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DISSERTATION

***Evaluation of the Impact of E-business in Supply Chain
Management: "A Case of the Retail Sector in Malawi"***

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ABSTRACT:

Developments in information and communication technology (ICT) and electronic business (e-business) have significant impact on business operations including in retail supply chain management. Retail managers are persistently seeking ways to improve customer service, marketing, supply chain performance, and profitability of their retail chain stores.

In this regard, the study's main objective was to evaluate the impact of e-business in supply chain management using a case of the retail sector in Malawi; identifying levels of e-business adoption, utilisation, benefits and challenges. Highlights were made on benefits derived from e-business adoption such as reduced transaction costs, improved communication and information flow, coordinated supply chain planning, ability to overcome geographical trade barriers, enable access to global sources of supply and markets. Prominent barriers to e-business adoption and utilisation are high cost for electronic equipment, poor technology infrastructure resulting in poor network quality, high internet subscription rates, and frequent power blackouts affecting operations and information processing.

Technology development in Malawi is in infancy stage hence not allowing continuing development of electronic business. The study established that the low technology adoption rate means low adoption for e-business and associated applications. While there is awareness of e-business applications that can be utilized to improve customer service, procurement, logistics management, supplier and customer relationship management and marketing, very few of these applications are being utilized in the business models adopted by retail firms.

The study identified areas that require consultative effort from all stakeholders in order to improve the technology environment and attain sustainable e-business utilization. Issues that were beyond the case firm's business strategy scope are national technology infrastructure development, policy formulation and implementation, regulations on data security in an environment of online business and consistent provision of power for improved operations execution.

The Researcher recommends government's increased effort in investing to improve the national technology and power generation infrastructure, policy formulation and implementation to promote e-business adoption and utilisation in the country. The retail firms must put in place or update e-business strategies to ensure consistency with each firm's corporate and business strategies and pursue cross organisation supply chain systems integration and collaboration for better performance.

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ABBREVIATIONS AND ACRONYMS:

3PL	Third Party Logistics
AAS	Automated Accounting Systems
APS	Automated Procurement Systems
CCTV	Closed-Circuit Televisions
CRM	Customer Relationship Management
CSCMP	Council of Supply Chain Management Professionals
E-Business	Electronic Business
EC	European Commission
E-Commerce	Electronic Commerce
EDI	Electronic Data Interchange
EFT	Electronic Funds Transfer
E-Mail	Electronic Mail
E-Procurement	Electronic Procurement
ERP	Enterprise Resource Planning
GPS	Global Positioning Systems
ICT	Information communication and technology
ISP	Internet Service Provider
MCCCI	Malawi Confederation of Chambers of Commerce and Industry
POS	Point of Sale
PPS	Production Process Systems
PTC	Peoples Trading Centre
RFID	Radio Frequency Identification
SCM	Supply Chain Management
UKONS	United Kingdom Office for National Statistics

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CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1. Introduction:

This chapter sets out the background of the subject and provides a general overview of the study. The aim of the study is to evaluate the impact of e-business in the retail supply chains in Malawi focusing on adoption, utilisation, benefits and challenges. Included in this chapter are the research aim, objectives; state of technology development and e-readiness in Malawi; profiles of the case firms and an outline of the dissertation structure.

1.2. Background of the Study:

During the past decade the use of information technology to support business activities has increased dramatically with the development of electronic business and communication technologies known as electronic business, electronic commerce or internet commerce (Drury, 2008). Electronic business (e-business) is defined as the execution of business transactions over the Internet (Chopra and Van Mieghem, 2000) while Lambert et al, (2001) define supply chain management as the integration of key business processes from the end user through original suppliers that provide products, services, information and finances that add value for customers and stakeholders.

Exploitation of e-business has become one of the primary conditions of doing business in the current business environment. The importance of e-business and technology has grown significantly in supply chain management in search for competitive advantage (Kahkonen et al, 2013). Process quality improvements, cost and time savings are realized in course of supply chain operations which contribute to improved customer service. E-business enhances integration and collaboration among different supply chain players and speedy exchange of information. Kahkonen et al, (2013) state that supply chain members are able to automate routine work, improve supply lead times through coordinated planning and process transparency. Stefansson, (2002) noted that the flow of information between parties in a supply chain is crucial for carrying out an effective and efficient transition of consignments. As highlighted by Lancioni et al, (2000) e-business leads to cost reduction and service

improvements in several operating areas including transportation, inventory management, purchasing, customer service, production scheduling and supplier operations.

The retail sector experiences high transaction and stock turnover. Increasing the operational efficiency of the supply chain results in huge savings and is the key towards remaining competitive or even gaining competitive advantage and revenue growth (Casati et al, 2001). New entrants on the market are introducing innovations including automated sales management, e-procurement, e-payments, and collaboration to enhance customer service. Adoption of these innovative technologies is of great importance as it contributes to improved quality of decisions and increased productivity.

Sukati et al, (2012) agreed to confirm that firms are now increasing focus on delivering value to the customer, requiring the supply chain to be more responsive (***delivering right products at the right time, place, price and in good quality at the lowest cost possible***). E-business enhances the retailers' efficiency by providing a platform for integration with other supply chain players in order to attain continuous improvements through stock monitoring, accurate demand forecasting, timely processing of supply orders, coordinating distribution, stock transfers; attain real time sales tracking, timely supplier payments and reporting.

1.3. Statement of the Problem:

E-business is an emerging concept in the Malawi business environment let alone in her retail supply chain management. As supply chain complexity and integration demands grow, disparate systems and manual information management must be eliminated (Gibson and Defee, 2012). The e-business arena is enabling firms to rethink their supply chain strategies and explore new avenues of inter-organizational cooperation (Sahin and Robinson, 2002). Greater and more intense competition and global value chains are leading to substantial shifts in what is expected of the supply chain function (A.T. Kearney Report, 2013). In a bid to improve profitability and efficiency, retailers are seeking ways to reduce costs, improve efficiency and customer service through efficient supply chain management (Casalino, 2004).

According to Harris, (2009), establishing partnerships with customers and suppliers; establishing e-business supply lines; creation of enterprise-wide resource planning systems to coordinate supply chain activities and lowering inventory levels while increasing availability are some of the key strategic considerations that supply chain management executives must

critically consider. Streamlining cross company processes is the great frontier for reducing costs, enhancing quality and speeding operations. The demand management process needs to balance customer's requirements with the firm's supply capabilities (Keely et al, 2001). ***Does technology or e-business adoption bring supply chain performance improvements?***

Retail supply chains are complex and composed of multiple interacting supply chains, as such there is need to combine effectiveness and efficiency. Retail competition is fierce due to global majors and increase in new entrants. The entire supply chain needs to be integrated (Jakate, 2007). E-business – the use of internet based computing and communications to execute both front-end and back-end business processes has emerged as a key enabler to drive supply chain integration (Lee and Whang, 2001). Firms that adopt e-business approaches can reap benefits such as reduced costs, increased flexibility, faster response times and inventory visibility. Point of sale (POS) scanners and electronic data interchange (EDI) allow companies to capture sales and inventory movements in real time fashion (Fischer, 1997). Retailers are now evaluating their retail supply chains in an effort to increase efficiency and reduce cost (Pfitscher and Wei, 2005).

It is important to note that adoption of information technology based business initiatives brings about both advantages and challenges especially in a platform in which integration extends across different players such as suppliers, business partners and customers. Awad and Nassar, (2010) identified some challenges such as adaptation or interoperability difficulties (skills gap and lack of awareness); high cost of implementation; lack of security; uneven partner benefit (differences in adoption capability) and difficulty in keeping up with change expectations.

Technology enabled supply chain management promises a high potential not only to cut costs, but also to improve service levels for the customer thus a strategic issue and critical for large retailers' competitiveness (Woerndl, 2008). The research covers a broader perspective of e-business in supply chain management and progressively narrows the scope to retail operations in the Malawian context.

1.4. Aim and Objectives of the Study:

The aim of the study is to evaluate the impact of e-business in retail supply chain management using a case of the retail sector in Malawi.

The objectives of the study are:

- (a) To evaluate the impact of e-business in retail supply chain operations.
- (b) To evaluate the effect of electronically enabled integration between internal and external retail supply chain players.
- (c) To identify challenges that retail chain stores and their supply chain members face when performing transactions on technologically enabled platforms.
- (d) To establish how prevailing information technology infrastructural conditions and capabilities affect electronic retail supply chain management.
- (e) Recommend appropriate and sustainable e-business adoption and enhancement strategies in the retail supply chain.

1.5. Research Questions:

The overall research question is: How has e-business impacted retail supply chain management? Focus is on the Malawian context. The question tackles e-business in supply chain as a broader perspective and narrows down to discuss retail operations and strategy.

The research questions of the study are as follows:

- (a) What role has e-business played in improving retail supply chain operations?
- (b) What e-business models are Malawi retailers using to improve supply chain operations and information flow?
- (c) How has investments and adoption of e-business contributed to competitive advantage and profitability for Malawi Retailers?
- (d) What challenges are retailers and their supply chain members facing when executing business and supply chain transactions, what are their experiences?
- (e) What strategies should Retailers in Malawi put in place to sustain success and address challenges associated with adoption of e-business in the retail supply chain?

1.6. Significance of the Study:

Adoption of e-business has been seen to contribute effectively in improving business performance and productivity. The study evaluates the impact of e-business in retail supply chain and provides knowledge of how to utilize the potential of e-business in supply chain management within the retail value chain. Findings of the study will help retail supply chain executives and sector stakeholders (including policy makers) realize how they can benefit from technology utilization in the retail sector including adoption of e-business. Chopra and Van Mieghem, (2000) agreed to state that companies need to fully understand how e-business affects their revenues and supply chain costs. There is need to identify potential operational and sector collaboration areas that require enhancement, make technological infrastructure and investment prioritization decisions for better supply chain performance.

In a competitive retail industry, the right information technology and telecommunication infrastructure will be an immense difference and huge competitive advantage over competitors in terms of cost savings, productivity and inventory management (Mansoor, 2010). Retail supply managers must find innovative and integrative means for increasing the delivery of goods or products to customers in a timely, efficient and effective way. Use of information systems helps companies to build value in their supply chain relationships, effectively manage costs, offer superior customer service and lead in logistics performance through communication, resource planning, collaborative supply chain functions execution (Tim, 2007; Turner, 1993).

1.7. Technology Development and E-Readiness in Malawi

Malawi is one of the developing economies in Southern Africa with an estimated population of 16 million (National Statistics Office, 2014). The youth who are more socially aware and like to use the internet in different ways make over half of the Malawi population. Increased ownership and access to mobile digital gadgets creates potential for on-line business transactions hence an e-business adoption opportunity. Malawi recognises that to build her economy there is need to improve information and knowledge access through information communication and technology (ICT). In 2013 a national ICT policy was launched providing a guiding framework on how Malawi will turn existing ICT potential into economic benefits for the industry and citizens.

However, the policy framework is too broad as it does not touch on specific initiatives such as e-business.

Technology absorption drives competitiveness as it improves production and business processes execution. A survey conducted by the Malawi Confederation of Chambers of Commerce and Industry (MCCCI) in 2013 found that various levels of technology enabled business utilisation existed in 72 studied organisations with potential for improvement leading to increased collaboration, better information sharing among business partners, improved customer service and overall business performance.

Technology Usage Aspect	Usage Percentage	Under Consideration	Not Yet
Electronic Mail (E-Mail) Communication	99%	0%	1%
Internet (worldwide web connection / communication)	99%	0%	1%
Automated Accounting Systems (AAS)	86%	4%	10%
Automated Human Resources Management Systems	32%	39%	29%
Automated Procurement Systems (APS)	36%	44%	20%
Production Process Systems (PPS)	58%	27%	15%

Figure 1: Extent to which business utilise ICT in Malawi (Source – MCCCI, 2013)

Very little has been written about e-business in Malawi let alone about its adoption, usage and its impact in retail supply chain management. It is critical for retail chain store operators to understand the consumer's needs and behaviour as well as supply chain players and their technology capabilities while exploring the potential of e-business adoption and utilisation in Malawi retail operations.

Improvements need to be considered in improving the internet network, the digital technical infrastructure, affordability of services, literacy rates and logistics infrastructure (Gregorio et al, 2005). In his analysis, Pahladsingh, (2006) notes that successful e-business depends on a critical threshold of online users hence the need to invest in infrastructural and internet service level improvements, cost or price reduction in the technology sector in Malawi so that user numbers can increase hence attaining the critical mass levels.

1.8. Scope of the Study:

The study covers three retail chain stores operating in Malawi. Based on the objective of the study “evaluating the impact of e-business in retail supply chain management”, it was decided to select three top retail chain stores in Malawi as case companies and these are Peoples Trading Centre (PTC), Shoprite and Game Stores.

1.9. Summary Profiles of Case Study Firms:

Retailing business activities involve the selling of goods and services to consumers for personal, family, household or organisational use. Changes in people’s social status resulting in more disposable income or awareness have increased retail sales trends; which means high competition as well.

1.9.1. Peoples Trading Centre (PTC):

Peoples Trading Centre (PTC) is the largest and wide spread retail chain in Malawi. PTC has over 80 retail shops across the country selling and distributing fast moving consumer and domestic goods both in wholesale and retail. PTC has expanded into remote areas giving Malawians a choice for domestic and commercial products. (*Source: Press Corporation website*).

1.9.2. Shoprite:

Since 1979, Shoprite has grown rapidly within the South African market. Shoprite first entered Malawi in August 2001 when it opened a Shoprite store in Lilongwe followed by another one in Blantyre in September the same year. Later on in 2003 Shoprite opened three small stores called “U-Save stores” in Lilongwe Old Town, Limbe in Blantyre and Zomba in Malawi’s Eastern Region.

Shoprite has a very simple philosophy: “bringing customers lower prices they can trust on their basic food and household requirements in a convenient shopping environment”. In ensuring

customer's convenience Shoprite stores are located in close proximity to where its target customers are to provide an environment that is conducive for a comfortable and enjoyable shopping experience. (<http://www.shoprite.co.za>).

1.9.3. Game Stores:

Game is a promotionally driven discount retailer of predominantly general merchandise and non-perishable groceries for home, leisure and business use. Game operates 110 stores in 12 African countries. Game's philosophy is to beat any competitor's price and also provide a guarantee for any product sold. At the shop opening ceremony, Mark Tenor, Game Manager for Africa confirmed Game's management commitment to delivering superior customer service and that clients will always get high quality products from Game stores. He also articulated Game's customer catchment expansion strategy when he said that Game is on a drive to increasing penetration in Malawi to lure shoppers from neighbouring countries like Zambia and Mozambique (Gondwe, 2010). <http://www.bizcommunity.com/Article/129/87/54536.html>.

1.10. Dissertation Structure:

In order to achieve the objectives of the study and present findings and conclusions in a structured manner, the report has been divided into five chapters, covering introduction, background literature review, research methodology, data analysis, conclusions and recommendations as follows:

Chapter	Chapter Title	Summary of Content
One	Introduction	This chapter has provided a background of the study, statement of the problem, research aim and objectives, research questions, justification, summary profiles of the case firms and dissertation structure.
Two	Literature Review	Provides summary of general theory in relation to the case study, findings of literature review, identification of gaps, research conceptual framework and establishes connection with the research question.

Three	Research Methodology	Discusses the choice of research philosophy, approach and strategy, explores options and provides rationale of the choices made in relation to the study. It also briefly discusses the study population, sampling, data collection, analysis and ethical issues.
Four	Data Analysis and Discussion of Findings	Provides critical analysis of the gathered data, identifies and discusses e-business impact on the retail supply chain in Malawi, advantages, challenges and opportunities for operational improvements in retail supply chain management.
Five	Conclusion and Recommendations	Concludes the study and provides recommendations for management and stakeholder consideration, associated implications and areas for consideration in future research.

1.11. Chapter Summary:

Background, key issues and significance of the study have been set out in this chapter. The following chapter is a literature review providing overview of secondary data on e-business and supply chain management.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction:

This chapter builds the context of the study by demonstrating existing thinking, arguments and practice relating to the impact of e-business in supply chain management. Books, journals, newspaper, conference proceedings, and internet resources were reviewed. The literature review focuses on definitions, e-business adoption in retail supply chain, strategy development, change management, e-business adoption drivers, challenges and benefits.

Technology and innovation enables companies to do business differently, offering unique products and services in timely fashion. Stoyanov, (2012) hinted that internet technology has contributed to invention of tools that can be utilized by practitioners to bring improvements in certain supply chain practices. Responsiveness to customer needs is enhanced resulting in increased customer acquisition, sales and revenue growth. Guillen et al, (2007) agreed to highlight that supply chain management improves a firm's competitiveness and performance. Companies with well-run supply chains continue to outperform their competitors. A real correlation has been drawn between companies' financial success and the depth and sophistication of their supply chains. (<http://cscmp.org/media-center/facts-global-supply-chain>). By introducing innovative ways for business transactions, there is creation of value which impacts both the producer, intermediary processors and the customer. One of such is e-business which has revolutionized the way business is conducted (Roger et al, 2002) by facilitating supply chain integration with key suppliers and customers, helping them execute transactions, coordinate and collaborate for achieving better supply chain performance (Stoyanov, 2012).

2.2. Definitions of Key Words and Terms:

2.2.1. Supply Chain:

Turban et al, (2006) define supply chain as the flow of materials, information, money and services from raw materials suppliers through factories and warehouse to the end customer. Supply chain involves internal and external partners located in different places. Bowersox,

(1990) states that the supply chain relationship starts with suppliers and involves producers, retailers, distributors as well as consumers. The primary objective is to maximise revenue, attain full utilisation of assets and capacity resulting in increased market share, profitability, and responsiveness to customer needs.

2.2.2. Supply Chain Management (SCM):

The Council of Supply Chain Management Professionals (CSCMP) defines supply chain management as the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities moving raw materials and finished goods from source to the customer. Importantly, it also includes coordination and collaboration with channel partners, such as suppliers, third party logistics service providers, and customers. **Supply chain management integrates supply and demand management within and across companies** (<http://cscmp.org/>). The supply chain management of goods and services involves multiple trading partners such as raw material suppliers, manufacturers, distributors, and retailers (Gangopadhyay and Huang, 2004). The goal is to reduce uncertainty and risks by improving inventory control, business processes and customer service.

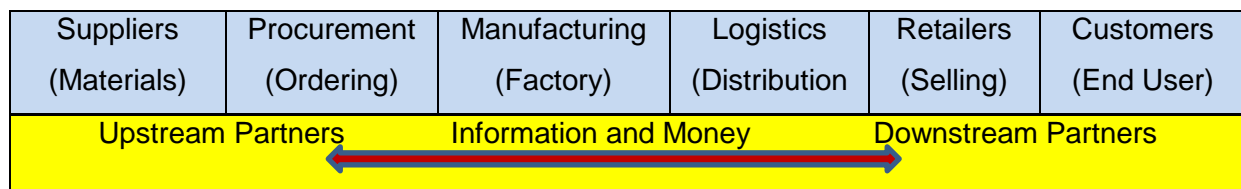


Figure 2: Supply Chain Management Relationships and Goods Flow: (Source – Internet)

According to Bozarth and Handfield, (2006), supply chain management is the active management of supply chain activities and relationships in order to maximize customer value and achieve a sustainable competitive advantage. Dornier et al, (1998) in their definition bring an aspect of logistics or distribution when they said “Supply chain management is the management of activities that transform raw materials into immediate goods and finished products, and **deliver those final products to the customer.**”

In order to yield results, Turban et al, (2006) stated that managing supply chains calls for coordination of several business partners, internal departments, business processes and many

customers. Similarly Croxton et al, (2001) asserted that implementation of supply chain management involves identifying the supply chain members with whom it is critical to link, the processes to be linked with each of these members, and the type or level of integration that applies to each process link.

2.2.3. Electronic Business (e-business):

E-business (electronic business) is the execution of business transactions over the internet (Chopra and Van Mieghem, 2000) as well as use of the internet to link companies with their suppliers, customers and other trading partners (Wagner and Sweeney, 2010). These electronic business processes include buying and selling products, supplies and services; servicing customers; processing payments; managing production control; collaborating with business partners; sharing information; running automated services. Today, as major corporations continuously rethink their businesses in terms of the internet, specifically its availability, wide reach and ever-changing capabilities, they are conducting e-business to buy parts and supplies from other companies, collaborate on sales promotions, and conduct joint research (<http://searchcio.techtarget.com/>). Moodley, (2002), defined e-business as any form of commercial or administrative transaction or information exchange that takes place via an information communication and technology based or computer mediated network. Fahey et al, (2001) recognized that by electronically connecting with supply chain partners, information is shared in real time fashion and simultaneously among numerous entities and as such Wagner and Sweeney, (2010) state that business processes are transformed to become more effective and efficient .

Relationships in an e-business framework as divided in four broader elements:

Business to Business (B2B)	Business to Consumer (B2C)
Consumer to Business (C2B)	Consumer to Consumer (C2)

Figure 3: Core Classification of E-Business Types: Adopted from Chen, (2001)

The International Business Machines (IBM) defines e-business as the transformation of key business processes through the use of internet technologies (www.ibm.com/e-business). Linking to this definition, Arthur Andersen (www.globalbestpractices.com) identified operating

organizational processes that occur in any organization as understanding markets and customers; developing vision and strategy; designing products and selling; producing and delivery services and lastly billing and customer invoices.

According to Malhotra, (2014) e-business is more than just buying and selling of products on-line. It includes marketing, selling, delivering, servicing and paying for products and services. Introduction of e-business in supply chain management has resulted in greater application of electronic based operation processes such as e-commerce and e-procurement.

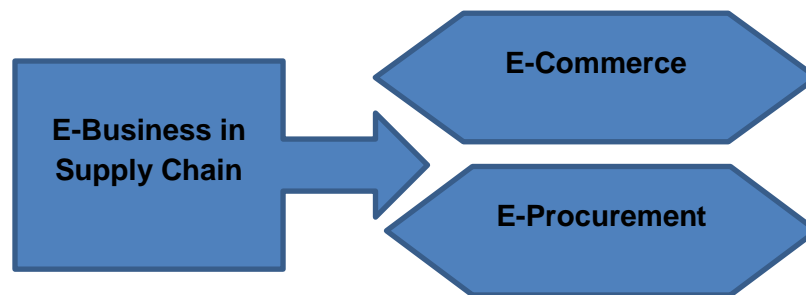


Figure 4: E-Business links – E-Commerce and E-Procurement: (Researcher Construct 2015)

Electronic Commerce (e-commerce) regarded as a subset of e-business (Wagner and Sweeney, 2010) is defined by Bozarth and Handfield, (2006) as the use of information technology solutions to automate business transactions. E-commerce helps to improve process speed, quality and cost of business communications. It provides a platform for suppliers, manufacturers, distributors, retail outlets and ultimately customers to be linked on-line and exchange information irrespective of geographical location. Bozarth and Handfield, (2006) confirm that with e-commerce, paper transactions are becoming increasingly obsolete.

Chaffey, (2007) defined electronic procurement (e-procurement) as the electronic integration and management of all procurement activities including purchase request, authorization, ordering, delivery and payment between a purchaser and a supplier. Tech Target (2007 – 2014), e-procurement is the business to business purchase and sale of supplies and services over the internet. Participating companies expect to be able to control inventory more effectively, reduce purchasing overheads, and improve manufacturing cycles. E-procurement is expected to be integrated with the trend towards computerized supply chain management (<http://searchcio.techtarget.com/>).

E-procurement facilitates procurement of right products in right quantities, quality from the right source at the right time and as a result Chaffey, (2007) believes that it effectively contributes to cost reduction, enhanced budgetary control, elimination of administrative errors, increasing buyer's productivity, improved information management, early supplier involvement and the payment process. E-procurement allows aggregation of spend hence identification of areas that need attention in terms of identifying alternative sources of supply and or procurement strategies.

2.2.4. Retailing, Supply Chain Information and Financial Flows:

E-business facilitates data flow data flow in business to business or system to system processes. The most important function of e-business is its connectivity and system interaction between service providers with their suppliers and customers (Roger et al, 2002). As discussed above, supply chain includes the flow of information to and from all participating entities that includes pricing, inventory, shipment tracking, credit and financial aspects (Turban et al, 2006). E-business enhances supply chain efficiency by providing real time information regarding product availability, inventory level and shipment status (Quayle, 2003).

Velmurugan, (2009) states that electronic business enables companies to link their internal and external data processing systems efficiently and flexibly. However interoperability difficulties which affect the linkages were not considered in this assertion. Information flow in logistics and supply chains is as fundamental as the flow of goods, materials and the people involved (Carter et al, 2005). The retail sector is subject to high stock turnover hence requiring prompt transmission of information within the supply chain. Carter et al, (2005) emphasise that timing and quality of information enables good decision making hence increasing flexibility in responding to customer needs. This is supported by Chopra and Miegheem (2000) who asserted that firms using e-business can easily share supply chain information such as inventory positions across the supply chain hence dampen the bullwhip effect. Pfitscher and Wei, (2005) state that e-business provides retailers with necessary tools to ensure that all important information flows through the organization quickly and accurately thus increasing inventory visibility, demand information and coordinate logistics.

The increase of e-business and e-commerce has enabled innovative ways of making payment through mobile devices, electronic money transfers (EFT), smart and visa cards. Industry

players note that electronic payment processing reduces security risk as payments do not involve physical exchange of money hence improved security and reduced risk of corrupt practices. It is also evident that real time flow of the finances from account to account results in improved cash access and cash flow management for the parties. As customers make instant payments the retailers' ability to pay their suppliers, service providers and staff salaries is enhanced resulting in improved business relationships and performance.

2.3. Factors Affecting e-business Adoption in Supply Chain (Drivers and Barriers):

According to Bozarth and Handfield, (2006), the rate of change in the markets, products and technology is escalating, leading to situations where managers must make decisions on shorter notice, with less information but with higher penalty costs.

According to Christopher, (1992), the supply chain function faces conflict between service improvement opportunities and investment costs hence some trade-offs. Retailers aim for high customer service, reduced transportation and warehousing costs, low inventories, fast delivery and reduced labour costs. The need for a strategic approach gets visible while application and usage of scientific means for planning, information analysis and real time exchanges become critical for decision making. This is where the use of information and communication technology and electronic systems come into play to enable supply chain managers increase information visibility hence improved decision making. Chopra and Van Mieghem, (2000) confirm that companies have variety of ways to use the internet to enhance supply chain performance.

Andam, (2003) identified capital investment costs as a crucial issue affecting adoption levels for technology such as e-business in supply chains. The initial investment for adoption of new technology is heavier for small firms. Roger et al, (2002) highlighted the high cost of setting up e-business infrastructure as well as associated implementation costs while Andam, (2003) added that costs for computers and high internet access rates are inhibitors for e-business adoption. Other costs are associated with staff training and technology skills development. However, adoption must not be held back as delays put the firm behind competitors. It must be noted that the benefits and value generated from e-business adoption far outweigh its costs.

Another challenge is information security (Roger et al, 2002). Incompatibility of operating software between supply chain member organisations makes integration become complex and

challenging. Moodley, (2002) also states that retailers are generally unwilling to provide their suppliers with live link into their sales and stock levels because such information is considered to be “confidential”. He continues to highlight that a substantial number of supply chain players are reluctant to allow their suppliers and customers access their databases and inner workings. There is lack of trust. Woerndl, (2008) confirmed that one of the biggest hurdles to e-business adoption for retailers is the business ecosystem. He believes that up to date some suppliers and customers are not prepared for e-business. The Researcher notes that this is more visible in operating environments that are not technologically advanced as the ICT infrastructure is still in infancy stage hence operationally challenging. Wagner and Sweeney, (2010) confirmed that many organisations lack up-to-date ICT infrastructure with which to organise, support and facilitate the complex and rapidly changing interfaces among entities and disciplines involved in business processes.

2.4. Summary of the General Theory:

The study is based on the “**Systems Theory**” which centres on bringing together various components of the supply chain such as human capital, information, materials and financial resources to form a subsystem of the larger supply network to attain better performance. “Collaboration and Integration” leads entities to work together in pursuing a common goal beyond what individual entities can accomplish. This calls for joint supply chain planning, leveraging of resources and evaluating performance improvements in order to achieve customer centric supply chain objectives in a sustainable way.



Figure 5: Illustration of a Collaborative or Integrated System: (Source – Internet Images)

2.5. Review of Previous Work and Literature:

2.5.1. E-Business and Supply Chain Strategy:

Slack et al, (2007) defined strategy as the total pattern of decisions and actions that position an organisation in its environment and that are intended to help in achieving its long-term goals. Jutla et al, (2001) noted that it is a big challenge to move from bricks and mortar orientation to an electronic (clicks and mortar) oriented business strategy and culture, however it is a critical necessity for business success and survival in this modern age.

Over the past decade, companies have adopted supply chain management as a critical element of their corporate strategy (Muckstadt et al, 2003). An e-business strategy provides operational guidance in pursuit for opportunities for increased sales, spend analysis and supplier rationalisation, keeping up with competition and ensure continuous improvements in supply chain operations and customer service in order to make profit. These are pursued in line with the corporate and business strategies. Organisations embarking on an e-business initiative consider sensible alignment of technology as an enabler with business strategy in order to be successful. Beheshti et al, (2008) state that apart from development of an e-business strategy, managers must commit to make changes to their business processes as needed such as creating electronic markets as a way of order processing and transforming the customer shopping experience. The customer must be the central focus of business strategy and priorities (Jutla et al, 2001).

In his analysis Kulwiec, (2000) established that with the emergence of electronic revolution, retailers are looking at opportunities for transforming their supply chains by way of disintermediation, in which they are bypassing wholesalers through buying directly from manufacturers. This approach contributes to cost reduction, improves delivery speed as well as quality as by moving goods straight from the factory to retail shops or directly to consumers avoids double handling which sometimes results in damages. However, Chopra and Mieghem (2000) argue that e-business can only decrease costs when customer participation (business to consumer) is increased. Manufacturers are also able to increase demand forecasting accuracy due to ability to monitor retail sales directly from shop floors in timely fashion and hence plan manufacturing and capacity utilisation schedules effectively.

Excess inventory is an enemy of supply chain competitiveness (Kulwiec, 2000). According to Casalino, (2004), retailers always struggle to balance between keeping stock levels low while also ensuring that right products are available in right quantities at the store level. To maintain customer satisfaction, store stock outs must be avoided and ensure continuous product supply.

Slack et al, (2004) emphasized that the firm's operations system must meet broad competitive and strategic objectives that must be translated into performance measures of quality, speed, reliability, flexibility and cost. Fischer, (1997) states that before devising a supply chain, there is need to consider the nature of and demand for the firm's products. An integrated information technology system is necessary, with customers and suppliers that are transparent in providing information on stock levels and demand changes, making implementation of supply pulling possible and hence no pushing inventory in anticipation of future demand. Timely updates are needed in the supply chain for efficient and effective stock replenishments. Croxton et al, (2001) state that demand management processes need to balance the customer requirements with the firm's supply capabilities. The whole essence of supply chain management is to protect the customer from the effects of supply risk either internally or externally in the supply chain as a whole. Strategically, a system must be in place for contingency planning in the event of disruption in the balance of supply (Croxton, et al, 2001). Effective collaboration and information sharing using information technology tools helps in improving quality of demand forecasting and order fulfilment as well as distribution logistics.

2.5.2. E-Business Impact on Operations Framework:

E-business technologies enable supply chain managers to make coordinated decisions by integrating the diverse and sometimes conflicting objectives of various trading partners in a chain (Vakharia, 2002). Decisions centre on business to business relationship for procurement or payment transactions and business to consumer exchanges for sales and payments. Bozarth and Handfield, (2006) identified 3 logistics information systems tools that can be employed universally to improve performance in any supply chain as below:

Decision Support Tools	Warehouse location choice, estimate volume and consignment delivery lead time. Evaluate supply chain capabilities, limitations and identify solutions.
Planning Tools	Scheduling, time spanning using computer based planning systems to find means that suit the situations and choice of transport mode.
Execution Tools	Implementation of planned movements, logistics monitoring using barcode item tracking. Barcode scanners feed specific item details into information systems to track movement and positioning of physical goods through radio frequency identification devices.

Figure 6: Logistics Information Systems Tools (Source - Bozarth and Handfield, 2006)

Inventory management is one of the most important aspects of supply chain management (Fisher, 1997). Having clear and real time inventory information is essential to speeding the process of stocking shelves in retail shop floors with new items during promotions. This helps to avoid the bullwhip effect in the retail supply chain as real time information transfer is key to reduction of shop floor shortages (Dornier et al, 1998). However by looking at an entire supply chain Wong and Johansen, (2005) state that for almost accurate or actual demand to be satisfied by retailers or suppliers, customer demand as well as supplier inventory must be known to the manufacturers through use of information sharing. Inventory levels must be kept low to reduce stock holding costs while aiming at improved customer service. Fischer, (1997) emphasized on the importance of critical decisions about inventory and capacity in that they are not about minimizing cost but about where in the chain to position inventory and maximization of available production capacity to hedge against uncertain demand. Manufacturers and retailers can cooperate to work around this and cut costs through the system. Kulwiec, (2004) confirmed that by reducing reliance on inventory buffers and expediting orders through cross docking, a seamless flow of products through supply chain pipeline is ensured.

The concept of e-business has resulted in development of e-procurement (electronic integration and management of all procurement activities including purchase request, authorisation, ordering, delivery and payment between purchaser and supplier) which can achieve significant savings and other benefits which directly impact the customer (Bocij et al, 2003). E-procurement focuses on improving performance by purchasing goods at the right time, delivered at the right

time and place, in right quantity and quality and from the right source (Baily et al, 1994). In their review Carter et al, (2005) established that e-business enabled supply chains have ability to improve delivery flexibility hence increased customer satisfaction for increased market share. They also stated reduced costs come about due to improved planning, coordination, decision making resulting in increased efficiency, process simplification and reduction of paperwork. Croxton et al, (2001) agreed to state that supply chains that succeed in reducing uncertainty and variability are likely to be most successful in improving their competitive position.

2.5.3. Impact of E-Business on Supplier and Customer Relationships (Integration):

Contemporary business life is process driven and chain oriented; therefore integration has become a core question for companies (Gullberg and Lundvall, 2003). E-business has been a powerful and compelling enabler of supply chain integration across a wide range of industries (Lee and Han, 2009). Integration of information and communications technology systems within and across the value chain has become a necessary condition for competitiveness (Moodley, 2002). Supply chain integration is defined as the collaboration between a firm and its supply chain members to manage inter and intra organisation processes with the aim to achieve effective and efficient flows of products, services, information, funds and decisions in order to provide maximum value to the customer at low cost and high speed (Bernon et al, 2013). The sharing of information is a critical success factor if a seamless product and money flow between suppliers and customers is to be achieved (Wagner and Sweeney, 2010). Poor relationships within any link in the supply chain can have disastrous consequences for all other supply chain members through to the customer. As such organisations must effectively manage relationships with their upstream suppliers and downstream customers (Bozarth and Handfield, (2006). In their articulation, Maddison and Darnton, (1996) hinted that organisational survival depends on uniqueness of their goods, services and relationships with other organisations. Emphasis must be on relationships not exchanges. Croxton et al, (2001) state that supplier relationships must be win-win since if both parties do not gain from the relationship, the incentive to be in the relationship is diminished and it will likely dissolve. Real time electronic communications with shared information at all levels is an absolute must for supply chain success (Burt et al, 2003).

The key to effective supply chain management is the ability to establish long-term, strategic relationships with supply chain partners (Zelbst et al., 2009). In his analysis Fischer, (1997) warned that costs rise to unprecedented levels because of adversarial relations between supply

chain partners as well as dysfunctional practices such as overreliance on price promotions. Chen and Su, (2011) contend that powerful competitive ability depends on the effective integration of supply chain partner-firms.

The customer relationship management (CRM) process provides the structure for how the relationship with the customer is developed and maintained (Croxtton et al, 2001). Commercial firms survive by selling goods or services to its customers. Customer service means consistent provision of time, place and utility getting products to customers at the right time and place as required. In order to achieve this, supply chain management requires various parties such as suppliers, manufacturers and distributors to cooperate in development of schedules, monitoring movements and in information sharing (Christopher, 1992). While focusing on customer service improvements, it is also critical to put inventory costs down by reducing raw materials and work in progress levels and allowing incremental investments in finished goods that flow out to the customer.

2.5.4. Impact of E-Business on Retail Business Performance and Profitability:

As stated by Sampson and Fawcett, (2001), the internet is having impact on businesses in various industries both in good and bad ways. Disintermediation (***elimination of supply chain members or stages***), a major effect of the internet economy, is both a threat and an opportunity in retail supply chains. Companies are now exploring opportunities for restructuring, reorganising and reengineering their relationship with the customer in a more direct way. Many times, a producer's new linkage to the customer is more tangible eliminating the retailer's role in the supply chain. Relationship turns from business to business and to business to consumer. What a shift from the traditional way. This situation raises a question on the continued need or role of a retailer in the supply chain and as producers get more connected to the customer, retailer's business survival is threatened. However, it is important to note that through creativity and innovation, instead of looking at disintermediation as a challenge, it can be turned into an opportunity where retailers shift their role and position through new partnerships within the supply chain and still operate effectively making awesome profit and earning return on investment.



Figure 7: Distribution Centre Elimination in Retail Operations (Researcher Construct – 2015)

The retail supply chain is subject to high product or goods turnover resulting from pressure to consistently meet customer needs; it also involves many players (such as raw material suppliers, manufacturers, third party logistics providers, the retail chain stores and the customers). This trend exposes the industry to supply chain risks of different forms one of which is the bullwhip effect, due to the effect of demand fluctuations as a result of unstable consumption styles as well as increases in demand as consumers respond to product placement strategies and periodical promotions. A risk management system must be in place to guide risk mitigation as a preventative measures. Handfield, (2007) highlighted that the foundation for a solid supply chain risk management program includes improved knowledge of where the disruptions may occur, and training to know when and how to respond. Irrespective of changes in the operating framework the retailer must focus on delivering right and quality products in timely fashion with passion for customer satisfaction. Consideration must be made for the following:

2.5.4.1. Quality: (Conformance, Performance, Reliability):

Mahavan et al, (2013) reported that supply chains are increasingly being measured on delivery quality as delivery timeliness and completeness are not enough. 21st century consumers and customers are expecting and demanding high quality products. In 2009, the European Commission (EC) reported that e-business components are essential elements of business with organisations taking strategic decisions to integrate e-business solutions into production processes, quality management, marketing, logistics and customer services. This is supported by findings reported in a United Kingdom Office for National Statistics (UKONS) which found that organisations with automatic links between key business processes and their e-commerce activities have higher average productivity than firms without the links.

2.5.4.2. Time: (Delivery Speed, Delivery Reliability, Delivery Window):

Customer service – Fischer, (1997) states that point of sale scanners in retail shops allow retailers to capture the customer's voice to be heard by all supply chain players through electronic data interchange (EDI). Moodley, (2002) highlights the expectation that through e-business initiatives, retailers can experience improved supplier collaboration, improved delivery margins, better store availability and reduced inventory. Information sharing is key to reduction of supply chain inefficiencies or uncertainties. Wood and Wang, (2013) confirm that supply chains become more efficient by enabling goods to be located anywhere while in transit using radio frequency identification (RFID) and global positioning systems (GPS). Delivery schedules can be effectively drawn leading to realistic promises to customers regarding availability. According to Malhotra, (2014) the difference between an on-demand business from its competition is the fact that it is responsive in real time, as events occur (lead times and process costs are reduced as ordering transactions are carried out through e-procurement).

2.5.4.3. Flexibility: (The mix, changeover according to needs):

This deals with the retail supply chain responsiveness to respond to sudden demand increase or unanticipated supply disruption ensuring that by using alternative supply sources the retailer is continuously meeting customer needs and priorities (Madhavan et al, 2013). Retail management is imposing new conditions on production planning, sourcing strategies and delivery time which creates pressure to reduce costs for maintaining large stocks, variety of items and the need for computer based analysis through point of sale information exchanges (Moodley, 2002). There is need for increased depth and speed of information sharing amongst supply chain members to attain continuous replenishment. Information on order status, shipment updates, sales and consumption is shared with suppliers for effective replenishment planning. Through e-business tools, retailers have become the channel captains and set the pace in logistics through process integration from end to end supply chains (Sparks, 2010).

2.5.4.4. Cost: (Labour, Material, Technological):

Fahey et al, (2001) state that e-business requires firms to refocus and reconfigure every type of tangible and intangible asset employed in business operations including skills, adoption of new

ways or channel of moving information and materials through process automation. Retailers can use in store electronic devices to provide an enhanced customer experience, devices such as point of sale (POS), digital signage, customer touch points and visa or credit cards for seamless customer experience, more importantly introduce an on-line (clicks) shop to combine brick and mortar retail channel. Changes can be introduced in transport management systems, order processing – paper reduction and number of processing staff, RFID – inventory tracking, monitoring and reporting, increased market knowledge and competitive condition – alternative suppliers and reduced cost for information processing. Retail entities have taken advantage of information technology to improve communication and reduce transaction costs (Tjader et al, 2004).

Bozarth and Handfield, (2006) noted the need for trade-offs in decisions making, the organisation’s emphasis on one performance dimension over another, based on the recognition that excellence on some dimension may conflict with excellence on another. The required analysis to inform this decision must be based on clear understanding of customer needs so that decisions made result in satisfying those identified needs effectively and efficiently.

The role of supply chain management is recognised differently in different organisations such as a cost saving centre or a competitive advantage development arm under sales or operations. Burt et al, (2003) confirms that effective supply chain management impacts the firm’s operations total costs and sales as articulated below:



Sales:	Up	Down	Cost:
Faster to market goods			Improved processing cost (no stock outs)
Improved quality			Waste elimination (non-value adding)
Pricing flexibility			Capacity (efficient utilization)
Enhanced customer satisfaction			Better asset utilization
Customer fulfilment			Reduced inventory hence low risk
Shorter cycle and lead times			Reduction of inventory holding cost

Figure 8: Summary of Supply chain Impact on Business Operations (Source - Burt et al, 2003)

Muckstadt et al, (2003) hinted that companies with sophisticated and complex supply chains embrace change and look at their supply chains paradigm in an innovative way to positively

impact bottom line results. They integrate their business processes to form a strong basis for decision support systems. Jakate, (2007) highlights that retail companies are now turning to their supply chain and distribution strategies as a way to differentiate their products and cut costs. Logistical expertise should be used not only to survive, but also to sustain real competitive advantage. According to Lee and Whang, (2001), companies that make use of e-business to redefine supply chain integration will achieve significant increases in efficiency and gain tremendous competitive edge over their competitors.

2.6. E-Business and Sustainability Issues in Supply Chain Management:

Effective returns management is a critical part of supply chain management. Though neglected in many forms, as management thinks this process is not important, this process can assist the firm in achieving a sustainable competitive advantage (Croxtton et al, 2001). In their exploration, Bernon et al, (2013) defined product returns in a retail set up as the process of planning, implementing and controlling efficient, cost effective flow of goods and related information from the point of consumption to the point of origin for purposes of recapturing value or disposal. Customers, retailers, manufacturers, logistics service providers, repairers and recyclers are involved at different stages based on product being handled. According to Wang et al, (2013) retail return logistics service is very poor at the present and recommends that companies must establish a rational reverse logistics information system for supply chain data collection, synthesizing, analysis and commodity tracking the well running of retail operations.

Bernon et al, (2013) state that supply chain integration is the very effective way of managing returns. Kauffman and Crimi, (2004) confirmed that communication and information systems are integrated as enablers of value chain transformation. Retail chain stores must be responsive to customers and coordinate effectively with logistics service providers when dealing with reverse logistics when handling merchandise returns. Business processes conducted on an electronic platform eliminate paperwork hence contributing to green and environmentally sustainable retail supply chain operations. However the frequency of delivery trips due to smaller parcels means more vehicle trips and hence an aspect of concern due to fuel and gas emissions.

2.7. E-Business and Location Decisions in Supply Chain Management:

According to Lu, (2011) supply chain managers must critically analyse and understand operational decisions and e-business adoption issues which are affected by location. He states that geographical location for supply chain operations is an important decision for supply chain design and planning. The primary focus is on serving customers better and further reducing operational costs. Location decisions have a profound impact on cost of labour, financial and legal implications affecting the business environment and as well as environmental consequences. In his contentions Moodley, (2002) argues that the internet can be used in many ways to speed and enhance inter-firm relations thus reducing physical and bureaucratic drag by and the importance of location and the procedural steps that require the direct intervention of the firms operatives. Tjader et al, (2004) agree with this thinking when they stated that e-business enables enterprises to form partnerships with others in a wide-ranging geographical areas, introduce products to market that were unreachable in the past, and foster and nurture cooperation and coordination with business partners. This means that with e-business, traditional supply chain operations barriers caused by geographical limitations are now broken down.

2.8. Identification of Gaps in Relation to the Proposed Research:

Moodley, (2002) highlights that exchange of papers in a procurement process does not add any value and create inefficiencies for both the seller and buyer. Through electronic data interchange (EDI) this activity can be moved on-line hence simplifies the procurement process. Information quality is enhanced hence more reliable and available on real-time basis.

E-business adoption brings with it the need for strategic change, touching on corporate objectives, business strategy, customer service and relationship management, and supply chain management, sales and marketing. Businesses must be ready to pay the cost for technological infrastructure investments and make behavioural or organisational cultural change commitments.

2.9. Research Question and Conceptual Framework:

Even though theoretical arguments suggest that e-business has much to offer in terms of connecting markets, productivity gains, cost savings and systematic efficiency (Moodley, 2002) in the supply chain, the Researcher feels there is need to examine the levels of impact of these beliefs in the retail sector and specifically in a Malawian context. As noted by Woerndl, (2008) later days' research on e-business in the retail industry should differentiate to a greater extent between micro, small and medium-sized firm and retailers with location consideration as well.

As stated by Miles and Huberman, (1994), the conceptual framework below, graphically presents key factors, concepts and variables and their presumed relationships among them with regard to the subject "impact of e-business in supply chain management".

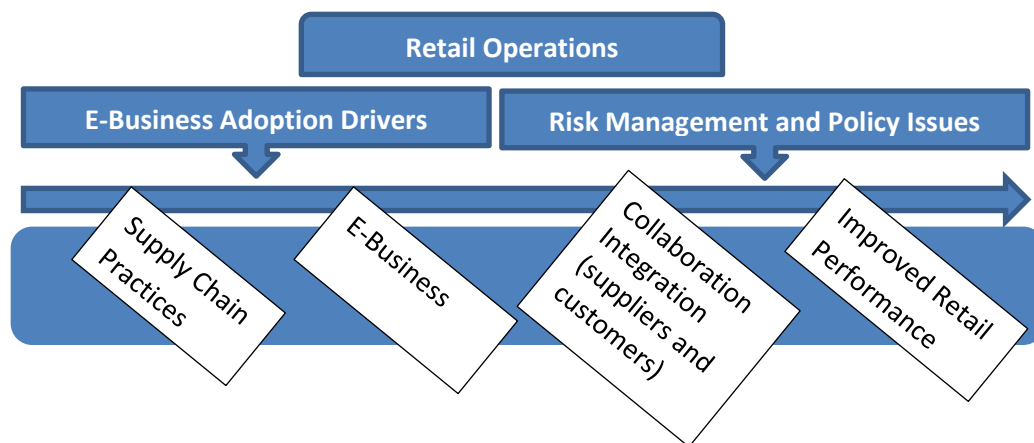


Figure 9: Conceptual Framework for the Study (Source – Researcher Construct - 2015)

2.10 Conclusion:

Retailers must realise the pressure mounting from technology development, the need to reduce costs, keep inventory low, improve customer responsiveness, product availability and supply chain collaboration to attain value. Moodley, (2002) suggests that retail firms need to better understand their needs, analyse and develop an appreciation of its resource base (financial, material and human resource) and pursue an understanding of the operating environment as well as prevailing opportunities and challenges. Andam, (2003) highlights the need for private sector firms to continuously engage with government to lobby for prioritisation of technology

infrastructure development decisions and creation of a favourable policy environment for e-business and consumer security. Tjader et al, (2004) recommend that the e-business adaptation gap between member entities must be closed.

2.11. Chapter Summary:

This chapter provided an overview of literature available relating to e-business and supply chain management focusing on definitions for key terms and analysis of previous literature relating to e-business, retail operations and supply chain management. In concluding the chapter, areas requiring consideration in future research have been highlighted thereby shaping the focus of the study. The next chapter outlines the research methodology that was used for the study covering research methods, data collection, tools used and analysis of collected data.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction:

In the previous chapter key issues were summarised regarding e-business in supply chain management. Chapter content was drawn from various publications (academic journals, books, and conference proceedings, internet resources) to establish a comparable base on e-business adoption between Malawi and other countries.

This chapter describes the research methodology used to conduct the study and analysis of the collected data that fed into conclusions and recommendations. Case study strategy was adopted. Data collection was done through participant interviews and questionnaires.

The research methodology followed a structured framework to attain valid and reliable results. The framework followed the research onion circle as outlined by Saunders et al, (2003).

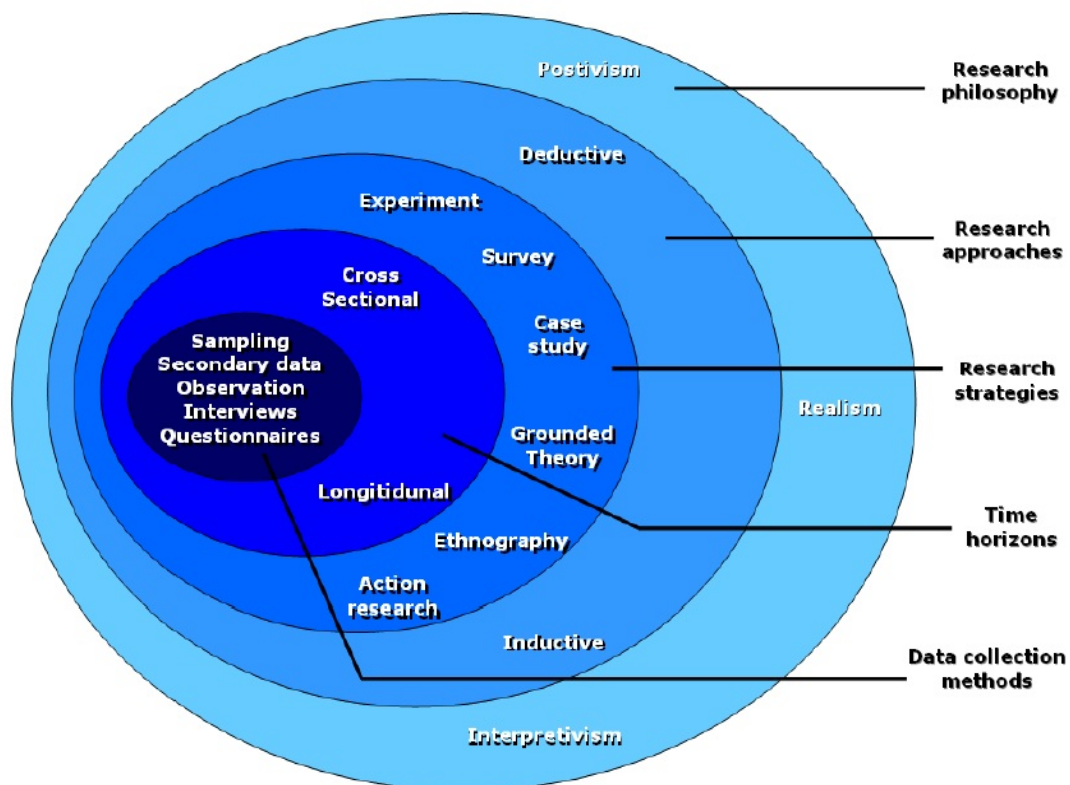


Figure 10: The Research Process "Onion" Source: Saunders et al, (2003)

3.2. Research Philosophy:

There are two main philosophies in research namely; positivism and phenomenology (Collins and Hussey, 2009). The positivistic philosophy is based on the fact that social reality is objective and singular, apart from the researcher. In the contrary, the phenomenological philosophy is based on the assumption that reality is subjective and multiple as seen by the participants hence the outcomes are subjective based on human minds. Moustakas, (1994) states that the goal of phenomenological research is to arrive at the essence of lived experience of a phenomenon.

This research assumes a phenomenological interpretive philosophy within a real life context. As stated by Garry, (2004) this philosophy focuses on understanding phenomenon and revisiting immediate experiences of them in order that new meanings may emerge. The researcher identifies the link between understanding and action as an indirect one mediated through people's thinking, values and relationships with understanding helping in judgment to arrive at a better, choice of action (Fisher, 2010).

3.3. Research Approach:

There are two basic types of research approaches namely; qualitative and quantitative approach (Collins and Hussey, 2009). The key difference between the two is the means of data collection as well as how it is analyzed.

Quantitative research collects and analyzes numerical data; concentrates on measuring the scale, range, frequency of the phenomena. It is highly structured and results are presented statistically (Nevile, 2007). On the other hand, qualitative research is more subjective as it reflects on less tangible aspects (Nevile, 2007). It draws on individual's experience of events, processes and systems (McMillan and Weyers, 2007) thus enabling the Researcher to obtain complex contextual descriptions, beliefs or opinions of how respondents experience or interact with a phenomenon under study. A qualitative study helps to answer questions on "when, why and how" (Attride-Stirling, 2001).

The study used a blended approach using both qualitative and quantitative methods which greatly helped the Researcher to deeply understand and interpret dynamics and reality within

the phenomenon under study. Collected qualitative data provided informants' perceptions and opinions regarding the impact of e-business in retail supply chain operations. Data collected through questionnaires went through a very basic statistical analysis (descriptive focus) and hence providing a quantitative perspective to the trend being studied.

3.4. Research Strategy:

Robson, (2002) defines a case study as a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. Morris and Wood, (1991), state that this strategy helps the Researcher to gain a rich understanding of the context of the study and processes being undertaken like in this evaluating retail supply chain organisational and managerial processes.

The research strategy employed for achieving the objectives of the study is a case study.

As stated by Moustakas, (1994), the goal of phenomenological research is to arrive at the essence of lived experience of a phenomenon hence interacting with the individual who experienced the phenomenon provides a strong basis for building a case. As stated by Hussey and Hussey, (1997), a case study research takes place in a natural setting where perceptions and opinions are expressed based on respondent's real life experience with a particular phenomenon. The study involved three retail chain stores (multiple case study) with operations in Malawi to allow for cross case analysis. Data was collected from the retail chain stores, customers, suppliers and other stakeholders. There was need for an in-depth understanding of the impact of e-business in retail supply chain management processes and operations. A case study helps to gain a rich understanding of the research context or contemporary set of events (Yin, 1994).

3.5. Participants Population and Sampling:

McMillan and Weyers, (2007) define a population as the whole group of people or items that might participate in a study. A sample is a group or subset of a population that represent the main interest of the study (Collins and Hussey, 2003). The sample from a population is where the study is carried out to discover facts that are generally acceptable in the view of the sample

but could be related to the population. **Generally the objectives and nature of study determines the caliber and qualities of the study population and sample to select.**

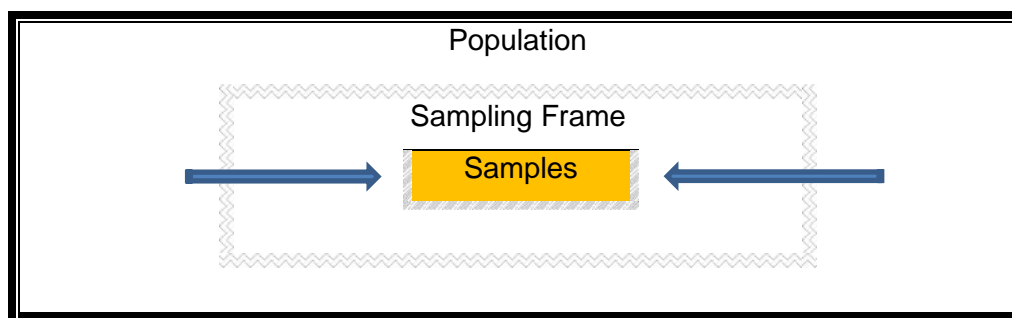


Figure 11: Relationship: Population, Sampling Frame and Sample: Adopted from David Gray (2009)

Population for the research comprised of 45 staff from the three case firms (9 senior supply chain managers were reached out through both in-depth unstructured interviews and questionnaires while 36 staff in supply chain and retail operations control and other positions were only completed a questionnaire). Views from 15 other randomly selected stakeholders (customers, suppliers and other members of the supply chain) were obtained through in-depth unstructured interviews making a total of 60 targeted participants. This population was selected with the aim of gathering a diverse pool of unbiased views from varying respondents regarding state of operations in the Malawi retail supply chain in relation to e-business development.

The study used random sampling to identify informants. A sample is an element selected to represent the population. Non probability purposive sampling was used to ensure the study provides precise information needed to answer research questions. Participants were targeted to achieve likelihood of them providing the required information hence assurance of rich and high quality data. The Researcher was challenged with time constraints and as such targeted specific respondents aiming for the likelihood of achieving a reasonable response rate. However as highlighted by Gray, (2009), care was taken not to omit vital characteristics or submit to subconscious bias in selecting the sample.

3.6. Data Sources and Collection Techniques:

Data collection techniques deal with ways and means used to collect research data from respondents. The research used both qualitative and quantitative data collected. Primary data was collected through interviews and questionnaire completed by participants while secondary data was collected from journals, internet sites, academic publications and books. In analysing the data, the Researcher was drawn to make conclusions, recommendations and identify areas requiring further research.

3.6.1. Questionnaire:

Self-administered questionnaires were distributed to targeted participants identified in the research sample. Nevile, (2007) points out that questionnaires facilitate standard data collection by asking a sample of the population to respond to the same questions hence maintaining consistency. 3 questionnaires targeting senior managers and 12 targeting operations staff were sent to each case firm requesting for voluntary participation. In total 45 questionnaires were sent out. Follow up messages were sent after two weeks.

3.6.2. Interviews:

Other than the case study firms, the Researcher interviewed a Business Analysis Specialist from the Malawi Confederation of Chambers of Commerce and Industry (MCCCI) with the aim of obtaining specialist opinion from a national business advisory organisation. The interview involved two officials whose responses have been accordingly incorporated into the data analysis. This was a semi structured interview and hence as stipulated by Saunders et al, (2009) a list of themes and questions to be covered was prepared in advance to give the participants opportunity to develop their own explanations and views while accommodating a considerable level of flexibility and depth. The Researcher used both open ended and closed questions in order to get more information on the topic under study. Other interviews sessions were conducted with one Manager from each of the case firms and randomly selected customers picked from the shop floors. The interview for Managers and customers was

unstructured but with a carefully thought through approach to ensure extensive coverage of issues in line with the main question of the study.

3.6.3. Literature Review:

Secondary research data was collected through review of case firm's websites, journals, books, conference proceedings, newspapers and academic resources results of which have been articulated in the literature review section above. The only limitation was lack of sufficient Malawi specific academic publications or professional journals that are directly relevant to the subject under study. The literature that was commonly found was covering generic information and communication technology issues not e-business, adoption realities and its impact on supply chains in Malawi.

3.7. Data Analysis:

Two data analysis methods were used – these are content analysis (examination of human communications, for judgment and obtaining meaning) for the qualitative portion out of interviews and descriptive statistics for the quantitative portion drawn from questionnaires. Raw data from questionnaires was reviewed for completeness. Repeated themes emerging from interviews were identified for appropriate grouping into related patterns, themes, categories and study questions. Data was qualitatively and quantitatively analyzed using Ms. excel descriptive statistics feature to build appropriate pie charts, graphs and analysis tables. During interviews, the Researcher had an opportunity to further probe the participants where their responses were not clear or put discussion into perspective where information being given was less relevant to the study.

3.8. Variability and Reliability:

In ensuring the integrity of collected data, the data collection tools (questionnaires and interview guide) were tested on a minimum of 8 people before full use in the research work. Weak and ambiguous questions were rephrased to improve user friendliness, comprehensiveness and

clarity. Participants were encouraged to freely express their views and insights without being influenced or directed in any way. According to Mugenda and Mugenda, (1999), reliability is defined as the degree to which a research instrument can yield consistent results after repeated usage. As stated by Gray (2009), reliability of the study will be enhanced through the process of triangulation by using multiple methods of data collection in this case qualitative and quantitative methods and cross-checking the information gathered. Secondly, the data collection tools were shared with the Supervisor to assess the validity and relevance of the framed questions in alignment with the study objectives which led to some level of revisions and changes.

3.9. Ethical Considerations:

In compliance with ethical requirements, prior access approval was sought from the three retail firms under study. The research purpose was clearly explained to respondents in seeking their voluntary participation. There were occasions in which people that were not comfortable to participate or continue taking part were accordingly excused. Confidentiality, respondent anonymity, privacy and personal respect including all aspects of research information non-disclosure were adhered to forming a strong basis for trust between the Researcher and the respondents. This created a collaborative task execution environment.

3.10. Time Horizon:

This was a cross sectional case study. Data collection was done simultaneously within a fixed timeline from multiple sources. According to Nevile, (2007) different organizations or groups of people are involved at the same time to look at similarities or differences between them or variables under research like in this case the three case firms and all the participants. Yin, (1994) states that cross sectional studies are appropriate when a Researcher is challenged with resource and time limitations. Alternatively a longitudinal study could be adopted however, a longitudinal study covers a lengthy period with repetitive observations, data collection and evaluation requiring more time and financial resources hence not appropriate for this study.

3.11. Dissemination of Research Findings:

Summary of study findings are orally presented to a panel of tutors and audience of students. Standard practice requires that prior clearance be obtained from case firms for dissemination of study findings beyond purposes of satisfying academic requirements. Presentations to supply chain executives, procurement and information systems management professionals may be considered based on need subject to obtaining prior case firm clearance. The Researcher believes that findings of the study will help retail supply chain executives and sector stakeholders appreciate the role of e-business in retail supply chains and inform strategic perspective and technological investment decisions. Chopra and Van Mieghem, (2000) emphasize that companies must fully understand how e-business affects their revenues and supply chain operations and associated costs as well supplier and customer relationships.

3.12. Chapter Summary:

Presented in this chapter is the research methodology that was adopted for the study. Highlights have also be made on the steps that were taken to ensure collected data helps to answer the research question and that all research ethical requirements were complied with throughout the process. The next chapter presents summary of research findings and analysis to inform conclusions and recommendations.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1. Introduction:

This chapter presents the results of the data collection through questionnaires and interviews that was conducted. The analysis used a combination of qualitative and quantitative methods using descriptive statistics to provide graphical picture of response summaries and content analysis in consolidating participant's views and opinions. *The Heinemann Macmillan dictionary defines evaluation as the process of thinking carefully about something before making a judgement about its value, importance, or quality. In some way, evaluation focuses on making a determination of the effectiveness or usefulness of something in this study "e-business".*

4.2. Background Details:

45 questionnaires were distributed to retail firms under study specifically to selected key managers and operations staff. Unstructured interview sessions were also held with senior managers, customers and suppliers for the case retail chain stores and a structured interview with two business analysts from the Malawi Confederation of Chambers of Commerce and Industry (MCCCI). The questionnaire response demographics are presented in the table below:

Respondent Category	Questionnaires Sent Out	Completed and Returned Questionnaires	Questionnaires not Completed	Response Rate by Percentage
Managers	9	7	2	77%
Staff	36	23	13	64%
Overall Total	45	30	15	67%

Figure 12: Questionnaire Response Analysis (Source – Researcher Construct – 2015)

The Researcher believes that a response rate of 67 percent is considered fair and reasonable on the basis of this being an academic study that had targeted specific class of respondents. Despite following up on the non-responding participants, no further response was received

beyond the initial 30. As such it was decided that data analysis continue based on the responses received through questionnaires and supported with that collected through interviews.

4.3. Presentation and Analysis of Research Data:

Simon (2011) defined data analysis as the process of analysing research data in order to make meaning of it. The Researcher examined retail operations, processes and related dynamics drawing from various data sources to determine the level of e-business adoption and its impact in retail supply chain management. By adopting a multiple case approach, the Researcher had an opportunity to deeply understand, compare and contrast different firm's experiences and participant's views regarding e-business in retail supply chains. Responses were based on the Respondent's experience in line with individual firms' context and technology capabilities.

The following subsections provide details and discussion of study findings and relate the same to dynamics and implications to supply chain operations. Presentation starts with questionnaire response statistics through to data analysis pointing out similarities and variations segmented into key thematic areas.

4.4. Analysis and Discussion of Study Findings:

Descriptive statistical analysis was done using basic Ms. Excel to provide summary insights of the collected data and reflection of the state of technology and e-business development in the study context. Graphical presentation is made through graphs and pie charts incorporated in each subsection or thematic area as reported below.

4.4.1. General Technology Adoption Trend:

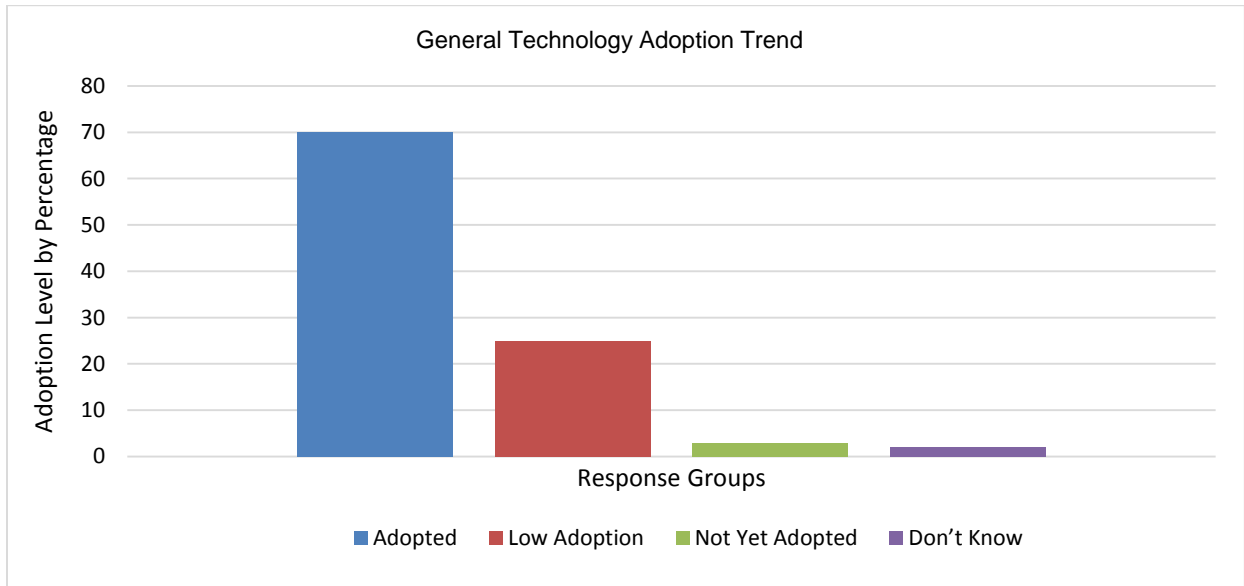


Figure 13: General Technology Adoption Trend Chart (Source – Researcher Construct – 2015)

Respondents were asked to identify if their firm has adopted information communication technology (ICT) and how they are utilizing it as a structure that supports e-business adoption to improve business practices. All the three case firms have adopted ICT and use the internet as reflected by the 70 percent of respondents who said yes to this question. This is supported by findings of the study conducted by Stoyanov, (2012) which asserted that internet technology is a critical necessity as it contributes to invention of tools that can be utilized by practitioners to bring improvements in certain primary supply chain and communication practices. Respondents highlighted electronic mailing (e-mail) as extensively being used for both internal and external communications.

25 percent represents portion that is taking initial or low profile ICT adoption steps and making sluggish progress in changing the technological and organizational structure.

As noted in the introduction, Malawi’s technology adoption and e-readiness is in the infancy stage. It was noted that even though all the three firms have adopted technology in their business operations, ICT utilization in supply chain management is only in a selected few areas such as materials requirement planning, distribution planning, inventory tracking and real time billing through point of sale facility utilization and electronic funds transfer for bills payment in

collaboration with the country’s commercial banks. Online banking helps the retail firms to easily monitor financial transactions with improved access to bank account details hence improved cash flow management. Secondly, respondents strongly felt that online funds transfer increases fiscal security as physical exchange of cash during business transactions is greatly reduced.

The adoption trend revealed that no progress or very little if any has been made in customer relationship management (CRM), electronic procurement (e-procurement), electronic (online) sales and marketing and integrated website operations through transaction portals. The case firms have websites, but however only one firm makes weekly updates with very limited provision for interactive customer interaction or engagement to allow on-line shopping, exchanges or online customer data profiling and business intelligence.

4.4.2. E-Business Applications or Technologies Usage:

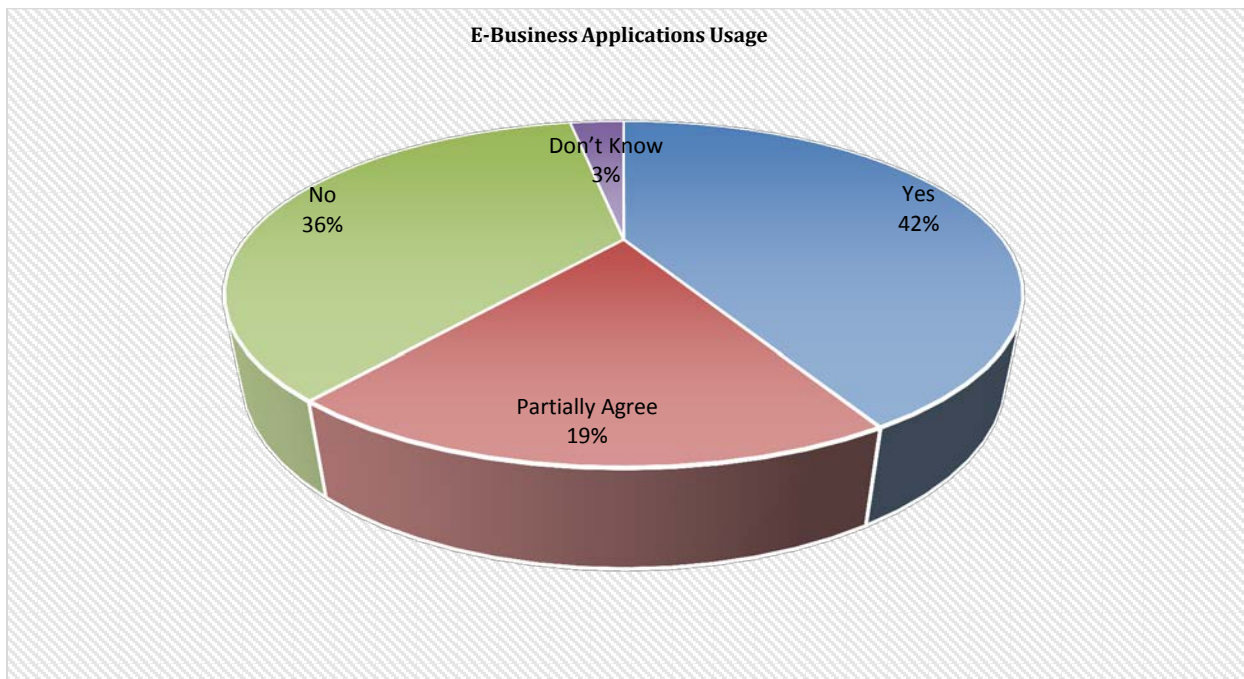


Figure 14: E-Business Applications or Technologies Usage Chart: Source – Researcher Construct – 2015)

In this element, respondents were asked to identify specific e-business applications or technologies being utilized within their supply chain context. 42 percent of the respondents

confirmed using e-business to create, deliver and capture value as well as searching for new market opportunities and means to satisfy customer needs. Those that said yes, are in the phase of translating innovative ideas into action through inventory control, supply chain planning, logistics management and payment systems. In the strategy development stage, retail firms are exploring on means for transforming their engagement with customers and suppliers to come up with innovations for differentiated product delivery, cost reduction, incentives, lock ins and introduction of exciting and attractive revenue models and online value proposition.

The element of business intelligence to understand market conditions, customer shopping trends, tastes and decision support to facilitate transition from legacy systems to new electronic based system is not progressing well as seen through the 36 percent that indicated they are currently not using these e-business applications and 19 percent which is neutral in their perspective.

Responses revealed that some critical process aspects are not receiving due attention that is expected and these are communications, and as highlighted above customer relationship management, marketing and sales promotion as well as e-procurement and information sharing. Respondents felt that by not utilizing e-procurement fully the retail firms are missing out an opportunity to negotiate with a wider range of suppliers across the globe as opposed to the traditional form of manual procurement with only a limited number of previously known suppliers. This opportunity could lead to better deals, obtaining high quality at reduced cost.

Based on the wide spread range of responses in this element, it was noted that there is no aspect dominating the element. The firms are more inward looking in terms of focus as aspects that deal with external integration and information sharing scored very lowly. ***None of the three case firms has ventured into online retailing, e-procurement and e-customer relationship management.***

The interviewed managers said that inability to fully utilize e-business applications is a result of lack of deliberately formulated e-business strategy. E-business applications are currently utilized under conditions of emergent strategies due to the firms ad-hoc response to changes in business practices as a result of technological developments within the operating context. It was noted that if retail firms are to be effective in using technology and e-business applications, a deliberately developed e-business strategy is required.

4.4.3. Drivers for E-Business Adoption in Retail Supply Chain Operations:

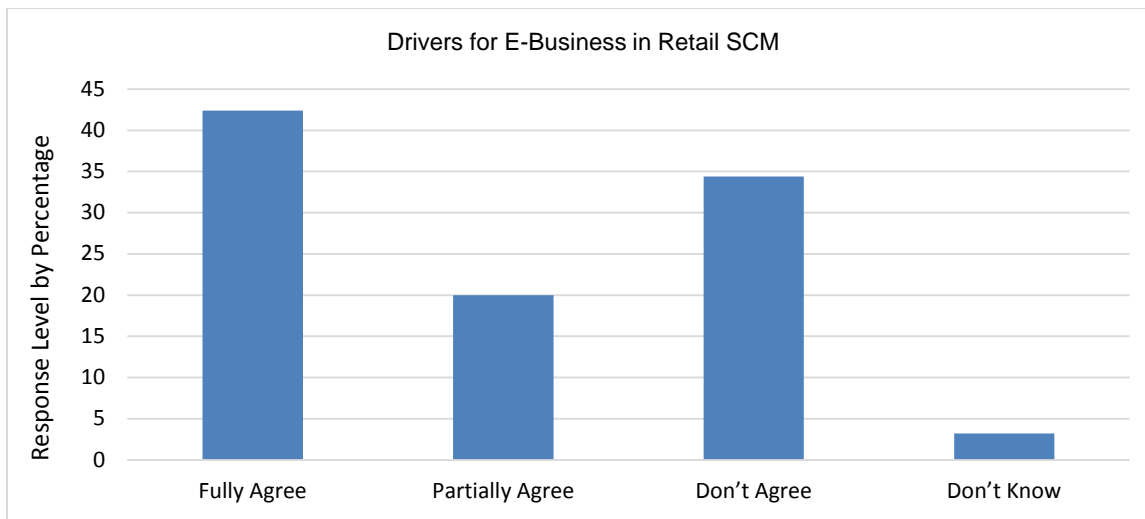


Figure 15: Drivers for E-Business Adoption in Retail Supply Chain Operations Chart: (Source – Researcher – 2015)

43 percent of the respondents agreed that increased ability to compete, customer focus, responding to technology change, pressure to reduce retail supply chain costs and strategic leadership, drive the agenda for e-business adoption and revitalization of retail supply chain management. Surprisingly, 34 percent of the respondents did not agree to this thinking and view e-business adoption as extravagance in business and that only firms with excess budget resources invest in e-business technology. They did not see visible or potential benefit of e-business to drive adoption.

Some of the retail operations staff that were interviewed were of the opinion that e-business adoption is highly complex, tough, and not easy to implement. The Researcher noted that this thinking results in lack of interest in moving the e-business agenda in the retail sector.

20 percent partially agreed, due to the fact that they are yet to complete an observation cycle in which analysis is focusing on appreciation of the differences between brick and mortar and click and order or click and collect business models or systems and their respective motivations.

The range of variance in responses reveal that firms are not sensitive to emerging forces driving change in the business environment, or it could be an issue of natural resistance or deliberate disregard of the trend which unfortunately leads to loss of opportunity to sustain relevance in the market place and ensure sustainable supply chain operations. The development is contrary to establishments noted in the literature review, that highlighted that by positively responding to change businesses strengthen their relationship with suppliers and customers for better performance and improving general business practices or supply chain operations.

Respondents highlighted the need for retail senior management to beginning viewing e-business enabled operations as a supplement to the traditional business model, in a way allowing increased adoption pursuit while not completely abandoning the brick and mortar model as it forms a strong brand identity and source of motivation for customer loyalty.

4.4.4. Current Cross-Organization Acceptance Levels for E-Business Utilization:

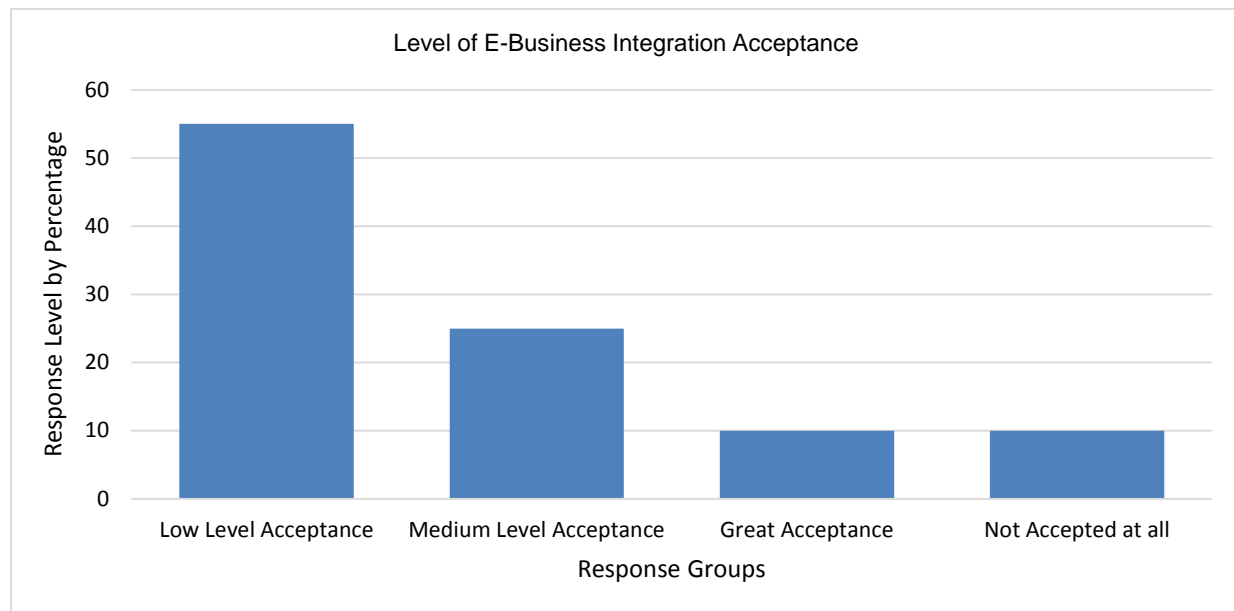


Figure 16: Current Cross-Organization Acceptance Levels for E-Business Utilization Chart: (Source – Researcher Construct – 2015)

Respondents were asked to assess the level of acceptance and usage of e-business applications or technologies by their customers, suppliers and members of the retail supply

chain. 55 percent of the respondents said that e-business acceptance or integration is very low while 25 percent indicated medium acceptance. Respondents in the low acceptance range are in the exploratory phase utilizing knowledge to plan adoption initiatives in phases. Respondents talked about taking a cautious approach as part of e-business adoption risk mitigation. Only 10 percent have experienced great acceptance while 10 percent said they are currently struggling as their partners or stakeholders are not accepting any change or initiatives leading towards adoption or utilization of e-business applications.

Retail e-business success is contingent on mass participation of consumers as well as all supply chain partners and players. The current trend indicates that there is more work, related to e-business awareness through increasing engagement and initiating exploratory discussions within the business sector and ignite the firm’s motivations and desire for change. Interviewees said that the benefits of e-business adoption in retail supply chain management have not been highlighted or discussed thoroughly to demonstrate the potential value it brings in improving performance through support to the corporate and business strategies. **Systems incompatibility and interoperability challenges were highlighted as key challenges slowing down acceptance and external integration.**

4.4.5. Level of E-Business Internal and External Integration:

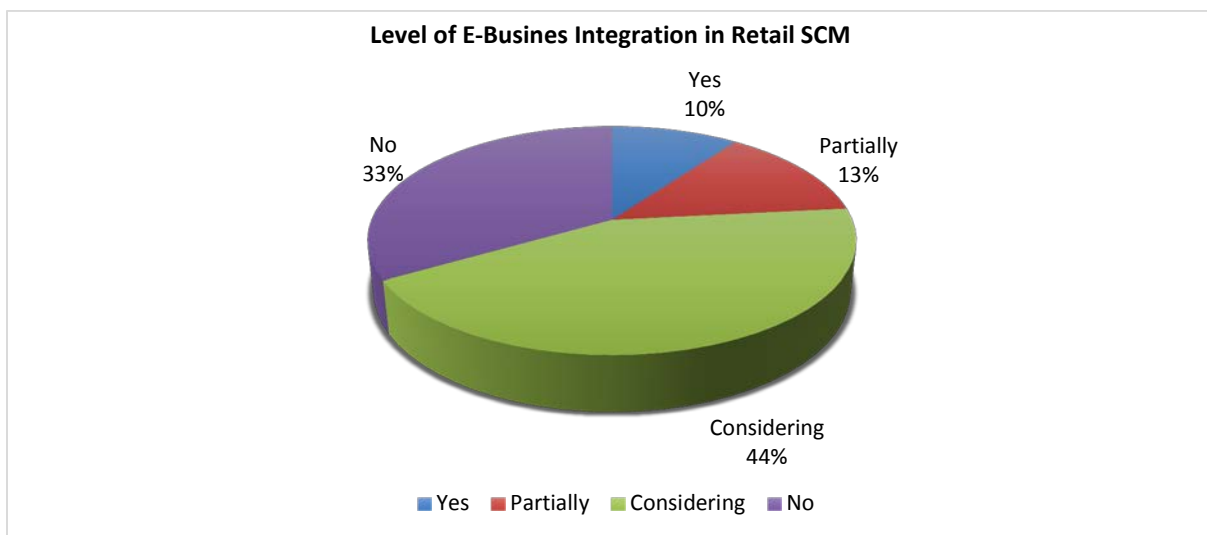


Figure 17: Level of E-Business Internal and External Integration Chart: (Source – Researcher Construct – 2015)

The Researcher wanted to know if the case firm's supply chain operations are electronically integrated with those of their suppliers, customers or other supply chain players. Responses received in this element are shocking but action provoking at the same time as 33 percent respondents indicated there is no cross organization integration within the retail supply chain. This is contrary to outcomes of the study by Jakate, (2007) which stated that to be effective and efficient, the entire supply chain must be integrated. However this study's finding is not surprising as it is supported by Woerndl, (2008) whose study found that most retailers in developing economies are not willing to integrate supply chain operations hence not ready for e-business.

44 percent of the respondents said they are in the e-business integration exploration or consideration phase. Managers expressed optimistic of fruitful outcomes of consultative discussions both within the firm and across the supply chain partners. One of the interviewed managers highlighted that explorations will extend to aspects of cost of investment and anticipated benefits that may be realized if supply chain processes are electronically linked between suppliers, 3PL service provides and customers. The manager briefly touched on potential challenges and risk that comes about with external integration and that risk mitigation measures must be in place as adoption options are being explored.

13 percent indicated partial integration. 10 percent have integrated their operations with external stakeholders and are enjoying benefits of full systems integration through increased information sharing, collaborative planning, and timely response to customer needs and shared cost reduction benefits as well as coordinated supply chain risk mitigation ventures.

Respondents highlighted differences in operating systems and organizational technology adoption capability as some of the challenges slowing down cross organization technology systems integration. Retail supply chain leaders must be encouraged to positively look at integration as a building block that gets individual retail firms connected to communities that organize with the customer in focus hence unlocking potential cost reduction through the entire supply chain performance synergies.

4.4.6. Impact of E-Business Adoption and Implementation:

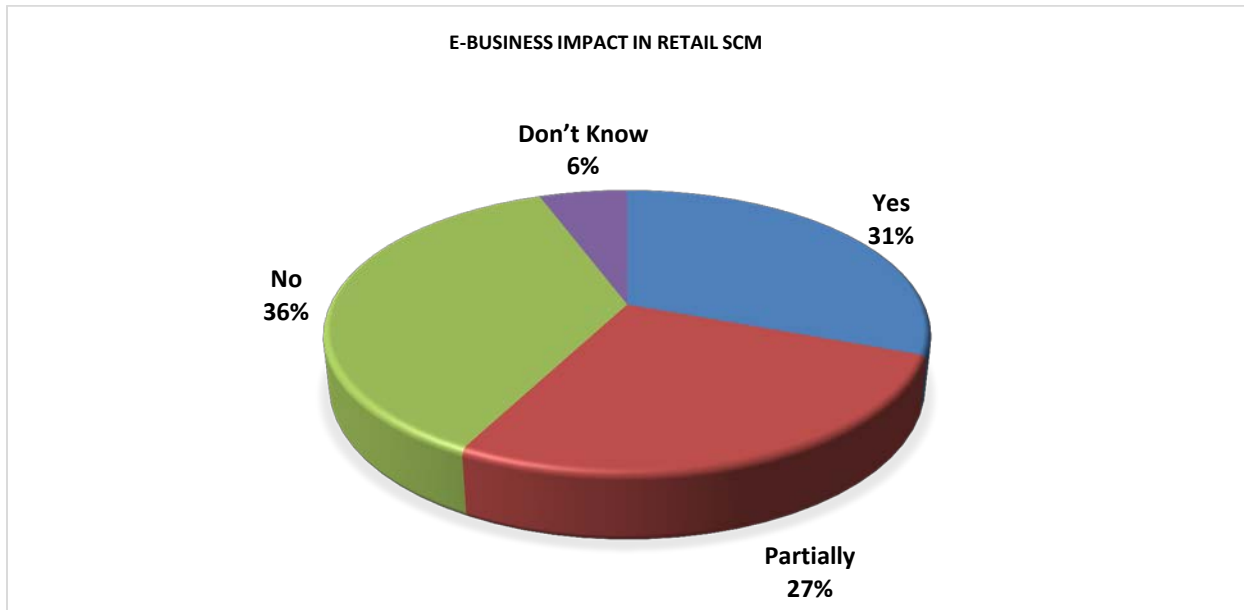


Figure 18: Impact of E-Business Adoption and Implementation Chart: (Source – Researcher Construct – 2015)

31 percent of the respondents agreed that e-business brings about positive supply chain performance improvements. They indicated aspects like faster payment processing which as highlighted in the literature review facilitates better cash flow management and capital utilization within the supply chain for increased profitability. Point of sale (POS) was mentioned as a new e-business central system for synchronization of inventory, sales and stock replenishment capabilities that is effectively being utilized in retail. Similarly, Fischer, (1997) emphasized that point of sale (POS) scanners and electronic data interchange (EDI) allow companies to capture sales and inventory movements in real time fashion for improved decision making. However, respondents noted that this stock turnover information flow is happening within the firm decision framework as the systems are currently not externally integrated with suppliers and 3PL service providers or manufacturers. This is asserted by Awad and Nassar, (2010) that systems interoperability difficulties affect integration efforts in business environments.

Another positive area that was highlighted is ability to buy from global low cost sources which contributes to cost reduction and access to better quality products. Additionally, one of the interviewed managers highlighted theft prevention, in the sense that warehouses and shop

floors theft or pilferage has been significantly reduced through use of digital remote product identification and item location tracking scanners that are also connected to the inventory, billing and digitally closed-circuit televisions (CCTV).

It is surprising to note that 36 percent did not agree that e-business brings about positive impacts in improving supply chain performance. 27 percent partially agreed and indicated they are still in the exploratory phase analyzing changing trends and learning from other organization's experience. Taking an exploratory approach in preparing for changes in operations is supported by Pfitscher and Wei, 2005, who encouraged supply chain managers to seriously evaluate supply chain operations in search for opportunities for continuous improvement (efficiency and effectiveness). It appeared that due to the low level utilization of e-business applications as outlined above, there is currently no visible changes in sales, general retail operations and supply chain operations hence both the firms, customers and other stakeholders had only few e-business benefits or impact to talk about. **The retail firms are not using social media tools (Facebook, Twitter, WhatsApp, LinkedIn, YouTube) for marketing, sales promotion, customer connection and liaison.**

Those that did not agree or partially agreed indicated that they don't see any collaborative planning or increased information sharing among retail supply chain partners, no trace of products coming faster to the market, organizations still keep information or supply chain data in locked cabinets within the four corners of their entity and strictly protecting it from access by other players. There is lack of trust amidst players. Respondents believed that customer shopping experience has not become convenient to the customer due to e-business adoption nor could any sort of increase in sales be attributed to e-business adoption. Respondents viewed retail sales increase as only coming about due to increased customer needs due to changing family and national demographics. Customers said there is no sign of innovative undertakings which the retail firms have introduced to increase customer centered business intelligence, they said, there is lack of visible attributes of customer relations management modeled through e-business marketing applications.

4.4.7. E-Business Adoption and Implementation Challenges:



Figure 19: E-Business Adoption and Implementation Challenges Chart: (Source – Researcher Construct – 2015)

60 percent of the respondents strongly agreed that e-business adoption brings positive impact in supply chain management, but they however noted that it comes along with challenges. The respondents identified high cost of equipment (hardware and software), insufficient funding, poor technology infrastructure and lack of visible benefit to customers as key challenges within the Malawi context. This was not surprising as in their study Roger et al, (2002) agreed that the cost for e-business infrastructure set up and maintenance is always high. Managers expressed concern in regard to lack of critical customer and supply chain partners mass that can easily appreciate e-business as having a significant impact on easy attainment of return on investment (ROI) or quick hit on investment payback. The Researcher noted that no extensive cost benefit analysis has been undertaken. **Shopping is restricted to physical floor shops only accessible at set hours of the day say 8am to 6pm, no online sales.** There was also mention of lack of legal and regulatory framework for the firm and customer data security as current systems are not configured with high level firewall security.

Poor internet connectivity featured highly and it was surprising that despite the internet service not being good, connection or monthly subscription rates are exorbitantly high and affecting e-business critical mass accumulation. This is not surprising as Andam, (2003) in his study identified high cost of computers and expensive internet rates as factors contributing to slow technology and e-business adoption in business environments. It was mentioned that some managers are not supportive of technology based initiatives as they are threatened that computer competent young people will begin to lead such projects and thereby make the old time leaders or managers irrelevant. Youthful respondents highlighted the need for change of mind set by the elderly managers so that they begin to view e-business applications and technology utilization as a source of value in business performance.

Respondents felt strongly that the frequent power blackouts experienced in the country significantly affect internet service provider (ISP) servers and computer operations contributing to poor internet connection. Interviewed customers expressed concern to the fact that effective use of electronic equipment largely depends on consistent supply of electricity. Unless these challenges are addressed, they will continue to overshadow the potential benefits of e-business adoption.

27 percent of respondents were neutral as they partially agreed that the cited challenges have significant effect on e-business supply chain operations. They believe that the issue of security fears does not hold as in the history of the country, no case of online hacking or fraud has ever been experienced or reported to have gone through the courts or legal system. These respondents were of the view that the issue of shortage of skilled ICT personnel to support e-business is no longer an issue as universities curriculums both private and public have incorporated ICT studies and yearly graduates are now increasingly being available for practice and available to address the short supply noted in the previous years. In as much as this could be true, there is need also for continuous professional training and certification to keep the experts updated of the constant technology changes in order to carry out their work better.

4.5. Chapter Summary:

This chapter covered analysis and discussion of study findings based on respondents' views and perceptions about the impact of e-business in supply chain management. Findings varied from unexpected hence surprising to somewhat expected. Sometimes things are taken for

granted as if development applies to all in the same way, but this study has shown that the issue of e-business adoption and utilization is not a one size fits all, it's all subject to prevailing operating conditions, the firm's capabilities, country's technology infrastructure, e-readiness, the policy framework and individual company's management teams capacity to lead change initiatives.

The following chapter concludes the study by summarizing key findings, discusses study constraints and limitations, study recommendations and finally identifies areas for consideration in future research.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS:

5.1. Introduction:

The study revealed that the rate of e-business adoption in the Malawi retail supply chain is at a very infant stage with technology utilization centered on individual firm's operational needs. Minimal electronic integration exists among the retail supply chain players hence minimal realization of e-business adoption benefits. If this were to happen, substantial systems and process redesign will be required leading to increased customer focus and better service delivery. Investment in technology infrastructure and human capital development must be prioritized which includes but not limited to acquisition of new hardware and software to improve internet connectivity and performance as well as staff training. Process and systems redesign is a strategic requirement. Lobbying for policy change and advocacy must be prioritized for positive transformation of the operating environment (covering aspects of customer data privacy, protection and security of online transactions). It was noted that retail supply chain transformation is an undertaking that requires collaborative effort, inter-organizational planning, and government commitment. A structured approach to change and set aside of financial resources to fund the process requires management support.

5.2. Relating Study Findings to Literature Review:

E-Business adoption and utilization differs greatly between developing countries and developed countries as well as sector by sector. Technology development context, infrastructure condition, e-readiness, cultural, social economic factors, and education levels in the country are critical determinants of the difference. Government's commitment in supporting e-business adoption and utilization through policy development and strengthening of the regulatory framework and collaboration with the private sector and other stakeholders is the recipe for success. Country economic and technology maturity facilitates the shift from traditional analogue, brick and mortar processes to online, digital or electronically enabled supply chain and business operations.

Study findings revealed that Malawi's e-readiness and adoption levels are still low and there is need to identify means through which the private sector, government, the academia, business

analysts and professional bodies can collaborate to bring change to the strategic country context to turn Malawi into a fully-fledged digital economy.

5.3. Limitations and Constraints of the Study:

The main limitations and constraints of the study were:

- **Limited coverage:** Despite case firms having shops nationwide, the research was limited to Blantyre and Lilongwe cities. The Researcher was challenged with time and financial resource limitations to allow travel for extensive coverage. The Researcher's experience confirms what Collins and Hussey, (2003) said that qualitative data collection methods are expensive and time consuming.
- **Unfamiliarity with the e-business concept:** The concept of e-business and let alone professional supply chain management is a fairly new and developing concept in Malawian industries. Participant responses were somehow affected by their lack of familiarity with the concept of e-business.
- **Lack of previous research, studies or publications on the subject:** It was difficult to find Malawi specific literature on e-business and supply chain management. Over 95 percent of the literature reviewed was based on e-business adoption experiences from other countries around the world. This created a challenge in the aspect of reflecting on the literature review in view of actual cases out of the Malawian context. However, this challenge created an opportunity to explore things that have worked elsewhere in exploring potential actions and recommend e-business strategies that can be considered for adoption in the Malawi retail sector for improved supply chain performance.

5.4. Conclusion:

The purpose of the study was to evaluate the impact of e-business in Malawi retail supply chain management. As highlighted above, the study findings have been viewed from three aspects:

Firstly, regarding technology readiness and infrastructure development. Web based competition has transformed how firms structure their business models to deliver value to their customers. However, to compete effectively in the digital economy, the environment must be conducive for flexible technology usage. ***The state of technology development in Malawi is not yet at a level that allows fluid development and use of electronic business in retail supply chain management.*** The study identified issues such as poor internet connectivity, high installation and commissioning cost including expensive prices for mobile digital gadgets or equipment and high internet premiums or monthly subscription rates. Frequent power blackouts was also identified as a big challenge affecting operations execution. These were identified as key hindrances for effective technology utilization in the local business context.

The second aspect is on e-business applications adoption. ***The study established that the low technology adoption rate noted above, has resulted in low utilization of e-business applications hence very little impact on retail supply chain management.*** It was noted that despite the respondents being aware of e-business applications that can be utilized to improve customer service delivery, procurement, logistics management, supplier and customer relationship management and marketing, very few of these applications are being utilized in the business models adopted by the three case firms. There is a lot of untapped potential and electronic tools or utilities that have not been explored or been used to help build the firms competitive capabilities hence not realizing full benefits of e-business adoption.

Third and last, areas that require consultative effort from all stakeholders in order to improve the technology environment and attain sustainable e-business utilization. Issues that were beyond the case firm's business strategy scope were related to policy development, regulations on data and personal data security in an environment of online business. Nothing was discussed about environmental or green issues in consideration of anticipated increase in fuel emissions due to increase in the number of vehicle trips delivering customer goods if online ordering comes into effect. This would need a policy review at a later stage. The other element was about taxation in which if rates applied on mobile digital and ICT gadgets were reduced it would increase access or penetration rate and hence impact e-business critical mass acquisition for retail operations profitability.

As usual business management, benchmarking, pursuing continuous learning and improvement are critical prerequisites for any effort that aims at transforming business operations. Learning

from regional retail chain stores operators from countries like South Africa would provide a better basis or yardstick for strategic change parameters. Retail supply chain management and business operations must undergo radical change including complete digitalization if they are to compete effectively and remain relevant to the today's vibrant market.

5.5. Recommendations:

5.5.1. Advocate for change in the national technology environment for improved capability and increased e-business adoption:

Retail Firms must advocate and lobby for development of policies and regulations that facilitate creation of an e-business conducive business environment. This would provide facilities for legal remedy, strengthen ethical awareness and compliance that promotes trust and stakeholder confidence that their privacy rights have a safeguard.



Figure 20: Illustration of Digital Network Infrastructure required for E-Business: (Source – Internet Technology Images)

Retail sector players must actively participate in government coordinated pre-annual budget consultations to consolidate their voice in lobbying for increase in budget resources allocated for national technology development along with research studies that support or inform national technology development. Issues of bandwidth increase must be pursued and prioritised for better internet connectivity and speed.

The Researcher is very optimistic that once the transformation agenda gets government support with private sector and academia working partnerships in search for solutions, extra ordinary results will be achieved.

5.5.2. Develop an e-business strategy – aligned with the corporate and business Strategies:

Each firm must conduct a business environmental analysis that informs the development of e-business strategy its alignment with the corporate strategy to contribute to attainment of supply chain management goals. Questions on outcomes in terms of improving operational efficiency and effectiveness must be addressed early in the strategy development process by carrying out a cost benefit analysis exercise. Delivering a unique customer service experience is the issue.

A fully fledged and deliberately developed e-business must provide guidance on full utilization of e-business applications. The strategy must be supported by systems with effective information and communication technologies along with innovative organizational procedures that aim at improving service delivery to the customer and continued supply of goods on the shop floor. The e-business strategy provides a framework of unique retail supply chain operations with the entity's differentiators or distinguishing elements to increase competitive advantage.



Figure 21: Illustration of Shopping Digital Gadgets in an E-Business Environment: (Source – Internet E-Business Images)

A seamless transition must be planned; for introduction of a click and order or click and collect business model as well as e-procurement and collaboration with manufacturers, third party

logistics (3PL) service providers such as courier companies for home deliveries. Means for effective electronic marketing must be identified such as use of social media and viral marketing. Website development, online catalogue and content updating is a critical requirement in an online business model and marketing. This facilitates customer acquisition, retention and raise brand visibility as well as awareness. It is anticipated that the young generation of busy professionals and the elderly or the physically disabled will find online retail sales very interesting and helping in addressing their time and mobility or shopping facilities access challenges.

The strategy must also outline the means by which the retail firms will maintain relevancy through position shift within the supply chain by dealing directly with manufacturers and coordinating direct deliveries to customer sites hence eliminating distribution centers in a way attaining cost reduction. There is also need to establish the value proposition change e-business will bring in terms of customer focus on aspects such as reduced retail prices, shopping convenience and delivery speed. The retail firms must note that management structures, staffing plan and associated workflows and staff assignments based on job capabilities must be reviewed and adjusted accordingly to align with newly adopted business models and ways of doing business.

An information and communication management framework is required to guide information sharing, integration and collaboration with supply chain players and determine what sort of supply chain data must be disposed for access by customers, suppliers, service providers and partners. Critical consideration must be made on partnerships with 3PL service provides such as courier or express pouch services to facilitate delivery of delivery of purchased goods to the customer or alternatively retail firms may consider to adopt a click and collect business model in which customers collect purchased goods at their convenient time from strategically positioned cabinets or lockers in agreed locations or agent stations however the challenge would be on reaching customers in the rural places where the road infrastructure is not good or impassable.

Based on implementation progress, an e-business strategy evaluation must be carried out to measure how the strategy has contributed to sales growth, increased revenue, cost reduction, efficient order processing, marketing, improved customer intelligence, customer service for customer satisfaction as well as relationship management. It is critical to include indicators that

measure improvements in productivity and profitability to highlight on achievement of corporate and business goals. “*What gets measured gets done*”

5.5.3. Institutionalise Change Management within the Operating Environment for Continuous Improvement:

Raise e-business awareness within organizations, customers, business partners and all supply chain stakeholders. This will increase appreciation levels for e-business focusing on its potential to enable companies attain full utilization leading to accessing new markets and customers. Consideration can be made to use business specialist, professional forums, technology fairs, conferences and symposiums. Increased awareness of e-business potential to transform business operations and supply chain management will lead to better perceptions, influence decision making and management commitment to support such strategic change. Increased awareness leads to increased adoption and better realization of potential benefits and improved customer service and value delivery.

5.5.4. Invest in Infrastructure and Human Capital Development:

In order to ease the adoption of e-business in retail business and supply chain operations, firms must be ready to provide sufficient funds in their operations budgets to support acquisition and installation of hardware, operating software, network components, maintenance and full utilisation of the e-business supply chain system.

Additionally websites and other customer interface tools must be continuously updated and equipped with eye-catching graphics and illustrations for ease of attention catch for browsers. All this requires significant funding with potential of benefits that offset the investment cost. The operating software must be equipped with strong firewall protection to prevent exposure to unauthorised system access from hackers, virus attacks, technology terrorism and online theft. A strong backup system must be acquired and put into place as part of risk mitigation and contingency planning in case of system failure.



Figure 22: Illustration of E-Business Operations Platform Requirements: (Source – Internet – E-Business Images)

Secondly based on ICT skill gaps that may be identified, investment must also be considered for staff training to improve skills and capabilities for both technical support (ICT Specialists) and general operators of the various systems for effective operations. Staff training should be supported with a competitive remuneration and retention strategy so that the firms can retain quality staff for improved quality operations flowing down to delivery of superior customer service.

5.6. Areas for consideration in Future Research:

Based on the study findings, constraints and limitations, the Researcher identified the following areas for potential consideration in future research:

Extend the scope of study to include other industry sectors. The subject of e-business is wide and cross cutting, however this study only focused on the retail sector supply chain management and covered three firms only. E-business offers great opportunities for cross industry collaboration leading to accelerated economic growth for countries, social development and business success.

Extending scope of the study to other industries such as banking, manufacturing and public service operations would be more revealing especially on identifying synergy opportunities and cross industry collaboration opportunities.

Secondly, **consideration must be made for a longitudinal study** that can cover a reasonable length of time with repetitive verification of findings to increase the validity, reliability and

generalizability of the findings. Repetitive testing of the findings helps to ascertain the accuracy of the trends and scales with closer and repetitive observation, evaluation, and examination of the phenomenon under study.

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APPENDIXES:

A.1. RESEARCH QUESTIONNAIRE:

PART A: DEFINITION OF KEY TERMS:

E-business (electronic business) is the execution of business transactions over the Internet. These electronic business transactions include buying and selling products, supplies and services; servicing customers; processing payments; managing production control; collaborating with business partners; sharing information; running automated services.

Supply Chain Management is the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities moving raw materials and finished goods from source to the customer. It also includes coordination and collaboration with channel partners, such as suppliers, third party service providers, and customers.

PART B: STUDY QUESTIONS:

Please feel free to provide your honest and frank responses to the questions below.

i. PERSONAL AND COMPANY INFORMATION:

Please tick where appropriate – provide additional details when necessary

(a) What is the name of your company?

--

(b) How many branches do you have in the country?

--

(c) What is your position in the company?

--

(d) For how long have you been working for this company?

Less than a year	
1 – 5 Years	

6 – 10 Years	
More than 10 Years	

(e) Who are your customers?

(f) Who are your major competitors?

i. STUDY SPECIFIC QUESTIONS:

1) Has your company adopted e-business application or technologies?

YES	
NO	

2) If you selected yes to question 1, what e-business applications or technologies has your company adopted?

Technology / Application	Adopted	Low Adoption	Not Yet Adopted	Don't Know
Customer Relationship Management				
Demand Planning and Forecasting				
Materials Requirement Planning				
Electronic Funds Transfer (EFT)				
Supplier Relationship Management				
E-Procurement (on-line Purchasing)				
Transport and Distribution Planning				
Electronic Sales and Marketing				
Product Tracking and Scanning				
Billing and Real-time Sales Management				
Integrated Website (Intranet and Web Portals)				

3) For what purposes does your company use e-business applications or technologies within the supply chain context?

E-Business Usage	Yes	Partially Agree	No	Don't Know
Procurement				
Inventory and Warehouse Control				
Logistics Management (inflow/returns)				
Payments				
Business Intelligence				
Communications and Reporting				
Customer Relationship Management				
Marketing and Sales Promotion				
Information Sharing				

4) When were these e-business applications or technologies introduced in your company?

Year of Introduction	Length of Usage To date

5) In your opinion, what do you think are the main drivers of e-business adoption in supply chain by retail operators?

Driver for E-Business	Fully Agree	Partially Agree	Don't Agree	Don't Know
Increased ability to Compete				
Keep up with Times (internet pressure)				
Pressure from Customers and Suppliers				
Industry or Government Requirements				
Fulfil Business Needs				
Technology Availability				
Funding Availability				
Pressure to reduce costs				
Strategic Direction (leadership)				

6) How would you rate the level of acceptance and usage of these applications or technologies by your customers, suppliers and members of your supply chain?

Level Of Acceptance	Rating
Low Level Acceptance	
Medium Level Acceptance	
Above Medium Acceptance	
Great Acceptance	
Not Accepted at all	

7) What factors do you think contributes to attainment of the level you selected above in question 5?

8) Are your company's supply chain operations integrated electronically with those of your suppliers, customers or other supply chain players?

Category	Yes	Partially	Considering	No
Suppliers				
Customers				
Other Supply Chain Players				

9) If yes could you give examples of electronic systems that are being used to interact with your suppliers, customers and other supply chain players?

10)What impact do these e-business technologies and applications have on your supply chain operations?

Category	Yes	Partially	No	Don't
Faster time to market products				
Convenience to customers and suppliers				
Real time information sharing (speed)				
Reduced Costs				
Improved Competitive Advantage				
Increased Sales				
Collaborative Requirements Planning				
Faster Payment Processing				
Strong Collaboration with partners				
Ability to buy from global low cost sources				

11) What are some of the challenges your company is facing while aiming to adopt or implement e-business applications or technologies?

Challenges Faced	Yes	Partially	No	Don't Know
Security Fears				
Lack of funding to support implementation				
Poor internet or technology infrastructure				
High Cost of equipment				
Shortage of skilled labor (IT support to e-business)				
Legal and Regulatory challenges				
Lack of visible benefit to customers				
Social and Cultural Beliefs (no reality)				
Low level of senior management support				
System incompatibilities with other players				
Business model not suitable for e-business				
Poor internet performance				

12) Given the present scenario based on your responses above and in pursuit to improve the situation, what recommendations would you make?

(End of Questionnaire)

Thank you for taking time to participate in the research and complete the questionnaire.