of great importance to many strategic managers. Shamekh (2008) said that IS strategy brings together the business aims of the organisation, a clear understanding of the information needed to support those aims, and the implementation of computer systems to provide that information. IS strategy is firmly grounded in the business, taking into consideration both the competitive impact and alignment requirements of IS/IT

### 2.4 Strategic Information Systems

(Hemmatfar, Salehi, & Bayat, 2010) Strategic SISs are systems that support or shape a business unit’s competitive strategy. A SIS is characterized by its ability to significantly change the manner in which business is conducted, in order to give the firm strategic advantage (Turban et al, 2006). A clear definition of SIS according to (www.it.toolbox.com, 2007) is a system that helps companies change or otherwise alter their business strategy and/or structure. It is typically utilised to streamline and
quicken the reaction time to environmental changes and aid it in achieving a competitive advantage. (Hemmatfar, Salehi, & Bayat, 2010) A SIS enables companies to gain competitive advantage and to benefit greatly at the expense of those that are subject to competitive disadvantage. They are focused on enhancing the competitive position of the firm by increasing employees’ productivity, streamlining business processes, and making better decisions. These approaches may not be visible to the competitors and therefore are not easily copied.

Businesses should try to develop strategic information systems for both the internal value chain activities and the external value activities that add the most value (Laudon & Laudon, 2006). (Wijnhoven, 2009) States that the combination of IT resources and data can become a strategic capability for an organization, a capability by which the organization can become significantly better than other organizations. This serves to show the importance of the IT resources and hence they become strategic resources for the firm.

(Laudon & Laudon, 2006) They go on to state that the following are the key features of a strategic information system:

1. Decision Support System (DSS). These allow the firm to develop a strategic approach to align Information Systems (IS) with the business strategy of the firm.

2. Enterprise Resource Planning (ERP) solutions that integrate the business processes to meet the enterprise objectives for the optimisation of the enterprise resources.

3. Database System with data mining capabilities so as to be able to make the best use of available corporate information for marketing, production, promotion and innovation.

4. The real time IS that is intended to maintain a rapid – response.

### 2.4.1 Decision Support System

A decision support system (DSS) is a computer based system, that is almost always interactive and is designed to assist a decision maker in making decisions (Brown, DeHayes, Hoffer, Martin, & Perkins, 2012). (Laudon & Laudon, 2006) believe that it is because of the importance of high quality decision making, that firms are investing heavily in business intelligence systems, which consist of
technologies and applications designed to help users make better business decisions. According to (Power, Frada, & Sharda, 2011), a Decision Support System (DSS) is an interactive computer-based system or subsystem intended to help decision makers use communications technologies, data, documents, knowledge and/or models to identify and solve problems, complete decision process tasks, and make decisions. Power et al contends that DSS has become ‘a component of any management information system, enterprise resource planning, as well as personal computing tool’. A successful decision-support system is one that assists rather than replaces the human decision maker. Druzdzel & Flynn (2002) define DSS as an interactive computer-based system that aids users in judgment and choice activities. A Decision Support System (DSS) is a collection of integrated software applications and hardware that form the backbone of an organization’s decision making process. Companies across all industries rely on decision support tools, techniques, and models to help them assess and resolve everyday business questions. Bhatt & Zaveri (2002) defined a DSS as a computer software that facilitates and accepts inputs of a large number of facts and methods to convert them into meaningful comparisons, graphs, and trends that can facilitate and enhance a decision makers’ (DMs) decision-making abilities. They go on to say that a DSS can assist a decision maker in processing, assessing, categorising, and organising information in a useful fashion that can be easily retrieved in different forms. (Laudon & Laudon, 2006) agree with Bhatt & Zaveri (2002) by contending that such systems have powerful capabilities of analysing scenarios to assist and support managers during the decision making process. Additionally, DSS can also assist in monitoring and tracking organization performance based on the organisation’s goals and objectives (Bhatt & Zaverri, 2002).

The decision support system is data-driven, as the entire process feeds off of the collection and availability of data to analyse. Business Intelligence (BI) reporting tools, processes, and methodologies are key components to any decision support system and provide end users with rich reporting, monitoring, and data analysis. The decision support systems have become critical and ubiquitous across all types of business. In today’s global marketplace, it is imperative that companies respond quickly to market changes. Companies with comprehensive decision support systems have a significant competitive advantage.
A DSS can facilitate problem recognition, model building, assist in collecting, integrating, organizing, and presenting the relevant knowledge, select an appropriate problem solving strategy, evaluate the different solutions, and choose the best solution. According to (Bhatt & Zaverri, 2002), decision support systems are interactive, flexible, and adaptable information systems, developed to support the solution of non-structured management problems for improved decision making. (Keen, 1980) ascertains that the DSS user, the DSS builder, and the DSS influence each other during the design, construction, and implementation phases of the DSS that is developed through an adaptive process of learning and evolution. Thus, a DSS is a system that alters its knowledge base of facts and methodologies to be consistent with the ever-changing external environments and internal structures of organizations. (Bhatt & Zaverri, 2002)

Decision support systems are a computerised system that provides support to managers and business leaders during the decision making process to help them to arrive at better decisions. The DSS make use of analytical models which use specialised databases and also include the decision maker’s own insights and judgments. The system is provides for human interaction in a computerised modelling process that support the making of semi structured business decisions. (O’Brien & Marakas, 2011)

Laudon & Laudon (2006) also stated four kinds of systems used to support the different levels and types of decisions. These are listed in the table below.

<table>
<thead>
<tr>
<th>Organizational Level</th>
<th>Decision Type</th>
<th>Type of Decision-Support System</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Senior management            | Unstructured        | Executive support systems (ESS)           | Decide entrance or exit from markets  
                              |                     |                            | Approve capital budget    |
| Middle management/           | Semistructured      | Management information systems (MIS)      | Allocate resources to managers and departments  
                              | project teams       |   Decision-support systems (DSS)  
                              |                     |   Group decision support systems (GDSS)  
                              |                     |                                | Design a new corporate Web site  
                              |                     |                                | Develop a marketing plan  
                              |                     |                                | Design a departmental budget |
| Operational management/      | Semistructured      | Decision-support systems (DSS)            | Evaluate employee performance  
                              | project teams       |   Management information systems (MIS)  
                              |                     |   Group decision support systems (GDSS)  
                              | Employees           |                                | Restock inventory  
                              |                     |                                | Routine credit decisions  
                              |                     |                                | Determine special offers to customers |

Table 2 Types of Decision Support Systems (Laudon & Laudon, 2006)
2.4.2 MIS & DSS

Management information systems (MIS) provide information on the firm’s performance in the form of ad hoc reports and routine reports that help managers monitor and control the business. They produce reports which management may request for and also reports which are regularly scheduled. Most of these extracted reports are summarised from the firm’s underlying transaction processing systems (TPS) (Laudon & Laudon, 2006). O’Brien & Marakas (2011), differentiate management information systems from decision support systems in that DSS makes use of model bases as well as databases.

Figure 3 Overview of a Decision Support System (Laudon & Laudon, 2006)

2.4.3 ENTERPRISE RESOURCE PLANNING (ERP)

(Laudon & Laudon, 2010) Enterprise systems, also known as Enterprise Resource Planning (ERP) systems are used to bridge the communication gap between all departments and all users of information within a company. Enterprise systems truly allow a company to use information as a vital resource and enhance the bottom line. The greatest enticement of enterprise systems is the chance to cut costs firm-wide and
enhance the ability to pass information throughout the organization. The biggest drawbacks to building enterprise information systems are time, money, and people. Because the installation of the system is so invasive, it takes a tremendous amount of time to install the hardware and software, to train the users, and rework business processes that will then inevitably change. Many companies find it more trouble than they care to handle.

**Figure 4 Enterprise Systems**

(Brown, DeHayes, Hoffer, Martin, & Perkins, 2012) describe an Enterprise Resource Planning (ERP) system as a set of integrated business applications, or modules, that are used to carry out common business functions that are done during the normal course of business. Brown et al. go on to state that these functions include financial accounting, material requirements planning, order management, inventory control, and human resources management. O'Brien and Marakas (2011) also agree with Brown et al, when they say that an ERP system serves as a backbone that provides linkages between the different functional areas of the company and also automates the various internal business operations. O'Brien and Marakas (2011) go on to say that an ERP is the foundation upon which e-business is based. The nature of the system is enterprise wide and therefore it provides the basis for the management and linkages in the various functional areas.
of the firm such as customer processing, supplier processing, stock control, financial control, operations, production, and distribution (O'Brien & Marakas, 2011).

An ERP system allows the firm to integrate engineering, customer service, planning, materials, manufacturing, finance, and human resources across a single facility or across multiple locations. It can be seen that the key feature of this system is the integrated nature of the various modules, departments or functional areas. Brown et al. also stated that unlike a functional IS approach, ERP systems are based on a value-chain view of the business in which functional departments coordinate their work. Functions typically supported by the system include manufacturing, inventory, shipping, logistics, distribution, invoicing, and accounting.

### 2.4.4 CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

Some solutions now embed customer relationship management functionality. The marketing gurus, (Kotler & Armstrong, 2008) define CRM as the overall process of building and maintaining profitable customer relationships by delivering superior customer value and satisfaction. They go to add that CRMs are all about acquiring, keeping and growing customers. CRM systems helps a firm in tracking and managing your customer relations (http://www.multisimplex.com).

### 2.4.5 SUPPLY CHAIN MANAGEMENT (SCM)

According to (Chopra & Meindl, 2004) Supply chain management (SCM) solutions encompass the management of all aspects of the firm’s procurement system. Chopra and Meindl go on to state that it takes into account all the processes and counterparties involved in the fulfilment of the firm’s purchases. The Supply chain management is defined as a set of approaches utilised to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right places, and at the right time, in order to minimise system wide costs while satisfying service level requirements. Supply chain management (SCM) systems are used to coordinate the movement of products and services from suppliers to customers. According to (Chopra & Meindl, 2004) these systems are used to manage demand, warehouses, trade logistics, transportation, and other issues concerning facilities, and movement.
and transformation of materials on their way to customers. Components of SCM include supply chain optimisation, and supply chain event management. (http://scm.technologyevaluation.com/)

Laudon & Laudon contend that Supply chain management (SCM) systems increase supplier intimacy while customer relationship management systems increase customer intimacy. SCM systems create immense switching costs between the two trading companies because of the huge investment in hardware and software that is needed successfully operationalise the system. Customer relationship management systems allow companies to learn details about customers that give them the competitive advantage over traditional competitors and new market entrants.

![Diagram](image)

**Figure 5 Enterprise – wide resource planning system (O'Brien & Marakas, 2011)**

The figure above shows an Enterprise wide system that also has an SCM and CRM embedded into the system.

### 2.4.6 Computer- integrated manufacturing (CIM)

Computer- integrated manufacturing (CIM) as a strategy helps in the improvement of the performance of a manufacturing firm by integrating various
financial areas of manufacturing, both in terms of material and information flow (Gunasekaran, 1997). An overview of a CIM system is depicted in the figure below.

![Figure 6 Integrated Architecture (Rockwell Automation, 2013)](image)

CIM is the architecture for integrating the engineering, marketing, and manufacturing functions through information technologies. In the broad sense, CIM involves the integration of all the business processes from supplier to end consumer. CIM can be used as a strategy for enterprise resource planning for business-wide level of integration (Gunasekaran, 1997).

### 2.4.7 BUSINESS PROCESS REENGINEERING AND PROCESS IMPROVEMENT

Many companies today are focusing on building new information systems that will improve their business processes. Some of these system projects represent radical restructuring of business processes, whereas others entail more incremental process change. If organizations rethink and radically redesign their business processes before applying computing power, they can potentially obtain very large payoffs from their investments in information technology (Laudon & Laudon, Management Information Systems - Managing the Digital Firm, 2006).
2.5 Competitive Strategy & Competitive Advantage

2.5.1 Competitive Strategy

A competitive strategy is a broad-based formula for how a business is going to compete, what its goals should be, and what plans and policies will be required to carry out those goals (Porter, 1985). Through its competitive strategy, an organization seeks to gain competitive advantage. (Oghojafor, 1998) also noted that firms basically engage the use of competitive strategy with the sole aim of gaining competitive advantage.

Businesses have traditionally engaged in a form of competition which (Thompson, Gamble, & Strickland, 2006) referred to as reciprocal competition. In this form of competition, companies compete from very similar strategic positions, relying on operating differences to separate the successful from the unsuccessful. However, (Thompson & Strickland, 1982) go on to talk of the new form of competition called strategic competition. In this approach, the competitive struggle is pursued first and foremost on a strategic basis. The choice of market segments, product offering, distribution channels, and manufacturing process becomes the paramount consideration. A competitive strategy is a broad-based formula for how a business is going to compete, what its goals should be, and what plans and policies will be required to carry out those goals (Porter, 1985). Through its competitive strategy, an organization seeks a competitive advantage.

2.5.2 Competitive Advantage

Competitive advantage in an industry is an advantage over competitors in some measure such as cost, quality, or speed. Competitive advantage forms the epicentre of a firm’s success or failure (Porter & Millar, 1985). Such advantage seeks to lead to control of the market and to larger than average profits. (Besanko, Dranove, & Shanley, 2000) say “When a firm earns a higher rate of economic profit than the average rate of economic profit of other firms competing within the same market, the firm has a competitive advantage in that market.” According to Thompson and Strickland, it is becoming more and more evident that the idea of competitive advantage offers the best general approach for achieving sustained
business success. This leads to the notion that is put forward by (Baltzan & Phillips, 2009) an organisation can not exist and survive unless if it has created a competitive advantage. According to (Laudon & Laudon, 2010) doing things better than your competitors, charging less for superior products, and responding to customers and suppliers in real time all add up to higher sales and higher profits that your competitors cannot match. (Hill & Jones, 2009) agree with that definition when they say that a company is said to have a competitive advantage over its rivals when its profitability is greater than the average profitability for all firms in its industry. (Baltzan & Phillips, 2009) go on to define competitive advantage as a product or service that an organisation’s customers place a greater value on than similar offerings from a competitor. (Thompson & Strickland, 1982) define it as the philosophy of choosing only competitive arenas where victories are clearly achievable. (Porter M., 1985) indicated that a firm would enjoy competitive advantage only when its actions in an industry create economic value and when few competing firms are engaging in similar actions. Porter further argues that competitive advantage grows fundamentally out of value a firm is able to create for its buyers that exceeds the firm’s cost of creating it. (Peteraf, 1993) on the other hand defines competitive advantage as sustained above normal returns. She defines imperfectly mobile resources as those that are specialized to the firm and notes that such resources “can be a source of competitive advantage”. (Barney, 2002) says that a firm experiences competitive advantages when its actions in an industry or market create economic value and when few competing firms are engaging in similar actions. (Barney, 2002) goes on to tie competitive advantage to performance, arguing that a firm obtains above-normal performance when it generates greater-than-expected value from the resources it employs. In the IS field, competitive advantage refers to the use of information to gain marketplace leverage (McLeod & Schell, 2007). One of the key issues of competitive advantage is the sustainability of the competitive advantage. Like what (Hill & Jones, 2009) say, a company is said to have a sustained competitive advantage when it is able to maintain above-average profitability for a number of years. They go on to add that the greater the extent to which a company’s profitability exceeds the average profitability for its industry, the greater is its competitive advantage.
2.5.3 Competitive Advantage – Analysis

According to Baltzan and Phillips (2009), organisations need to carry out an analysis of their current situation in order to develop competitive advantages. The three tools for such analysis recommended by Baltzan and Phillips (2009) are

1. Porter’s Five Forces Model,
2. The three generic strategies.
3. Value chain analysis.

2.5.4 Porter’s Five Forces Model

(Porter M., 2008) says that the configuration of the five forces differs by industry. He goes on to state that industry structure drives competition and profitability, not whether an industry is emerging or mature, high tech or low tech, regulated or unregulated. (Hill & Jones, 2009) Porter argues that the stronger each of these forces, the more limited the ability of established companies to raise prices and earn greater profits. Within Porter’s framework, a strong competitive force can be viewed as an opportunity because it allows a company to earn greater profits.

According to (Hill & Jones, 2009) the task facing managers is to recognise how changes in the five forces give rise to new opportunities and threats and to formulate appropriate strategic responses. In addition, Hill and Jones (2009) say that it is possible for a firm, through its choice of strategy, to alter the strength of one or more of the five forces to its advantage.
Buyer power

Buyer power can be referred to as the impact that buyers have on a manufacturing industry. According to (Ritson, 2011), the bargaining power of buyers is dependent upon a number of factors that include buyer knowledge, product quantities, concentration of buyers, and availability of substitutes. Buyer power is high when the buyers have many choices of whom to buy from and low when their choices are few. The firm should strive to reduce buyer power and thereby create a competitive advantage, by making itself more attractive for customers to buy from it instead of its competition.

SUPPLIER POWER

Supplier power in the Five Forces Model is high when buyers have few choices of whom to buy from and low when their choices are many. Supplier power is the converse of buyer power: A supplier organization in a market will want buyer power to be low. A supply chain consists of all parties involved, directly or indirectly, in the procurement of a product or raw material. In a typical supply chain, an organization will probably be both a supplier to its customers and a customer of other supplier organizations. Ritson (2011) also talks of an ideal situation which every manufacturer would want that of having low supplier power in the market. This low supplier power can arise as a result of high number of suppliers coupled with low switching costs.

THREAT OF SUBSTITUTE PRODUCTS OR SERVICES

The threat of substitute products or services in the Five Forces Model is high when there are many alternatives to a product or service and low when there are few alternatives from which to choose. Ideally, an organization would like to be in a market in which there are few substitutes for the products or services it offers. Of course, that is seldom possible today, but an organization can still create a competitive advantage by using switching costs. Switching costs are costs that can make customers reluctant to switch to another product or service. A switching cost need not have an associated monetary cost.

THREAT OF NEW ENTRANTS

The threat of new entrants in the Five Forces Model is high when it is easy for new competitors to enter a market and low when there are significant entry barriers
to entering a market. An entry barrier is a product or service feature that customers have come to expect from organizations in a particular industry and must be offered by an entering organization to compete and survive.

**RIVALRY AMONG EXISTING COMPETITORS**

Rivalry among existing competitors in the Five Forces Model is high when competition is fierce in a market and low when competition is more complacent. Although competition is always more intense in some industries than in others, the overall trend is toward increased competition in almost every industry. According to (Ritson, 2011) the intensity of competition depends on a number of factors such as the existence of a strong industry leader, the number of competitors, and the presence of exit barriers. The other factors are the fixed costs, as a determinant of capacity, degree of product differentiation and the industry growth rate.

**2.5.5 Porter’s Generic Strategies**

Once the relative attractiveness of an industry is determined and an organisation decides to enter that market, it must formulate a strategy for entering the new market. An organisation can follow Porter’s three generic strategies when entering a new market:

1. Broad cost leadership,
2. Broad differentiation, or
3. Focused strategy.

Broad strategies reach a large market segment, while focused strategies target a niche market. A focused strategy concentrates on either cost leadership or differentiation. It is very difficult if not impossible to implement all the three strategies at once therefore Porter (1980) suggests that a firm will be better off adopting only one of these three generic strategies. (Porter M., 1980) however goes on to point out that there are risks associated with these generic strategies. He says a firm can fail to attain or sustain the strategy. The value of the strategic advantage provided by the strategy tends to erode with industry evolution. Information systems could be a critical enabler of these competitive strategies (Xu & Quaddus, 2013).
2.5.6 The Value Chain

The term, value chain, refers to the idea that a company is a chain of activities for transforming inputs into outputs that customers value (Hill & Jones, 2009). According to (O’Brien & Marakas, 2011) the value chain analysis views a firm as a series of basic business processes and activities that add value to the firm’s products and services and therefore add an incremental margin of value to both the firm and its customers. By effectively using an information system in a strategic role at any, or preferably all, levels of the organisation, a digital firm can provide more value in their products than the competition. If they can’t provide more value, then the strategic information system should help them provide the same value but at a lower price (Laudon & Laudon, 2006). The firm’s processes that transform the inputs into outputs can be divided into two. One part is composed of a number of primary activities and the other has support activities. Each activity adds value to the product.

According to (Acumen Insights, 2009), the competitive advantage stems from the discrete activities within an organisation’s value chain and value system. Therefore, by focusing on these activities and their interactions, an organisation is able to utilise IST to gain a competitive advantage by performing the strategically important activities more cheaply or better than its competitors.

**Primary activities**

Primary activities have to do with the design, creation, and delivery of the product, its marketing, and its support and after-sales service (Hill & Jones, 2009). In the value chain illustrated in Figure 6 below, the primary activities are broken down into four functions: research and development, production, marketing and sales, and

<table>
<thead>
<tr>
<th>Generic Strategy</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Leadership</td>
<td>IST seeks to reduce the costs of producing and selling products/services. IST enhances the ability to reduce costs.</td>
</tr>
<tr>
<td>Differentiation</td>
<td>IST adds new unique features to the product/service. IST enhances the ability to differentiate.</td>
</tr>
<tr>
<td>Focus</td>
<td>Using IST to identify and create niches directly in the marketplace. IST enhances the ability to create niches in the marketplace.</td>
</tr>
</tbody>
</table>

**Table 3** Generic Strategies Adapted from (Robson, 1997)
customer service. In contrast, support processes are those business activities that help support the day-to-day operation of the business and that indirectly contribute to the products or services of the organization (O’Brien & Marakas, 2011).

**Figure 8. Porter’s Value Chain Model:** Porter (1985)

**2.5.7 The Value Web**

![Value Web Diagram](image)

**Figure 9. The Value Web** Laudon and Laudon (2010)

A firm uses value webs to connect it, suppliers, and business partners and share best practices so that each participant can improve its business processes (Laudon & Laudon, 2010). They go on to say that it lowers supply costs for
the firm and ensures a certain level of standardization through the manufacturing process. Suppliers can collaborate with each other via the value web to enhance their core competencies and improve the entire supply chain.

### 2.6 ICT and Competitive Advantage

In a competitive economy, companies should strive to identify their key resources that can possibly create and be used to maintain a competitive advantage over competitors. According to (Mihalic & Buhalis, 2013), the companies should explore how they can access and capitalise on those resources in order to improve their business performance and stay competitive in the marketplace.

#### 2.6.1 ICT Maturity Model

ICT maturity is the state of an organisation or industry, in which it reaches fully development state in applying Information Communication Technology in doing its business. In general, to measure ICT maturity in business, some elements related to management information system (MIS) is often considered, such as: hardware, software, data, process, human, network. The ICT policy, business strategy, and leader support also play important role in developing the ICT use in business. The benefits of MIS should be measured by its contribution to business activities from operating level to top level of management.

![Figure 10 Model for ICT maturity in business (Curry & Donelan, 2012)](image)
2.6.2 Business / IT Alignment

(Alalwan, 2010) Observed that IT resources alone are not likely to generate sustainable competitive advantage (SCA), and to gain SCA, the IT resources needed to have the ability to support and be supported by the corporate strategy. In addition, the IT resources should have the ability to enable IS strategy. Weiss & Anderson (2004) stated that organisations that have been able to successfully integrate technology and business strategy have created significant business returns. (Wijnhoven, 2009) concurred with that notion when he stated that organisations which excel in the management of IT and integrate IT well in the organisation will have a competitive advantage. (Weiss & Anderson, 2004) go on to note that the alignment of the business strategy and the IT strategy has been utilised by organisations to create and improve efficiencies, reduce costs, create barriers to entry, improve customer and buyer/supplier relationships, and to create new products and business solutions. Completing a strategic information systems analysis is one of the first steps managers should take to help determine how they can use information and information systems to gain competitive advantage. By effectively using an information system in a strategic role at any, or preferably all, levels of the organisation, a digital firm can provide more value in their products than the competition (Laudon & Laudon, 2006). If they can’t provide more value, then the strategic information system should help them provide the same value but at a lower price. A well-developed strategic information system that is integrated throughout the company can be used to lower overall costs and provide greater value to the company, the supplier, and the customer (Laudon & Laudon, 2006). According to (Luftman, 2000), the strategic alignment refers to applying Information Technology (IT) in an appropriate and timely way, in harmony with business strategies, goals and needs.

Organisations that have been able to successfully integrate technology and business strategy have created significant business returns (Venkatram, 1996). Information Technology (IT) has become an important enabler of business strategies in such areas of mass customization, competitive differentiation, quality improvements, and process automation and improvement (Karin, 1998). (Barry & O’Flaherty, 2003) Contend that a more strategic role within organisations can be achieved when IT forms a connection with strategic management and this alignment
is achieved through mechanisms including governance processes; value management; human resources capabilities and technological capabilities. Importantly, as argued by (Glasser, 2004), the strategic rationale declared with the business strategy must match the rationale declared in the ICT strategy.

### 2.6.3 Strategic Alignment Model (SAM)

The Strategic Alignment Model is composed of four quadrants that consist of three components each. All of the components working together determine the extent of alignment. At least as important are the linkages between the quadrants. The first linkage is that of strategic fit. This is the vertical linkage and refers to the use of strategy to determine the infrastructure of the business. The second linkage is functional integration. This horizontal linkage is most directly related to the alignment of business and IT (Henderson & Venkatraman, 1999).

![Figure 11 Strategic Alignment Model (Coleman & Papp, 2006)](image_url)

The model aligns business strategy with IT strategy to help firms continuously adapt to their business environments (Masa'deh, Hunaiti, & Yaseen, 2008). They go on to state that the model suggests that IT-business alignment can be achieved in organizations by building linkages among four strategic domains, namely business strategy, IT strategy, organizational infrastructure and processes, and IT.
infrastructure and processes. According to (Coleman & Papp, 2006), the twelve alignment perspectives can be used to assess the level and type of strategic alignment within an organization and that they underscore the need to carefully examine both the business and information technology strategies and infrastructures to determine whether they are working in harmony or whether they are working in opposition.

(Masa’deh, Hunaiti, & Yaseen, 2008) state that firms that pursue IT-business strategic alignment will leverage innovation activities and innovation activities in turn mediate the relationship between IT-business strategic alignment and firm performance. Finally, firms that pursue IT-business strategic alignment will leverage knowledge management assets and knowledge management strategy in turn mediates the relationship between strategic alignment and firm performance.

2.6.4 Digital business strategy

Many recent researches have shown this IT to Business strategy alignment as a functional-level strategy (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013). They observed that it essentially meant that even though the two were aligned, the IT strategy is essentially subordinate to business strategy. Bharadwaj et al (2013) noted that it is now time to rethink the role of IT strategy, from that of a functional level strategy that is aligned but essentially always subordinate to business strategy, into a fusion between IT strategy and business strategy. That fusion creates an overarching phenomenon which they refer to by the term Digital Business Strategy.

Bharadwaj et al (2013) define digital business strategy as organisational strategy formulated and executed by leveraging digital resources to create differential value. This definition advocates for the following three factors:

1. Going beyond the traditional view, of IT strategy as a function within firms and recognising the pervasiveness of digital resources in other functional areas such as operations, purchasing, supply chain, and marketing.

2. Going beyond systems and technologies, which might have narrowed the traditional views of IT strategy to recognise digital resources, thereby being in line with the resource-based view of strategy.
3. Explicitly linking digital business strategy to creating differential business value, thereby elevating the performance implications of IT strategy beyond efficiency and productivity metrics to those that drive competitive advantage and strategic differentiation.

This relatively new phenomenon requires the shifting of the focus about IT, as stated by Bharadwaj et al (2013), not as a functional-level response, but as a fundamental driver of business value creation and capture. They go on to say that digital technologies shape the new business infrastructure and influence the new organizational logic and patterns of coordination within and across firms.

2.7 Conclusion

This chapter looked at the conceptual framework of strategic information systems as a way of enhancing the competitiveness of manufacturing firms in Zimbabwe. The next chapter is going to explain the methodology used in the research.
3.1 Introduction

The previous chapter focused on literature review of the strategic information systems and competitiveness firms in the food manufacturing industry. This chapter examines the methodology used in the research and the justification for the chosen methodology. The chapter will also examine the philosophical basis of the research which was used to collect and analyse data during the study. Therefore this chapter will also discuss the target population, the research instruments, data collection procedures and the validation of research instruments. The research focussed on an evaluation of the impact of strategic information systems on the competitiveness of firms in the food manufacturing industry. It also covers such aspects as designing of respective questionnaires, interview guides, as well as the analysis and presentation of the data thereto and the summary of the chapter.

3.2 Research Design

According to Yin (2003), the research design is a series of steps that links the empirical data to the study’s initial research questions and at the end to its conclusions. Saunders et al. (2007) mentioned that a research design is a general plan of how the researcher intends to go about answering the research questions and should contain clear objectives derived from the researcher’s questions, specify the sources from which the data will be collected and consider the constraints that the researcher has such as time and money. In other words, a research design encompasses the methodology and procedure employed to conduct a research. The design of the study defines the study type, such as descriptive, correlational, semi-experimental, and review and sub types such as descriptive – longitudinal case study.

De Vaus in 2001 stated that one of the functions of a research design is to ensure that the evidence obtained enables the answering of the initial question as unambiguously as possible. In other words, the research design articulates what data is required, what methods are going to be used to collect and analyse this data, and how all of this is going to answer your research question. Yin (2003) said that a research design deals with a logical problem and not a logistical problem.
The overall research design for this study was descriptive in that it made use of questionnaires to solicit “expert” and practitioner opinion.

### 3.3 Research Philosophy

All research is based on some underlying assumptions about what constitutes a valid research and which research methods are appropriate. In order to conduct a successful research, it is therefore important to know what these assumptions are. A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analysed and used. Saunders et al. (2007) defined research philosophy as an overarching term which relates to the development of and the nature of knowledge belonging to a particular field.

According to Galliers (1991), there are two major research philosophies that have been identified and these are the positivist and the interpretivist. Bhattacherjee (2012) explains that the Positivist methods which include laboratory experiments and survey research, have the main aim of testing theory while the interpretive methods are more focussed on building the theory. Bhattacherjee (2012) goes on to note that the positivist methods use a deductive approach to research, starting with a theory and testing theoretical postulates using empirical data obtained from the research to test the theory or hypothesis whilst the interpretive methods use an inductive approach which begins with the raw data and goes on to try to formulate the theory from the observed data.

There are two approaches to carrying out a research, and White (2000) said that research can either be of a qualitative or quantitative nature.

#### 3.3.1 Quantitative approach

Quantitative research is based on the measurement of some quantity, amount, or frequency of observations (Kothari, 2004). Kothari goes on to explain that the quantitative approach can only be applied to observation that can be expressed in some form of numerical quantity. Quantitative Research is used to quantify the problem by way of generating numerical data or data that can be transformed into useable statistics. Kothari (2004) also explained that quantitative research is used mainly to try and explain the possible relationships between observed data and the theory. It can be used to quantify attitudes, opinions, behaviours, and other defined
variables – and generalize results from a larger sample population (Denzin and Lincoln, 2005). The main method of data collection used in a quantitative research is a survey. The survey can take one of many forms such as questionnaire, personal and telephone interviews.

3.3.2 Qualitative approach

According to (Kothari, 2004), qualitative research is concerned with qualitative phenomenon, meaning that it relates to some of quality or type or feeling which cannot be quantified. Qualitative Research is mainly a research that explores the reasons, thinking and motivation behind the observed phenomenon. Wilson (2006) defines the qualitative approach as an unstructured research methodology that is carried out using a small number of carefully selected individuals to produce non quantifiable insights into behaviour, motivations and attitudes. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative Research is also used to uncover trends in thought and opinions, and dive deeper into the problem. According to Kothari (2004), a qualitative research aims at discovering what the underlying motives and desires, using in depth interviews for the purpose. The methods of data collection methods are varied and they range from using unstructured to semi-structured techniques and these include the use of individual interviews and observations.

3.3.3 Advantages of qualitative methods

Qualitative methods are flexible as compared to the quantitative methods. They allow more spontaneity and adaptation of the interaction between the researcher and the respondent. Qualitative methods use open-ended questions which allow the respondents to respond in their own words and can thus provide more detailed information unlike the quantitative methods that are rigid and require respondents to choose from fixed responses. However, sometimes the responses may be rather complex.

Another advantage of using qualitative methods is that the flexibility of the method allows the researcher to probe the respondents by further asking “how” and “why” questions (Mark et al, 2005). The advantage of this approach is that it provides
a deeper understanding of social phenomena than would be obtained from purely quantitative data (Silverman, 2000).

### 3.3.4 Selecting the suitable approach

The two methods have some similarities in a number of areas. One of them is that they are both built on empirical or observable reality. Regardless of their methodological and theoretical differences, qualitative and quantitative researchers agree that social research should be based on the stuff of the real world: interactions, interviews, documents, or observations (Marvasti, 2004). Yin (2003) says that the choice of which one to use from the two depends on the type of information that is required, and also on the available resources in terms of finances and time.

This research employed the quantitative approach because the data was going to be collected from many sources and used to determine frequency of observations from the industry experts therefore making a qualitative approach difficult. The information required to answer the research questions was obtained through a questionnaire which made data collection easier. The use of the quantitative approach is also justified by time and financial constraints on the researcher’s part.

### 3.4 Research Strategy

According to Yin (2003) there are a number of methods that can be used when doing research and these experiments, surveys, and case study. It is worth noting that each of these strategies has its own unique advantages and disadvantages.

This research seeks to establish the impact of strategic information systems on the competitiveness of the food manufacturing industry in Zimbabwe. The research involves establishing the current systems in place and how they are being used to facilitate the business processes.

#### 3.4.1 Survey

This is research strategy is used when inferences have to be made about the population under study. It involves the selection of a sample that will be probed and
surveyed so that conclusions about the whole population can be made basing on the results of the sample (Wilson, 2006). Surveys can take one of two forms, according to (Cohen, Manion, & Morrison, 2007), and they can be exploratory in nature, in which case no assumptions or models are postulated, and in which relationships and patterns are explored through correlation, regression, stepwise regression and factor analysis. The research can also be confirmatory in nature, in which case a model, causal relationship or hypothesis tested.

3.4.2 Case Study Research

Case studies involve an attempt to describe relationships that exist in reality, very often in a single organisation. Case studies may be positivist or interpretivist in nature, depending on the approach of the researcher, the data collected and the analytical techniques employed. Reality can be captured in greater detail by an observer-researcher, with the analysis of more variables than is typically possible in experimental and survey research.

Case study research can be used for research aims such as describing the phenomena, developing and testing the theory and it has been used within both the positivist and the interpretivist philosophical traditions (Cavaye, 1996). As Robson (2002) remarks, case studies opt for analytic rather than statistical generalization, that is they develop a theory which can help researchers to understand other similar cases, phenomena or situations. According to Cohen et al. case studies have the advantage that they can establish cause and effect, indeed one of their strengths is that they observe effects in real contexts, recognizing that context is a powerful determinant of both causes and effects.

The case study was not chosen in this research mainly because the industry is small and it was felt that the results of a case study could not have been representative of the entire industry.

3.5 Data Collection Methods

As stated above, the main data collection tool was a questionnaire administered to respondents in selected companies. The companies were randomly selected from the manufacturing firms in Harare.
3.5.1 Population

Salant and Dillman (1994) a population is the whole set that the researcher intends to carry out his study on no matter how large it may be. This entire set in all inclusive of all objects which may be people, objects, transactions, or events that the researcher is interested in studying. In this research, the population consisted of all senior managers in the food manufacturing companies in Zimbabwe. That being the case, the target population was so big that it was beyond the scope of this research to use all the members and carry out a census. The researcher had to make use of some sampling procedures.

3.5.2 Sampling procedure

Sampling procedures can be either probability or non-probability sampling as indicated in the figure below. Qualitative research methods use probability type of sampling (Kothari, 2004). Under this sampling design, every item of the universe has an equal chance of inclusion in the sample. This includes convenience sampling, judgment sampling and quota sampling. Judgment sampling was used in the research.

Table 3.1: Sampling procedures

<table>
<thead>
<tr>
<th>Element selection technique</th>
<th>Representation basis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Probability sampling</td>
</tr>
<tr>
<td>Unrestricted sampling</td>
<td>Simple random sampling</td>
</tr>
<tr>
<td></td>
<td>Haphazard sampling or convenience sampling</td>
</tr>
<tr>
<td>Restricted sampling</td>
<td>Complex random sampling (such as cluster sampling, systematic sampling, stratified sampling etc.)</td>
</tr>
<tr>
<td></td>
<td>Purposive sampling (such as quota sampling, judgement sampling)</td>
</tr>
</tbody>
</table>

Figure 12 CHART SHOWING BASIC SAMPLING DESIGNS (Kothari, 2004)

In many a cases, the population from which a sample is to be drawn does not constitute a homogeneous group. In this case, a sampling technique called stratified sampling technique is then employed so as to obtain a sample that can be regarded
as being representative enough (Kothari, 2004). The population is put into a number of non-overlapping sub-population groups known as strata and sample items can then be randomly selected from each stratum. If the items selected from each stratum is based on simple random sampling the entire procedure, first stratification and then simple random sampling, is known as stratified random sampling.

### 3.5.3 Quota sampling

It almost similar to stratified sampling above in that the population is divided into groups or strata, however the actual selection of items for sampling is left to the interviewer’s judgement. The researcher simply takes a quota to be sampled from the different strata. This selection criterion allows the researcher to focus on participants whom he feels are the most suitable to provide information that is required by the study (Kothari, 2004).

### 3.5.4 Convenience sampling

This sampling method requires the selection of the sample basing on factors which are convenient to the researcher. This convenience sampling was used in the selection of companies that participated in the survey, particularly in the exclusion of out of Harare firms. Due to time constraints, the researcher had to limit the survey to companies located in Harare. The sample will not be excessively biased because the bulk of the manufacturing firms are located in Harare.

### 3.5.5 Purposive sampling

This is also known as judgement sampling. In judgement sampling, the researcher’s judgement is in the selection of a sample which the researcher considers to be representative enough for the entire population (Kothari, 2004). In this research the senior management of the organisation was selected because of their strategic role and their experience in managing ICT use in their departments.

### 3.6 DATA SOURCES

There are basically two types of sources of data that can be used in a research. The data can come from either a primary data source or secondary data source. Primary data is collected directly from the participants in the research and is
collected raw. Secondary data on the other hand is data that is found from other data sources other than the participants. This data can come from previous researches or records containing primary data. Secondary data sources may include the internet and databases with data mining capabilities (Salant & Dillman, 1994). The research predominantly made use of primary data that was collected from questionnaires. Secondary data was used only to a lesser extent and constituted data from annual reports and earlier industrial surveys.

3.6.1 Questionnaires

A questionnaire is a research instrument that consists of a series of questions and other prompts for the purpose of gathering information from respondents. Questionnaires are one of the chief instruments that are used to collect primary data. The questions contained in a questionnaire can be structured, semi-structured or unstructured. The use of questionnaires has the following advantages and disadvantages (Salant and Dillman, 1994):

3.6.2 Advantages of using questionnaires

a) Most questionnaires are filled anonymously and therefore respondents are more inclined to answer truthfully without fear of exposure or embarrassment.

b) They are easy to administer and also less costly.

3.6.3 Disadvantages of using questionnaires

a) Participants may fail to clearly understand the questions and therefore provide incorrect information.

b) The respondent may lack interest and motivation to complete questionnaire resulting in low response rate.

c) Partially filled questionnaires are common resulting in incomplete data being collected.
3.6.4 The Questionnaire

The administered questionnaire consisted of five sections (Appendix two). It was designed in accordance with the requirements of the study. The questionnaire was made short enough to retain the attention of the respondent but long enough to capture all the necessary information. The first section was a general information section where the demographic information was collected. The other four sections collected data that was pertinent to the subject under study.

3.7 Reliability of Data

(Saunders, Lewis, & Thornhill, 2007) defined reliability of the data as the extent to which data collection techniques will yield consistent findings asserting that similar observations would be made by other researchers should they carry out the same research under similar conditions.

3.8 Validity

Validity is defined as the extent to which data collection method or methods accurately measure what they were intended to measure (Saunders, Lewis, & Thornhill, 2007). According to Saunders et al (2007), there are three types of validity measures:

i. Content Validity. The extent to which the questionnaire provides adequate coverage of the investigative questions.

ii. Criterion validity. It is the ability of measure or questions to make accurate predictions.

iii. Construct Validity. The extent to which the measurement questions actually measure the constructs you intended them to measure.

3.8 DATA ANALYSIS

Quantitative data analysis and presentation was done. The data analysis was done using SPSS v16. The data obtained from the research was captured into the analysis program for manipulation.
3.9 CONCLUSION

The research was carried out using quantitative data. The organisations were selected basing on two points. One was that of location and the other was randomness. Firms were randomly chosen from food manufacturing firms in Harare. In the next chapter the researcher discusses and analyses the findings of the research.
Chapter Four – Findings and Analysis

4.0 Introduction

This chapter presents the results and the discussion on the research that was carried out on the evaluation of the impact of the strategic information systems on the competitiveness of the food manufacturing industry in Zimbabwe.

4.1 Response Rate

The population under study consisted of departmental heads and forepersons in randomly selected food manufacturing firms in Harare. Production, IT and marketing departments were the main focus of the survey. Of the 10 companies that had been identified to participate in the survey, three refused to participate siting various explanations varying from company policy to confidentiality and hard competition. These companies were therefore excluded from the survey.

<table>
<thead>
<tr>
<th>Company</th>
<th>Questionnaire Out</th>
<th>Questionnaire Return</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nestle</td>
<td>6</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Innscor Snack Foods</td>
<td>6</td>
<td>5</td>
<td>83.3</td>
</tr>
<tr>
<td>Innscor – Bakers Inn</td>
<td>6</td>
<td>5</td>
<td>83.3</td>
</tr>
<tr>
<td>Lifestyle - TN Foods</td>
<td>6</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>DairiBord</td>
<td>6</td>
<td>5</td>
<td>83.3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>27</td>
<td>90</td>
</tr>
</tbody>
</table>

A total of 30 questionnaires were sent to potential respondents after a successful pilot test with 10. There were 27 questionnaires which were filled and returned, representing a response rate of 90%. The heads of departments were selected because of the strategic nature of the information sought by this survey. The high response rate increases the accuracy of the findings.
4.2 Validity and Reliability

Before the analysis of the data, a reliability test of the data was carried out. The test is meant to check that the questionnaire items are independent of each other. The reliability test that was applied is the Cronbach Alpha test. The table below shows the results of the questionnaire’s reliability test.

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
<th>Cronbach’s Alpha Based on Standardised Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
<td>0.961</td>
<td>14</td>
</tr>
<tr>
<td>Standardised Items</td>
<td>0.954</td>
<td></td>
</tr>
</tbody>
</table>

Table 5 Cronbach’s Alpha Reliability Test

The result of Alpha was found to be 0.96, which is well above the threshold for reliability of 0.6, showing that the data collected is deemed to be reliable and independent of each other.

4.3 Current ICT Systems

A survey was carried out to establish the existing ICT infrastructure within the surveyed firms. This was primarily focused on software applications in use and connectivity issues.

Figure 13 Current ICT systems in Place

The figure above shows the graphical view of the responses regarding the existing ICT infrastructure in the respondents’ firms. It can be seen that all the
respondents had internet connectivity at their workplaces. 100% of the respondents also indicated that they do have Local Area Networks (LAN) at their firms, and they also had websites. This is a high level of presents on the World Wide Web. Since 100% of the firms’ have a LAN and an ERP, it follows that the forms’ departments are directly connected in as far as information sharing is concerned. However, all the respondents indicated that they did not have any direct connectivity with their major business partners.

It was also important for the survey to establish how the respondents’ firms were linked with their major suppliers and customers. It is quite obvious that the major trading partners will have to be communicated with every so often and therefore was need to establish how that communication is handled.

![Figure 14 Modes of inter-company communication](image)

The figure above shows that the good old telephone and e-mail are the largest facilitators of inter – company communications. The e-mail and telephone / fax are used by 100% of the respondents in official communications. Next, it shows that the next most used means of communication is the website. It is used by 62.5% of the respondents, just as much as the respondents who physically have to go to the customer or supplier. 50% of the respondents also said that they also relied on the postal service or makes use of a courier. A few of the respondents (37.5%) said that they made use of the text messaging on mobile phones and even new features like whatsapp. 25% even agreed that they have used even social networking sites to
conduct official communications. It was saddening to note that none of the respondents used online tools such as ERPs, VPN, VLAN, and Extranets.

It was also imperative to establish how the current ICT infrastructure was being used with regards to inter – departmental communications.

![Figure 15 Mode of inter-departmental communication](image)

It can be seen that 100% of the respondents also relied on both the telephone and e – mail for communications between departments. 75% said they used the company’s ERP whilst 50% made use of LAN and Intranet and 38% made use of an instant messaging service.

### 4.4 Alignment of IT Strategy to Business Strategy

One of the matters arising from the literature review was that for the firms to be competitive, both the IT strategy and Business strategy must be aligned. A survey was carried out to establish whether these strategies in the food manufacturing firms were aligned. This part of the questionnaire consisted of 14 questions whose answers were to be chosen from a five point likert scale. This was a way of trying to simplify an otherwise complex issue. The five point Likert scale was set with the following range:

1 – Strongly Agree, 2 – Agree, 3 – Neutral, 4 – Disagree, and 5 – Strongly Disagree. Using the above rating, a mean value below 3.0 for any of the question was taken to mean an agreement with the statement of the question, while a value above 3.0 showed a degree of disagreement with the statement of the question.
Descriptive Statistics

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business &amp; IT strategy are aligned</td>
<td>1</td>
<td>3</td>
<td>1.88</td>
<td>.641</td>
</tr>
<tr>
<td>Business &amp; IT strategies equally important</td>
<td>1</td>
<td>3</td>
<td>2.12</td>
<td>.835</td>
</tr>
<tr>
<td>Business Managers understand IT</td>
<td>1</td>
<td>4</td>
<td>2.25</td>
<td>1.035</td>
</tr>
<tr>
<td>IT Managers understand business</td>
<td>1</td>
<td>4</td>
<td>2.25</td>
<td>1.035</td>
</tr>
<tr>
<td>Business Managers Involved in crafting IT strategy</td>
<td>1</td>
<td>4</td>
<td>2.88</td>
<td>1.246</td>
</tr>
<tr>
<td>IT Managers are involved in crafting business strategy</td>
<td>1</td>
<td>3</td>
<td>2.62</td>
<td>.744</td>
</tr>
<tr>
<td>IT Managers take part in corporate strategy</td>
<td>2</td>
<td>3</td>
<td>2.62</td>
<td>.518</td>
</tr>
<tr>
<td>Top Management committed to Strategic use of IT</td>
<td>1</td>
<td>3</td>
<td>2.12</td>
<td>.641</td>
</tr>
<tr>
<td>IT and business strategies prepared at the same time</td>
<td>1</td>
<td>4</td>
<td>2.75</td>
<td>1.165</td>
</tr>
<tr>
<td>IT &amp; business managers agree how IT supports business strategy</td>
<td>1</td>
<td>4</td>
<td>2.25</td>
<td>1.165</td>
</tr>
<tr>
<td>IT projects have business managers’ support</td>
<td>1</td>
<td>4</td>
<td>2.25</td>
<td>1.035</td>
</tr>
<tr>
<td>IT &amp; business managers satisfied with ability to communicate</td>
<td>1</td>
<td>4</td>
<td>2.38</td>
<td>.916</td>
</tr>
<tr>
<td>Business strategy constrained by business strategies of suppliers</td>
<td>3</td>
<td>4</td>
<td>3.62</td>
<td>.518</td>
</tr>
<tr>
<td>IT strategy constrained by IT strategies of suppliers</td>
<td>2</td>
<td>4</td>
<td>2.75</td>
<td>1.035</td>
</tr>
</tbody>
</table>

Table 6 Descriptive statistics

As stated above, the proposition with a mean greater than three will be rejected. This means that of all the 14 questions, question 13 which had the proposition that the business strategy of the firm is constrained by the business strategies of its suppliers was rejected.
Figure 16 Business Strategy constrained by suppliers’ business strategies.

This can be seen clearly in the figure above that 37.5% were neutral to the proposition whilst 62.5% of the respondents disagreed. The majority of the respondents felt that the business strategies of suppliers did not affect the business strategy of their firms and they disagreed with the proposition. In other words, the business strategy of the respondent’s firm is independent of the business strategies of the firm’s suppliers.

Figure 17 Business and IT strategies are aligned

The majority of the respondents were agreeable to the notion that the IT strategies of their firms were properly aligned to the business strategies of the firms. 87.5% of the respondents either agreed or strongly agreed as opposed to 12.5%
who were neutral. With a mean of 1.88 and standard deviation of 0.641, the proposition is accepted as it falls way below the threshold of 3.0.

4.4.1 Business and IT Strategies are equally important

The next question had the proposition that the business strategy and IT strategy are equally important. As depicted in the figure below, a quarter of the respondents strongly agreed and 37.5% agreed whilst another 37.5% were neutral. This gave a mean of 2.12 and therefore the proposition was accepted.

![Business & IT strategies equally important](image)

**Figure 18** Business and IT strategies are equally important

4.4.2 Business Managers have a good understanding of IT

The questionnaire asked about whether the business managers had a good understanding of IT.
Figure 19 Business managers have good understanding of IT

25% of the respondents strongly agreed and 37.5% agreed giving a total of 62.5% who were convinced that the business managers had a good understanding of IT. 25% were neutral and 12.5% disagreed. With a mean of 2.25, the proposition is accepted.

4.4.3 IT managers have good understanding of the business

Figure 20 It managers have good understanding of business
25% strongly agreed and 37.5% agreed that the IT managers had a good understanding of the firm’s business. Another 25% were neutral and 12.5% disagreed. The proposition is also accepted because it has a mean of 2.25.

4.4.4 Business managers are involved in formulating IT strategy at departmental level

The questionnaire also probed on whether or not the business managers were involved in the formulation of the IT strategy at departmental level. While 25% of the respondents agreed, a higher number, 37.5% were neutral and another 37.5% did not agree. The mean of the responses is 2.88 with standard deviation of 1.246. This proposition is marginally accepted.

![Business Managers Involved in crafting IT strategy](image)

Figure 21 Business managers involved in crafting IT strategy

4.4.5 IT managers are involved in formulating business strategy at departmental level
Figure 22 IT managers involved in crafting Business strategy

The figure above shows that only a handful of respondents either strongly agreed or agreed with the proposition, the bulk were neutral. 75% were neutral whilst 12.5% strongly agreed and another 12.5% agreed. The responses had a mean of 2.62 and therefore the proposition is accepted.

4.4.6 IT managers take part in formulation of corporate strategy

Figure 23 IT managers involved in formulating corporate strategy
37.5% of the respondents agreed with proposition whilst 62.5% of the respondents were neutral. This gave a mean of 2.62 and the proposition was accepted on the basis that the mean is below the threshold value of 3.0.

4.4.7 Top management is committed to strategic use of IT

Only 12.5% of the respondents strongly agreed whilst 62.5% of them agreed with the proposition and 25% were neutral. The proposition is accepted not only because it has a mean of 2.12, but also because 75% of the responses were affirmative.
4.4.8 IT strategy and business strategy are prepared at the same time.

Figure 25 IT and business strategies prepared at the same time

25% of the respondents strongly agreed and another 25% disagreed, whilst 50% were neutral. The proposition was accepted with a mean of 2.75 and standard deviation of 1.165. Whilst the preparation of both strategies at the same does not guarantee their alignment, it helps to ensure the involvement of both Business and IT managers and raise their awareness to the needs of the firm being supported by both strategies.
4.4.9 IT and business managers share a vision of how IT will support the business strategy

This is a very important attribute that is key to proper alignment of the firms business and IT strategies. 25% of respondents strongly agreed whilst 50% agreed with the proposition and 25% disagreed. The proposition is accepted with a mean of 2.25.
4.4.10 All IT projects have business managers’ active sponsorship and leadership

![Graph showing IT projects have business managers’ support]

Figure 27 IT projects have business managers’ support

25% of respondents strongly agreed and another 25% were neutral whilst 37.5% agreed to the proposition and 12.5% disagreed. The proposition has a mean of 2.25 and is therefore accepted.

4.4.11 IT and business managers are satisfied with their ability to communicate and negotiate with each other

![Graph showing IT & business managers satisfied with ability to communicate]

Figure 28 IT and business managers satisfied with ability to communicate

The alignment of the strategies is not once of thing event but a continuous process and hence there is a continued need for liaison between the IT managers
and Business managers. The questionnaire therefore probed to find out more about the ability to communicate between these managers. 12.5% strongly agreed with the statement of the question that the managers we were satisfied with their ability to communicate and negotiate. 50% agreed and a further 25% were neutral whilst 12.5% disagreed. The proposition is therefore accepted on the basis of its mean of 2.38 and standard deviation of 0.916

4.4.12 Our IT strategy is constrained by the IT strategies of suppliers

The IT systems of each firm may require to link or connect or share information with trading partners. Technological gaps and mismatches may occur between these two firms and therefore hinder the sharing of information. The questionnaire asked about whether the IT strategy of the firm was constrained by the IT strategies of suppliers.

![Figure 29 IT strategy constrained by IT strategies of suppliers](image)

62.5% of the respondents agreed and 37.5% disagreed. The mean of the responses was 2.75 and a standard deviation of 1.035. The proposal is therefore marginally accepted. This means that the IT strategies of firms in the manufacturing industry are also affected by the IT strategies of their suppliers.
Section D

This section was meant to analyse the effective use of information technology within the manufacturing industry and its link to competitiveness. Within a company, competitiveness can be brought about by cost reduction, increased revenues, increased brand awareness, product visibility, improved productivity, and improved customer and supplier relationships.

The questionnaire asks if the IT has an important role to play within the organisation. As shown in the figure below, over 55% of the respondents strongly agreed with the assertion that IT has an important role to play within the organisation. 33% agreed whilst 11% were neutral. It can be seen that the majority of the respondents felt that IT was indeed important within the organisation.

![IT has important role to play](image)

**Figure 30 IT has an important role to play within the organisation**

Departments within one organisation may need to communicate or interact in their normal daily duties and work routines. The questionnaire also probed the frequency of those interactions and the quality of the interactions. The quality referred to how they impacted on the organisation’s performance. On the issue of the amount of daily work interactions, 11% of the respondents said that the interactions were just occasional whilst 55.6% said they had frequent interactions between the departments and 33% had very frequent interactions.
These interactions may be casual in nature with little or no effect on the performance the concerned departments. However they could also be of high quality and critical nature such that they are essential to the survival of the organisation concerned. To this end, 22% of respondents said that these interactions were of slightly high quality and 78% said they were of high quality.

Information sharing forms the basis of most interdepartmental interactions. Speed and accuracy are of great importance in these interactions.
Figure 33 the Role of IT in inter-departmental interactions

The figure above shows that only 11% said that IT has a low role to play whilst 44% thought it had a high role to play and still another 44% said IT played a very high role in interdepartmental communications and interactions.

The next phase of the survey was largely exploratory in nature as the researcher sought to establish if the implementation of ICT was guided by ICT policy or strategy documents also establish if continuous monitoring and control was there. On the presents of an IT policy within the respondents' firms, 88.9% of respondents said such a policy documents did exist within their organisations and 11.1% said it did not.

Figure 34 ICT policy in place
Any equal number of respondents also said they had an IT strategy in place at their workplaces and 11.1% said they did not.

![ICT Strategy in place](image)

**Figure 35 IT strategy in place**

![Committee to steer implementation of policies](image)

**Figure 36 Committee to steer implementation of policies**

The figure above shows that 33.3% of the respondents said that they did not have a committee to steer the implementation of the ICT strategy and Policy. 56.7% said such a committee existed. The main purpose of such a committee is to ensure the
proper implementation and continued monitoring and control of the strategy and policy documents.

The main respondents of this survey were mainly departmental heads and their supervisors and as such it is worrying to note that slightly over 22% of them claimed they were not consulted during the formulation of the strategy and policy documents. However 78% were consulted.

Figure 37 Consultation in crafting of policies

The questionnaire also probed on the presence of guidelines and procedures which govern the implementation, monitoring, and control of these policies. These guidelines could have been stated in the policies themselves or in such other documents as their organisations would deem necessary.

Figure 38 Presence of Guidelines and procedures
The figure above shows that 22.2% stated that these said guidelines did not exist in their organisations 77.8% said that they did.

All the respondents were agreeable to the fact that ICT does improve the performance of their respective departments. If the performance of each individual department improves, then it follows that the overall performance of the firm should improve as well.

**Figure 39 ICT improves performance**

100% of respondents said performance of their department improved.

**Figure 40 Adherence to IT strategy and IT policy**
The figure above shows that 55.6% said adherence to the ICT strategy and policy documents was high and an additional 11.1% said it was actually very high. 22.2% said it was very low whilst 11.1% said it was low.

**Figure 41 Percentage of services for which ICT is used to generate value**

55.6% of respondents said that there were activities for which they used ICT to assist in the creation or generation of value. 22.2% said those activities were very low and a further 11.1% said they were low.

**Figure 42 Percentage of employees using ICT in daily work**

33.3% recorded that there was a very high proportion of employees who use ICT for their normal work routine. 44.4% said that the proportion was low and a further 22.2% even said that it was very low. This shows that the bulk of the workers
in the food manufacturing industry do not use ICT in their normal work routine. It could be that they do not need to use ICT in their line of work, or just that the systems are not in place in their organisations.

![Training in ICT use for employees](image)

**Figure 43 Provision of training in ICT use**

According to the figure above, 56.7% of respondents claimed that the firms were providing low ICT training to their employees. At the same time 33.3% claimed that the firms were providing very high ICT training for employees. This marked difference could be attributed to the fact that the firms which have evolved into knowledge enabled firms place more emphasis on information sharing and continuous staff development.

![Figure 44 Benefits of using ICT](image)
Upon being asked about the benefits of using ICT in their organisations, 100% admitted that ICT brought about a reduction in costs and also resulted in time saving. In other words tasks were now being completed faster and at reduced costs. 89% of respondents said they experienced increased productivity and they had improved relationships with both customers and suppliers. 89% also said they noticed improvements in inventory control. Improved inventory means that the firm will experience less stock out of essential raw materials, low shrinkage, and better procurement processes. Organisations exist so as to create value for the stakeholders. To this end, 67% of respondents said they witnessed an increase in profits due ICT usage and implementation of strategic information systems.

56% of respondents said the other benefit was that of increased sales and revenues. Naturally, it follows that if reduce costs and increase sales, you will definitely increase the profitability of the firm. On the low side, 33% of respondents recorded an increase in brand awareness. This was beside the fact that most of these firms had the capacity to improve the awareness of their products without making other significant expenses say towards marketing. On a positive note, none of the respondents responded by saying that they experience no benefits from the strategic use of ICT.

**Conclusion**

This chapter dealt with data analysis and presentation. The next chapter is about the conclusions, recommendations as well as the testing of the proposition.
CHAPTER FIVE – CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

Chapter four carried out a data analysis and discussions on the research. This chapter draws out comparisons between the results discussed in chapter four and the research problem and the research objectives. Recommendations are made to guide the way forward in cognisance of the experiences of chapter four.

5.1 Conclusions

The aim of the research was to evaluate the impact strategic information systems on the competitiveness of the food manufacturing industry in Zimbabwe.

5.1.2 Current IT systems

It was established that the majority of the respondents had some IT systems installed at their workplaces. This means that the firms in this industry can command competitive advantage from just having an IT system installed as most of their competitors have them. Most of the respondents were using state of the art IT infrastructure such as high speed internet on an optical fibre backbone at their workplaces. Some of the respondents were using modern laptops and desktops on LANs and Wi-Fi on server controlled networks. Additionally, most of the surveyed firms had an Enterprise Resource Planning system in place.

Since most of the firms had modern IT infrastructure in place, the only issue that remained was the proper usage of the IT infrastructure in a manner that would result in the improved competitiveness of the firms.

5.1.3 Alignment of IT to Business strategy

Most respondents confirmed that in their firms there was alignment between their business strategy and IT strategy. It was also established that for most of the respondents, their IT strategies were aligned to the business strategies of their firms. However, the challenge to the proper alignment was the constraints brought by the IT strategies of suppliers. The survey shows positive line of thinking that is now
evident among business and IT managers regarding the importance and existence of alignment. This is especially important because it shows us that non IT managers are increasing their knowledge of IT functions and gaining more insight as to how they can improve on the overall competitiveness of the firm. That is the reason why the survey was not restricted to IT practitioners but encompassed both the IT managers and other functional managers. These non IT managers are the very same people who make use of ICT in their everyday work routines as they work towards achieving the goals of the firm.

The survey identified the IT strategies of suppliers as the major constrain to full alignment. Some Supply Chain Management software applications provide the option to be directly linked with suppliers. This option becomes a challenge for the food manufacturing industry because most of the raw materials come from the agriculture industry. The nature of our agriculture industry is characterised by large number small to medium scale farmers. These farmers lack the necessary IT infrastructure to be interlinked with the manufacturing industry.

5.1.4 Effective use of ICT

The levels of daily interactions between departments were high and these were actually very critical for the well being of the firm. The use of ICT was also influential in those interactions. There is still room for improvement as there were some respondents who recorded low usage of ICT and even those who recorded high usage could still improve to record very high.

One issue that hinders the effective use of ICT is lack of adequate computer skills in non IT employees. There is need for continuous development of ICT skills especially given the fast pace at which ICT systems change. Most non IT managers may not know the latest developments in IT technology which may lead to a lag in their IT knowledge. Continuous staff development in technology matters results in the narrowing of the knowledge gap between the IT managers and the business managers.
5.1.5 ICT and Competitiveness

The performance of an individual firm is a sum of the performances of individual departments within the firm. All the respondents reported that the use of ICT within their departments increased the department’s productivity and therefore we can come to the conclusion that the performance of the company as a whole also improved. The following is an example of how effective use of Strategic Information Systems at every stage of production can

5.1.6 Best Practices

In chapter four, it was seen that most of the firms may have had IT strategy and IT policy documents in place. What was lacking in some of the firms was the proper implementation, monitoring, and control of these strategic documents. This was evident in some of the firms which did not have committees to steer the implementation of the policy documents. At the same time there were some respondents who said there was not much consultation when the strategies and policy documents were prepared.

5.2 Recommendations

The following recommendations are made in relation to the research’s problem statement and research objectives.

5.2.1 ICT Systems

The ICT infrastructure In place can be viewed as forming one side of an equilateral triangle. This infrastructure includes things like the hardware in place, installed software and the enabling connectivity. The next side of the triangle is formed by the human infrastructure. This now refers to the people who use the ICT infrastructure to enhance the performance and competitiveness of the firm. The final side of the equilateral triangle is formed by the environmental infrastructure. The environmental infrastructure is composed of the space which the ICT systems operate in. This is made up of the IT strategy, IT policy, IT security policy, and other guidelines and procedures which the organisation may put in place from time to time. It is important to note that this ICT environment is unique to each particular firm. These three facets of the ICT form the core of the strategic information systems (SIS). A successful firm will have to give equal attention to all of them in order to be
competitive. Poor infrastructure will inhibit the full performance of the company and the same will happen with a poorly trained and clueless workforce. At the same time operating without the proper guidelines and guidance of the necessary documents will not yield positive results.

There is need to examine the operations of the firm in its entirety and identify all the organisational and infrastructural processes therein. These will include all the internal processes and even the external ones. An audit of the information technology infrastructure and processes will have to be carried out identify the capabilities of the current systems and compare them to the needs of the firm and also identify the gaps that will need to be filled. The GAP analysis should involve the users of the systems as well as both the IT and business management. The information technology infrastructure and processes should be able to facilitate, promote, and enhance the organisational and infrastructural processes in accordance to the IT strategy and business strategy.

5.2.2 Best Practices

One of the key features of the ICT mix stated above is the ICT environment as guided by the ICT strategy, ICT policy, and other ICT governance documents. The proper crafting, implementation, monitoring, and control of these stated documents will automatically set and guide the management best practices for the strategic use of ICT for competitiveness.

5.2.3 IT – Business Strategy Alignment

It has been seen that for strategic information systems enhance the competitiveness of the firm, the IT strategy and Business strategy will have to be aligned. The firms are advised to use a strategy alignment model such as the Strategy Alignment Model (SAM) by Henderson and Venkatraman or any other later models. These models are of great importance and have the advantage that they can be modified to suit the unique requirements of each individual firm. The alignment will result in the working together of the two strategies to ensure the improved competitiveness of the firm.
5.3 Areas of future Study

The following areas will need to be further investigated to compliment this research:

1. Transition to a Digital Business Strategy, implications to a manufacturing firm.
REFERENCES


Pham, Q. T. (n.d.). *MEASURING THE ICT MATURITY OF SMEs*.


Dear Sir/Madam,

RE: Application for your permission to cater for my MBA research

I am a final year MBA Financial student at the University of Zimbabwe intending to carry out a case study research at your company between March 2013 and August 2013. This is being done in partial fulfilment of the requirements of the Masters of Business degree. My selected topic is:


I have got high expectations that apart from the sought after research being for purely academic purposes, it will also greatly assist to improve the company performance. Confidentiality and research ethics will be strictly followed.

I will be grateful if the sought after permission is granted.

Yours faithfully,

Wellington Smoke
Dear Respondent

RE: Application for your permission to cater for my MBA research

I am a final year MBA student at the Graduate School of Management of the University of Zimbabwe. I am conducting a dissertation research in partial fulfilment of the requirements of the Masters of Business Administration Degree programme. The research will assist manufacturing firms in optimising their ICT strategies for the attainment of a sustainable competitive advantage.


Your input will be greatly appreciated. The researcher guarantees a high degree of confidentiality and ethical practices. The information sought through the questionnaire will be used solely for academic purposes. I thank you in advance, in anticipation of your effort and time in completing this questionnaire.

Yours faithfully,

Wellington Smoke
**Appendix Three**

Please write your answer clearly or check ✓ to appropriate position

**Section A  General Information**

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<th>Title</th>
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<th>Mrs</th>
<th>Ms</th>
<th>Miss</th>
<th>Other</th>
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<td>25-35</td>
<td>36-45</td>
<td>46-55</td>
<td>Above 56</td>
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What is your level of IT PROFICIENCY?

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<th>Moderate</th>
<th>Low</th>
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Name (Optional): ________________________________________________

Organisation : ________________________________________________

Department : ________________________________________________

**Section B Existing ICT infrastructure**

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<th>Operating System*</th>
<th>Network Operating System</th>
<th>Internet Connectivity</th>
<th>Direct connection to other Departments</th>
<th>Direct connection to Suppliers/Customers</th>
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<table>
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<th>Developer/Vendor</th>
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<tr>
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<td>Human Resources</td>
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<td>Marketing &amp; Sales</td>
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<td>Purchasing &amp; Logistics</td>
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<td>Other(Specify)</td>
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1. How is the company linked with its major suppliers and customers? (Check as many answers as applicable)

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<td>Telephone / Fax</td>
<td>Physically Connected / Verbal</td>
<td>Website</td>
<td>VLAN</td>
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2. How are departments linked in as far as information sharing is concerned? (Check as many answers as applicable)

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<td>Intranet</td>
<td>WLAN</td>
<td>IM</td>
<td>Other(Specify)</td>
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</table>

3. Local area network (LAN)  □%Yes ; □%No

4. Wide area network (WAN, GAN) □%Yes ; □%No

5. Wireless LAN/ Wi-Fi □%Yes ; □%No

6. Website presence □%Yes ; □%No

**Section C  Alignment of IT Strategy to Business Strategy**

1. Business strategy and IT strategy are aligned in my company

   □ strongly agree □ agree □ neutral □ disagree □ strongly disagree

2. Business strategy and IT strategy are equally important

   □ strongly agree □ agree □ neutral □ disagree □ strongly disagree

3. Business managers have a good understanding of IT

   □ strongly agree □ agree □ neutral □ disagree □ strongly disagree

4. IT managers have a good understanding of the business

   □ strongly agree □ agree □ neutral □ disagree □ strongly disagree

5. Business managers are involved in formulating IT strategy at departmental level

   □ strongly agree □ agree □ neutral □ disagree □ strongly disagree

6. IT managers are involved in formulating business strategy at departmental level

   □ strongly agree □ agree □ neutral □ disagree □ strongly disagree

7. IT managers take part in the formulation of corporate strategy
8. Top management is committed to the strategic use of IT.

9. IT strategy and business strategy are prepared at the same time

10. IT and business managers share a vision of how IT will support the business strategy

11. All IT development projects have business managers’ active sponsorship and leadership

12. IT and business managers are satisfied with their ability to communicate and negotiate with each other

13. Our business strategy is constrained by the business strategies of our suppliers

14. Our IT strategy is constrained by the IT strategies of our suppliers

Section D Effective use and Implementation of ICT and its link to competitiveness

1. Information technology has an important role to play in your organisation?

2. Amount of daily work interaction between departments

3. Please rate the quality of work interactions your department had with other departments

4. What is the role of IT in those interactions?

5. What are the effects/results in company performance after the use of ICT tools? (Check as many answers as applicable)
Section E ICT and competitiveness, Benchmark and Best practices

1. Is there an ICT policy in place
   - Yes
   - No

2. Is there an ICT strategy in place
   - Yes
   - No

3. Is there a committee steer the implantation of above policies
   - Yes
   - No

4. Was any consultation done in the crafting of policies
   - Yes
   - No

5. Are there any guidelines and procedures regarding implementation, monitoring and control of policies
   - Yes
   - No

6. Does ICT improve the performance of your department
   - Yes
   - No

7. Adherence to the above documents

   - None/Nil
   - Very Low
   - Low
   - High
   - Very High

8. Concrete services or activities for which ICT is used to generate value?

   - None/Nil
   - Very Low
   - Low
   - High
   - Very High

9. Share of number of employees using ICT for their normal work routine

   - None/Nil
   - Very Low
   - Low
   - High
   - Very High

10. Training in ICT use for employees concerning ICT usage

    - None/Nil
    - Very Low
    - Low
    - High
    - Very High

11. What are the effects/results in company performance after the use of ICT tools?

    - Check as many answers as applicable

    - No Effect
    - Cost Reduction
    - Time Saving
    - Improved Inventory Control
    - Increased brand Awareness
    - Improved supplier/customer relationships
    - Increased sales and revenues
    - Increased Profits
    - Improved Productivity
    - Other(Specify)

Thank you very much for your time and effort. You are greatly appreciated.