The Use of e-Technology in Operational Processes of Organisations in Polokwane Municipality

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Abstract: The aim of this paper is to examine how organisations use e-technology in their operational processes to create value. E-technology is defined as the devices, mechanisms or networks such as internet, intranet and/or extranet which are utilised to create, assist, disseminate or facilitate personal, business, organisational and institutional action and information. The study was quantitative in nature. Exploratory and descriptive research was used to outline the use of e-technology in operational processes of organisations. A sample size of 50 businesses was utilised. The theoretical basis was used to develop the questionnaire and a pilot study was also conducted to enhance validity. To ascertain reliability of the research tool, the Cronbach alpha test was utilised. A self-administered questionnaire was utilised to collect data. Data analysis was done using SPSS. The results are a clear explication of the factors influencing the utilisation and impact of e-technology adoption in operational processes of organisations. Recommendations are made to adopt e-technology to enhance effectiveness and efficiency within their operational processes and also enable businesses to attain their organisational goals.

Keywords: E-technology, Operational processes, Performance measurement, Value proposition, Value creation

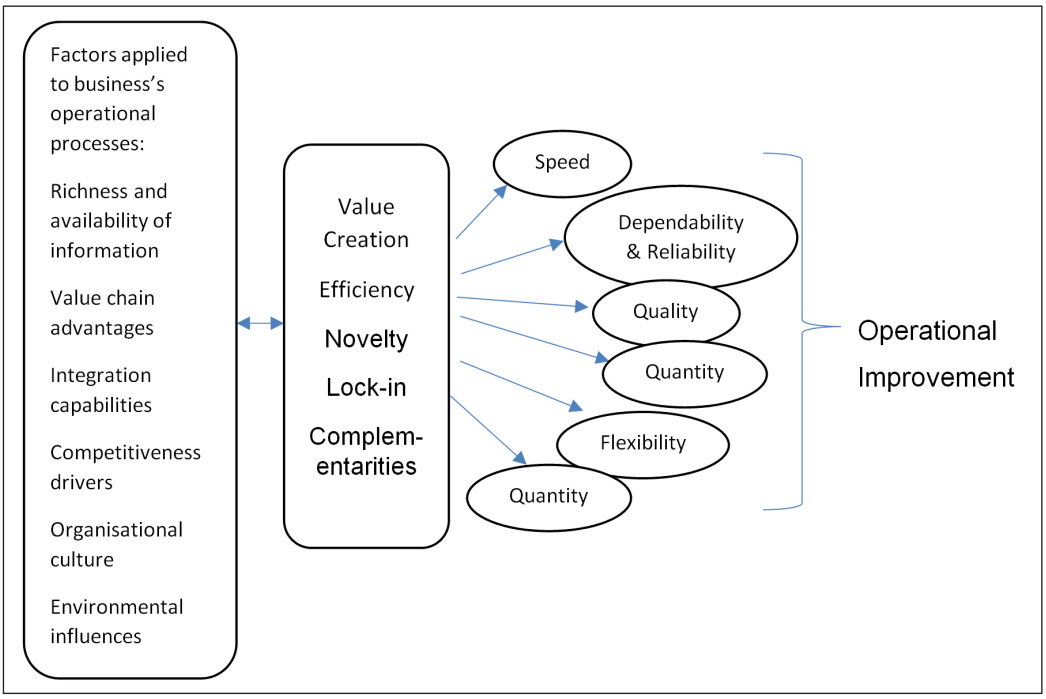
1. Introduction

Operations management is managing the production processes of goods and services delivery (Reid & Sanders, 2011). Not all organisations have a functional department named operations but they all carry out operations functions, because each and every business produces and deliver goods and services to their target market (Greasley, 2009). This study is an attempt to examine how different organisations or businesses in Polokwane municipality (South Africa) make use of e-technology in their operational processes. Operational processes or business processes are to do with functions of the business or organisation. Through these operational processes, organisation(s) creates or delivers the right desired value to their current and potential consumers. Kruger, Ramphal and Maritz (2013) state that this value is the special ingredient of a successful and vibrant organisation. "Recently the use of the internet to conduct transactions or e-commerce has transformed the ways of carrying out operations management" (Greasley, 2009:6).

Greasley (2009) outlined that "the 1970s saw the use of computer in materials requirements planning (MRP) software for inventory control and scheduling. The 1980s saw the emergence of the just-in-time (JIT) philosophy from Japan, which transformed the way business deliver goods and services". The idea of total quality management came as an answer to the need to improve the quality of goods and services. After these ideas, the new concept of supply chain management and business process re-engineering (BPR) emerged in 1990s. Lately, the utilisation of the internet to carry out the day-to-day activities of businesses has changed the way in which operations management is conducted (Greasley, 2009).

Kolarić, Petrović and Radojčić (2011) argue that continuous and permanent development of technology has enhanced novel frontiers and possibilities for businesses. This paper, through empirical research, will determine the way in which e-technology is used in organisations or business operations processes as they try to create value for customers. E-business is defined as novel business or organisational logic that is in the borderless world (Kolarić, Petrović & Radojčić, 2011). "E-business does not only imply the adoption of new technologies. It also implies and requires change of practices in dealing with customers and suppliers, change of the way in which products and services are delivered to buyers, and change in skills of the staff necessary for support of e-business" (Kolarić, Petrović & Radojčić, 2011:32).

Figure 1: Framework For Analysis: The Use of E-Technology to Create Value in Operational Processes



Source: Author's own conception

In the mid-1990s revolution of information and communication technology and the introduction of e-business applications provided an excellent opportunity for companies wishing to facilitate, improve, and even transform their business processes (Matopoulos, Vlachopoulou & Manthou, 2009), however, the problem remains why e-technology is used and how it affects the organisation's operational processes. The sub-problems of the study are: the factors influencing the use of e-technology in operational processes and the impact of e-business adoption on operational processes. Under sub-problem number b, there are several sub-divisions which are the impact of e-technology on coordination, impact of e-technology on internal efficiency and lastly the impact of e-technology on marketing. The purpose of this study was to examine how organisations or businesses use e-technology in their operational processes in order to create value that the business's target market desire. In order to achieve the study, the following objectives for this study been set:

- To examine factors influencing the use of e-technology in operational processes of an organisation.
- To investigate the impact of e-technology adoption on operational processes

2. Theoretical Basis for the Research

The framework for analysis in Figure 1 illustrates factors that influence the use of e-technology in operational processes to create value that will enhance operational improvement.

3. Factors Influencing the Use of e-Technology in Operational Processes of an Organisation

Factors such as relative advantages of e-technology drive organisations to adopt e-technology in their organisation's operational processes. The above discussion will now be used to generate the factors that will influence the adoption of e-technology in operational process. Each factor will be analysed and additional references will be given (Alam, Ali & Jani, 2011). The factors are as follows:

3.1 Richness and Availability of Information

More content and information on products - Organisations are influenced to adopt e-commerce by the fact that it is capable to provide more content to advertise and promote the business (Ndayizigamiye & McArthur, 2012). E-business technologies provide production information and production requirement and real-time information concerning product and

its availability. E-technology ensures accurate transmission of information among the business and its stakeholders (Gunasekaran & Ngai, 2008:160). Tassabehji, Wallace and Cornelius (2007:16) state that e-technology provides easy access of information to the organisation so that it can fully exploit opportunities which come from the ensuing e-environment, such as, enabling organisation to reach large market audiences. Zhuang and Lederer (2006:255) state that e-business technologies ease the exchange of real-time and sharing of information among the business departments and stakeholders.

3.2 Value Chain Advantages

E-technology impacts organisation's execution by distribution channel and new medium of marketing communication (Zhuang & Lederer, 2006:255). The impact of e-technology in an organisation's operational processes, enhance fast distribution and management of inventory and enable cooperation and consolidation between supply chain co-operators (Sanders, 2007:1332).

3.3 Integration Capabilities

E-technology through streamlining and automatizing the labour-intensive procurement routine, it is a potent business instrument that can overturn the purchasing of the organisation (Teo, Lin & Lai, 2009:973).

3.4 Competitiveness Drivers

Organisations adopt e-technology because information technology is an efficient strategic tool used to gain a competitive advantage for an organisation to be more competitive in its industry or environment (Yaboah-Boateng & Essandoh, 2014).

3.4.1 Financial Benefits

E-commerce benefits such as cost saving, efficiency and flexibility are other factors that make organisations adopt e-technology (Alam *et al*., 2011). Factors like economic benefits of e-technology also influence businesses to adopt and make use of e-applications (Yaboah-Boateng & Essandoh, 2014).

3.4.2 Cost Advantages

Organisations adopt e-technology, because of its cost advantages (such as reduced communication and administration costs). Organisations adopt e-commerce as they are driven by its benefits, such as decreased cost of sales (Garg & Choeu, 2015).

3.4.3 New Markets

Organisations are influenced to utilise electronic technology in their organisational processes by the fact that e-technology increase selling opportunities of an organisation (Zhuang & Lederer, 2006).

3.4.4 Effective Market Intelligence

The fact that e-technology enables the collection of high quality customer data to ensure that the organization's product(s) satisfy or exceed the expectations of the organisation's customer and also retain its customers, drive organisations to adopt e-technology (Zhuang & Lederer, 2006).

3.4.5 Process Improvement Requirements

Organisations are driven to utilise e-technology by the fact that e-technology is the enabler of the business's re-engineering of operations processes (Garg & Choeu, 2015).

3.5 Organisational Culture Drivers

The general innovation culture of the organisation as a whole also influences organisations to adopt e-technology in their operational processes (Ndayizigamiye & McArthur, 2012).

3.6 Convenience Capabilities

E-technology's compatibility, its ease of use and its seen usefulness are important factors that lead organisations to adopt e-technology (Ndayizigamiye & McArthur, 2012). Sensed convenience, self-efficacy and internet utilisation are the most critical influencing factors in the adoption processes of e-technology in an organisation. Organisations are also influenced by the benefits proved by e-technology (Soto-Acosta & Meroño-Ceran, 2009).

3.7 Environmental Influences

Businesses adopt e-technology because of external pressure from the business's environment (Ndayizigamiye & McArthur, 2012).

4. The Creation of Value in Operational Processes

E-technology can be considered as a disruptive technology and enabled the creation of more value to customers. The creation of value in operational processes should result in improvement of products and service delivery. These improvements should exhibit

themselves in the operational performance measures of organisations. Value creation can be classified according to the classification of Amit and Zott and by evaluating unique features of the internet such as integration and information richness. The value chain is a prime example of where the value creation can be seen. Creation of value based on these aspects will now be discussed and then used to determine factors that will influence the adoption of e-technology.

4.1 Efficiency

According to Garg and Choeu (2015) successful implementation of e-technology in a business change or transform the business and its processes in a sense that it increases and improve business's sales together with profitability, decrease cost and improve productivity, improve procurement along with distribution, it provides a better guarantee of competitive position or advantage and bettering the quality of service. Soto-Acosta and Meroño-Ceran (2009:212) state that e-technology provides transaction efficiency in the business's operational processes. E-technology makes organisations to be more efficient, since it is stated that the utilisation of e-technology provides internal efficiency and external coordination. These two authors further state that using e-technology gives a firm different value propositions, it provides information availability and gives the business a wider market reach (Soto-Acosta & Meroño-Ceran, 2009). Zhuang and Lederer (2006:255) state that e-technology increase operational efficiency and ease the exchange of real-time and sharing of information among the business departments and stakeholders to produce value for an organisation.

According to Mahdillou and Akbary (2014), e-technology contributes to the organisation by decreasing total purchasing costs (e.g. decrease costs in the "requisition-to-payment") processes, and it also brings efficiency in procurement processes of an organisation. Electronic technologies allow organisations to ensure that their procurement process strategy is a centralised process rather than a decentralised procurement processes. They furthermore state that utilisation of electronic technology makes procurement processes more efficient and quicker. The impacts of e-technology are further argued as Johnson, Klassen, Leenders and Awaysheh (2007) state that by adopting e-technology in the organisation's operational processes, they experience reduced prices from suppliers, reduced transaction costs, lower investments in supply chain inventories, improved speed and flexibility and higher customer service levels.

4.2 Novelty

According to Croom and Brandon-Jones (2007), the adoption of e-technology restructures governance structures and also changes organisational characteristics. E-business also brings improvement in controlling supply, collaborative planning and forecasting. Gunasekaran and Ngai (2008:160) agree on what the above mentioned researchers outlined, which is, e-technology eases certain processes of the organisation, improves its productivity, increases efficiency, enables the organisation to simply interact with its suppliers and consumers, and makes them more competitive in the market.

4.3 Lock-In

Lock-in is demonstrated as swapping costs and also helps to achieve e-business value creation. E-business ability to create value is increased through the degree of customer motivation, which leads to them engage in continuous transaction (Amit & Zott, 2001:505-506).

4.4 Complementarities

Complementarily is providing a packet of complement products or services to business's customers and is a source of creating value. E-business have the ability to complement operational actions such as supply-chain integration and linking one business's imaging technology with the others communication technology, which results in value creation (Amit & Zott, 2001:504-505).

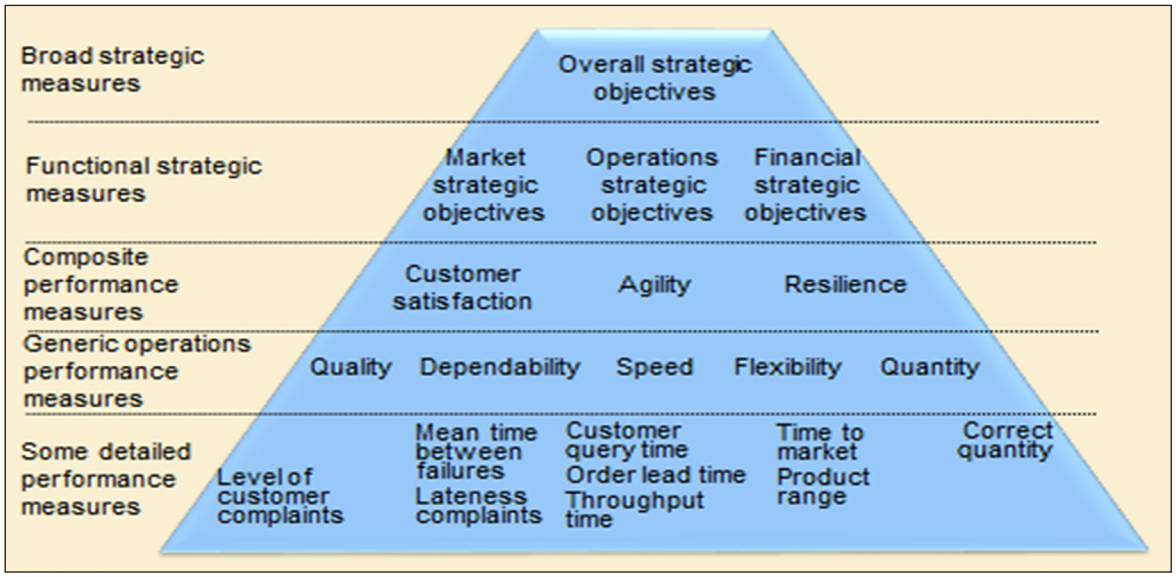
5. Performance Measurement

Performance measurement is a procedure of measuring the action of the business, through comparing its self with the best competitors in the industry (Slack, Chambers & Johnston, 2010).

5.1 Benchmarking

Slack *et al*. (2010) state that benchmarking is the process of studying other organisations' operational performance and comparing the performance of your business with that of competitors in order to influence new ideas that might add value to performance improvement.

Figure 2: Performance Measures Can Involve Different Levels of Aggregation



Source: Slack et al. (2010)

5.2 Generic Performance Objectives

Five operations performance objectives are as follows: quantity, quality, speed, dependability and flexibility. Cost also forms part of this objectives, since it measures the ability of a business to deliver their products or service at less cost (Slack *et al*., 2010).

Quality: Output is delivered by the system, according to specifications of the products and services. Empathy is also included when dealing with service delivery to customers (Slack *et al*., 2010).

Speed: The e-business system lead to fast delivery of products and services, information is easily attainable and can be fleetly obtained (Slack *et al*., 2010).

Dependability: The power to deliver products and services as proposed to customers. The extent to which the operation system can perform required functions is referred as reliability. The time during which the system is accessible and available to use is called availability (Slack *et al*., 2010).

Flexibility: The ability to alter operations output. The ability to comprise changes into the system's output is called modifiability (Slack *et al*., 2010).

Quantity: Present the required output. Reach is the power to get in touch with future and current customers, or to advertise products and generate new business in old and new markets (Slack *et al*., 2010).

Cost: Cost is regarded as a measuring tool of the power to deliver the product and service at minimum cost. Costs can also be regarded as direct and indirect costs, financial and non-financial costs or initial investments and ongoing costs (Slack *et al*., 2010). E-technology enables operations to produce variety at speed variety at speed and to create flexibility and availability at all hours. Therefore, the performance objectives were used to determine if the adoption of e-technology leads to higher performance.

6. Methodological Approach

The research followed a positivistic approach to enable the researcher to evaluate the relationship between variables (Bryman *et al*., 2011). The population studied was businesses that operate within Polokwane Municipality. A list of these businesses was obtained from the Polokwane Local Municipality. A random sampling method was utilised in order to allow each unit of the population to have an equal probability of inclusion (Bryman *et al.,* 2011). The researcher also used exploratory research. The random sample was obtained from the list supplied by the Polokwane Municipality and the RAOSOFT sample size calculator was used to select the intended respondents. A self-administered survey was used since a higher response rate of self-administered surveys has been found when compared with other techniques of collecting data (Cooper & Schindler, 2011). The sample size

calculated was 50 businesses. Fifty questionnaires were distributed by the researcher to businesses in Polokwane Local Municipality. The researcher set an appointment with the respondents in order to ensure that they answer the questionnaires in the presence of the researcher and also to avoid the issue of having to come back the day after. A response rate of 82% was achieved.

7. The Use of e-Technology in Operational Processes of an Organisation

7.1 Factors Influencing the Use of e-Technology in Operational Processes of an Organisation

Organisations don't just adopt e-technology without being influenced to do so. They are numerous factors that influence organisations to adopt or utilise e-technology in their operational processes. Table 1 outlines the findings of this study. The findings of this research study portray that the capacity to reduce corruption by e-technology influence organisations to adopt and employ e-technology in their organisations operational processes. 2.4 percent of the respondents disagree that e-technology's capacity to reduce corruption influence organisations to adopt e-technology, where else 11.9% are neutral, which means capacity to reduce corruption might or might not influence organisations to adopt e-technology. Furthermore 42.9% agree where else 40.5% strongly agree that e-technology's capacity to reduce corruption influence organisations to adopt e-technology. Organisations need to be efficient so that they can survive in their environment of operation. Improved efficiency influences businesses to adopt e-technology. Fifty-seven percent agree and 33% strongly agree that businesses are influenced by improved efficiency to adopt e-technology in their organisations operational processes.

Increased sales form part of the factors that influence organisations to adopt e-technology. This was proven as the results shows that 88% of the sample size agrees that increased sales influence businesses to adopt e-technology. The environment in which the businesses operate in is ever changing so organisations are influenced by the opportunities provided by e-technology (greater global access) to adopt e-technology. The results show that 86% of the

Table 1: Factors Influencing the Adoption of E-Technology

No	Question	Disagree	Neutral	Agree	Strongly Agree	Agreement	Conclusion
1	E-technology's capacity to reduce corruption in organisations lead to the use of e-technology	2%	12%	43%	41%	84%	Corruption
2	Improved efficiency lead businesses to use e-technology	0%	7%	57%	33%	90%	Efficiency
3	Increased sales influence the use of e-technology in operational processes	0%	10%	50%	38%	88%	Market reach
4	Opportunities such as to gain greater global access influence the utilisation of e-technology	0%	12%	36%	50%	86%	Market reach
5	Decreased transaction cost influence the utilisation of e-technology	0%	17%	33%	48%	81%	Efficiency
6	Easier access to potential customers provided by e-technology influence organisations to use e-technology	0%	14%	43%	41%	84%	Market reach
7	Easier access to suppliers influence organisations to use e-technology	2%	7%	50%	38%	88%	Supply chain effectiveness
8	Easier integration provided by e-technology influence organisations to use e-technology	2%	19%	41%	36%	77%	Supply chain effectiveness
9	Dependability advantage provided by e-technology adoption influence the use of e-technology	2%	10%	43%	43%	86%	Availability
10	E-technology's capability to create availability at all hours influence businesses utilise e-technology	0%	14%	38%	45%	83%	Availability
11	Better achievement of customer expectations influence businesses to adopt e-technology in their operational processes	0%	5%	55%	38%	93%	Market reach

Source: Authors

respondents strongly agree that the businesses are influenced to adopt e-technology by the opportunities that e-technology provide, opportunities such as greater global access.

The results of this study outline that organisations are influenced to adopt e-technology by the fact that e-technology reduce transaction cost. 17% of the respondents are neutral about the fact that organisations are influenced to adopt e-technology by the fact that it reduces transaction costs, where else 81% agree that they were influenced to adopt e-technology by its ability to decrease transaction costs. They are numerous factors that lead businesses to adopt e-technology, easier access to potential customer is one of those factor that lead businesses to adopt e-technology. On this factor, 14% of the respondents are neutral on the fact that easier access to potential customers that e-technology provide, where else 84% agree that easier access to potential customers that e-technology provide lead to the adoption of e-technology.

E-technology makes it simple and easy for businesses to reach or access its supplier. Eighty-eight percent of the respondents agree that businesses adopt e-technology, because it makes it simple and easy for businesses to reach or access their suppliers. The results clearly show that easier access to suppliers produced by e-technology lead many organisations to employ e-technology in their operational processes.

E-technology has the ability to easily integrate the business systems, 76% of the respondents agree to the fact that this factor lead to the adoption of e-technology. Eighty-six percent of the respondents agree that they are influenced by dependability advantage that e-technology provide in order to adopt e-technology in their organisations operational processes.

Eighty-three percent agree that capability to create availability at all hours lead to the adoption of electronic technology in an organisation. Ninety-three percent of the respondents agree to the fact that better achievement of customer expectations lead to the adoption and employment of e-technology in the organisations operational processes.

All the above mentioned factors are the main influential factors that lead organisations to adopt e-technology in their organisations operational processes. The results clearly show that the majority, if not all, of the organisations are being influenced by the factors mentioned above to adopt or to utilise e-technology.

7.2 The Impact of e-Business Adoption on Operational Processes

E-technology provides several change or improvements to the organisations operational processes when it is adopted; below are the impact of e-business on operational processes of a business. The results of this study shows that 91% of the respondents agree that e-technology ease the business to change direction whereas 2% of the respondents disagree to the fact that e-technology ease the business to change direction. E-technology when adopted, allow business to compete better in the environment that it operate in. The results outline that 95% of the respondents agree that e-business allow businesses to compete better in their market or operational environment. Every business need speedy operational processes, e-technology proves or produce that to the businesses who adopted or employed it. The results of the study have proven that 90% of the respondents agree that e-business bring speed in operational processes.

E-business on the other hand makes the operational processes or a business's day-to-day activities flexible. This means that e-business brings flexibility in a firm's day-to-day activities, and 91% strongly agree that e-business provide flexibility in firm's day-to-day activities.

Table 2 on the next page further portrays that e-technology change interaction between customers and business when it is employed or adopted in the business's operational processes, 92% of the respondents agree that e-business really change interaction among the business and its customers.

For a business to remain competitive in the environment that it operates in, it must first develop. E-technology when adopted leads a business to growth and development of supporting systems. On this impact 17% of the respondents are neutral whereas 95% agree that the above mentioned impacts take place when businesses use e-technology in their operational process. Twelve percent of the respondents are neutral, 83% of the respondents agree that e-technology reduces the cost of production in a business's and 0% of the respondents disagree on this impact made by e-technology.

Table 2: Impact of e-Technology Adoption

No	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Agreement	Conclusion
1.	E-technology's ability to ease the business to change direction	0%	2%	5%	67%	24%	91%	Change in business
2.	E-technology allow business to compete better	0%	0%	2%	45%	50%	95%	Compete better
3.	E-technology adoption bring speed in operational processes	0%	0%	7%	45%	45%	90%	Speed in operational processes
4.	Adoption of e-technology bring flexibility to the firms' day-to-day activities	0%	0%	0%	41%	50%	91%	flexibility
5.	The use of e-technology in a business change interaction between customers and the business	0%	0%	5%	64%	28%	92%	Change interaction
6.	E-technology adoption in operational processes lead to growth and development of supporting systems	0%	0%	17%	43%	38%	81%	Growth and development
7.	E-technology adoption reduce the business's cost of production	0%	0%	12%	50%	36%	86%	Cost reduction
8.	E-technology provide consistency of production standards	0%	0%	7%	41%	50%	91%	Consistency
9.	E-business technology develop a smooth integration of businesses in the supply chain	0%	2%	12%	50%	33%	83%	Smooth integration
10.	E-technology adoption lead to the adoption of other electronic processes	0%	5%	10%	43%	41%	84%	Adoption of other electronic processes
11.	E-technology enable fast information sharing	0%	0	14%	52%	31%	83%	Fast information sharing
12.	E-business replace the business's traditional processes	17%	12%	12%	36%	21%	57%	Replace traditional processes
13.	E-business complement the business's traditional processes	0%	0%	10%	57%	31%	88%	Complement traditional processes
14.	E-technology adoption provide businesses with portals	2%	0%	12%	45%	38%	83%	Provide portals
15.	E-technology adoption provide businesses with mediators such as search engines	0%	0%	12%	45%	41%	86%	Provide mediators
16.	E-technology adoption provide businesses with information suppliers	0%	0%	17%	45%	36%	81%	Provide information suppliers
17.	E-technology adoption provide businesses with value added resellers	0%	2%	10%	45%	41%	86%	Value added reseller
18.	E-technology adoption leads enterprises to gain competitive advantage.	0%	0%	2%	33%	62%	95%	Competitive advantage
19.	E-technology provide new ways of managing relationships within the organisation	0%	5%	10%	38%	45%	83%	New way of managing relationships

Source: Authors

Customers of every business require consistent standard of products for them to be loyal, so e-technology bring consistency of production standards in a business. Fifty percent of the respondents agree that if you want consistency in the production standards of your organisation, adopt e-business. The results further outline that 2% of the respondents disagree that e-technology develop a smooth integration of businesses in the supply chain, where else 83% of the respondents agrees that if you seek for a developed smooth integration of businesses in the supply chain, adopt e-technology. Other impacts that e-technology make when it is adopted in an organisations operational processes are as follows:

Eighty-four percent of the respondents agree that e-technology lead to the adoption of other electronic processes such as e-marketing and the likes. E-technology enables fast information sharing and 83% of the respondents of this study agree. Fifty-seven percent of the respondents agree that e-technology when adopted replace the business's traditional processes, and bring new ways of doing business in an organisation. Eighty-eight percent of the respondents agree that e-technology when adopted complement the business's traditional processes, in a way that it supports the weakness of the traditional processes with its strength. Eighty-three percent of the respondents agree that e-technology Provide businesses with portals.

The majority of the respondents (86%) agree that e-technology when employed provide businesses with mediators (search engines) such as Google search engine.

The results of this study portray that eighty-one percent of the respondents agree that when e-technology is employed in an organisations operation processes, it provide businesses with information suppliers. E-technology, when adopted in an organisations operational processes provides businesses with value added reseller, 86% of the respondents agree to the above mentioned impact made by e-technology in an organisation. Ninety-five percent of the respondents agree to the fact that when a business adopted e-technology, it leads enterprises to gain competitive advantage. Eighty-three percentage of the respondents further agree that after an organisation have adopted e-technology, it provide the organisation with new ways of managing relationships within the organisation.

8. Conclusion and Recommendations

This study reaffirms that businesses don't just adopt e-technology in their organisations operational processes, but they are influenced by numerous factors to do so, those factors are clearly outlined in the findings of this research study. The adoption of this e-technology provides some new improvement or developments in the operational processes of the organisation as it is portrayed in the findings. It is advisable for all businesses to adopt e-technology so that they can better achieve their organisational objectives. This might lead to growth and development in the country's economy.

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