

# The Impact of Information and Communication Technology (ICT) in Improving Business Competitiveness in Ghana

Ebenezer Komla Gavua<sup>1</sup>, Seth Okyere-Dankwa<sup>2</sup>, Solomon Anab<sup>3</sup>, Kwame AnimAppiah<sup>4</sup>

Koforidua Technical University, Department of Computer Science

**Abstract:** *The role information and communication technology (ICT) plays in increasing the competitiveness of business cannot be undermined since it enables most organizations to increase productivity and profitability. However, it has been realized that although ICT is employed in the various activities of the banks, most of them are implementing business strategies that are not enabling them to gain competitive advantage over their competitors in the banking industry and therefore are not making the desired profits. Objectives were set to identify the role of information and communication technology in business operations in New Juabeng municipality, to determine stakeholders' views on the use of information and communication technology in business operations in New Juabeng Municipality, to identify how banks in New Juabeng Municipality use information communication technology to gain competitive advantage and to identify how banks in new Juabeng municipality use business strategies to gain competitive advantage. The case study research design was employed in this study. The study adopted questionnaire as the main instrument to gather data and information for the study. The hypothesis tested indicated a significance level at 0.05 showing that ICT has improved the competitive position of businesses and also contributed to the success of business in New Juabeng municipality. Out of 150 copies of questionnaire distributed, 140 copies were retrieved completely filled. This represented 93% of the valid data. With the help of SPSS the data and information was quantitatively analyzed in the form of tables, bar charts and pie charts. The study found out among others that, business organizations are using information and communication technology (ICT) in their business operations and transactions. ICT infrastructures can be improved by training staff members and investing in technology and also ICT is helping business operation and making customers feel satisfied with it (ICT) operations and has changed the scope of modern marketing environment in recent times as well as making internet business operations (ICT) more convenient and effective than direct business operations. The study recommended among others that, ICT should be properly installed to give adequate information needed to do transactions, regular maintenance of ICT systems should be put in place to maintain free flow of information and easy transactions, organizations using ICT in their operations must and business strategies in their business operation to gain competitive advantage using Ansoff matrix to access product on two dimensions.*

**Keywords:** Information and Communication Technology, Competitive advantage

## 1. Introduction

The application of Information and Communication Technology has encompassed every aspect of modern businesses because these businesses have realized the need to increase efficiency and profitability.

Ages ago human beings were forced to sense and store information in their memory for future use. This notion continued for a very long time until the introduction of technological mechanisms which eventually lead to the manufacturing of computers, now computers are being used in organizations to store huge volume of information which are retrieved and accessed via the internet.

Information and communication technology (ICT) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video conferencing and distance learning (Rouse, 2005).

Information and communication technology is often used as an extended synonym for information technology (IT), but is a

more specific term that stresses the role of unified communication and the integration of telecommunication (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information (Melody et al, 1986).

The information and communication technology is an enabling technology that has allowed companies to affect both their demand and costs at the same time (Sherringham, 2012). New entrants or incumbents have been able to radically position themselves within an industry, critically affecting the existing industry structure. This has triggered competitive response, which leads to a new equilibrium in transformed industries. As a result of these advances in technology and improvements in internet communication, businesses are now adopting to the system (the use of ICT), upon which this study seeks to examine the impact of information and communication technology in improving business competitiveness in Ghana.

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## 2. Theoretical Frameworks

### 2.1 Porter Five Forces Analysis

Michael Porter's (1979) framework uses concepts developed in micro-economics to derive 5 forces that determine the attractiveness of a market. They consist of those forces close to a company that affect its ability to serve its customers and make a profit. A change in any of the forces requires a company to re-assess its marketplace. The five forces are:

- The bargaining power of customers
- The bargaining power of suppliers
- The threat of new entrants
- The threat of substitute products
- The intensity of competitive rivalry

The Five Forces That Shape Industry Competition



**Figure 1**

### 2.2 Ansoff Matrix

A common tool used within marketing was developed by Igor Ansoff in 1957. He suggested that a business has the potential to grow by using one of four strategies. These strategies involve making the most of existing markets and products, introducing new products, or entering new target markets. Ansoff's four strategies are depicted in the matrix below.

- Market Penetration
- Product Development
- Market Development
- Diversification

		Products	
		Present	New
Markets	Present	Market penetration	Product development
	New	Market development	Diversification

**Figure 2**

### 2.3. Boston Consulting Group Matrix



**Figure 3**

The matrix assesses products on two dimensions. The first dimension looks at the products general level of growth within its market. The second dimension then measures the product's market share relative to the largest competitor in the industry. Analyzing products in this way provides a useful insight into the likely opportunities and problems with a particular product. Products are classified into four distinct groups, Stars, Cash Cows, Problem Child and Dog.

- Stars (high share and high growth)
- Cash Cows (high share, low growth)
- Dogs (low share, low growth)
- Problem Child (low share, high growth)

Also sometime referred to as Question Marks, these products prove to be tricky ones for product managers. These products are in a high growth market but do not seem to have a high share of the market. This could be reason for this such as a very new product to the market. If this is not the case, then some questions need to be asked. What is the organization doing wrong? What are competitors doing right? It could be that these products just need more investment behind them to become Stars. A completed matrix can be used to assess the strength of your organization and its product portfolio. Organizations would ideally like to have a good mix of cash cows and stars. There are four assumptions that underpin the Boston Consulting Group Matrix:

- If you want to gain market share you will need to invest in a competitive package, especially through the investment in marketing
- Market share gains have the potential to generate a cash surplus due to the effect of economies of scale.
- The maturity stage of the product life cycle is where any cash surplus is most likely to be generated.

## 3. Related Literature

### 3.1 The Role of Information and Communication Technology In Business Development

Information and communication technologies, also known as ICT, include the Internet, phones, cable services, computers, and other hardware and digital technologies that facilitate the transfer of information from one interface to another. Information from the internet has become increasingly complex and efficient. Most organizations today are looking for more cost effective approaches to delivering enterprise

application to their user base. Among the alternatives that are becoming increasingly popular are various forms of that involve the e-collaboration sharing of information between organizations, integration of inter-enterprise business process among partner organizations, and the delivery of software services by external application service provider (ASPs).

It is the close alignment between ICT and business processes that can provide competitive advantage to organizations and produce high quality products and services at lower cost, resulting in a strategic advantage (McCabe, 2003; Nevens, 2002). In general, there are two types of enterprise applications that support business processes example, logistics, CRM, etc. and applications that directly implement business processes like example, electronic banking, mobile telephony, airline e-tickets and so on. For the first type of enterprise applications, it is possible to gain competitive advantage by combining ICT with unique company culture and knowledge. This unique combination enables the company to function effectively and utilize key assets such as organizational knowledge and culture. The second type of enterprise application provides a service or product to customers and its timely deployment and unique features can result in competitive advantage.

Due to the impact of ICT on the main factors influencing the way of doing business abroad, manifold changes are taking place within the organizational structures of the economy. The analysis below examines the consequences of these changes for three areas; the internal organization of companies, the organization of markets, i.e. the relationship between banks and its customers, and the organizational forms of co-operation between different companies. This classification is useful, since the fiscal analysis will refer to these three categories. ICT also serve as a platform for the business activities of a company, for example if the supply of information and services constitute its main business activities.

### **3.2 Competitive Advantage of Information and Communication Technology in Today's Business**

The information and communication technology is an enabling technology that has allowed companies to affect both their demand and costs at the same time (sherringham, 2012).

New entrants or incumbents have been able to radically position themselves within an industry, critically affecting the existing industry structure. This has triggered competitive response, which lead to a new equilibrium in transformed industries.

Therefore, as the Internet simultaneously affects demand and cost, simple comparative static exercises are unlikely to provide much insight into the effect of the Internet as in many cases the market structures is radically changed. In this sense, in the financial services industry, brokerage has been completely reshaped.

Similar transformations are going on in whole range of industries, especially in those industries in which information plays a key role, be it as content (such as the media industry) or as the infrastructure for information (such as the telecommunication industry) or as the infrastructure for information (such as the computer and electronic industry). All these industries have suffered fundamental changes, and are nowadays immersed in a process of industry convergence, and new industries with new competitive dynamics have emerged. All these are due to the following factors:

- Transaction Processing
- Collaboration
- Command & Control
- Creativeness, Conversations & Confidence
- Changing Markets

## **4. Methodology**

The researchers adopted the quantitative approached in data collection because it presents the researchers with numerous advantages such as looking at the relationships between variables and establishing the cause and effect in highly controlled circumstances. Also this method often reduces and restructures a complex problem to a limited number of variables.

### **4.1 Data Collection Instrument**

Two (2) main sampling techniques were employed; the stratified sampling and the simple random sampling. The stratified sampling was used to group the sample size into 2 main categories; namely: Staff of the bank and Customers. These groupings will enable the data required from each stratum to be collected and analyzed. Simple Random sampling was then employed to collect data from customers from the institutions since they come around only to do business. The two sampling techniques were employed since they enabled the researcher to collect data relevant to the study and to reduce percentage errors during data analysis.

Questionnaire method of collecting data was used as the instrument in obtaining the data. The questionnaires were designed for all possible respondents, organizations and customers within the defined territory which is New Juabeng. In all 150 questionnaires were designed and distributed in the New Juabeng municipal. It was mainly distributed randomly according to the customers and organizations (managers and workers), (50 questionnaires for organizations and 100 questionnaires for customers) among the four banks.

Therefore, the researchers issued 110 questionnaires to customers and 100 were received as well as 40 interview questions to management of different banks.

Questionnaires were sharply limited based on the fact that, respondent will be able to read the questions and respond to them accurately. Open-ended and close-ended questions were used. The researchers used the open-ended and close-ended

questions in order to give researchers the opportunity to get information directly as the respondents want to present it.

#### 4.2 Data Analysis and Results

##### The use of ICT in business transactions

Table 1 illustrates that 38 respondents representing 38% of the total frequency stated that using ICT in business transaction is very good to customers, 57 respondents representing 57% of the total frequency stated that the use of ICT in business operations gives customers satisfaction and five respondents representing 5% says is poor. This shows that, ICT brings satisfaction to customers in their business transactions without giving them many problems.

**Table 1:** The use of ICT in business transactions

	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	38	38.0	38.0	38.0
Satisfactory	57	57.0	57.0	95.0
Valid Poor	5	5.0	5.0	100.0
Total	100	100.0	100.0	

##### How ICT has improved the competitive position of your company

In all, 40 respondents (being staff of various banks) representing 100% answered with different views, 20 respondents representing 50% said ICT helps to get easy access to vital information in the face of competition. 6 respondent representing 15% stated that ICT provides easy access to research and development(R&D). Moreover, 14 respondent representing 35% also stated with the view that ICT has necessitated more innovative banking products.

**Table 3:** How ICT has improved the competitive position of your company

	Frequency	Percent	Valid Percent	Cumulative Percent
ICT has helped to get easy access to vital information	20	50.0	50.0	50.0
Easy access to research and development	6	15.0	15.0	65.0
Valid ICT has necessitated more innovative banking product	14	35.0	35.0	100.0
Total	40	100.0	100.0	

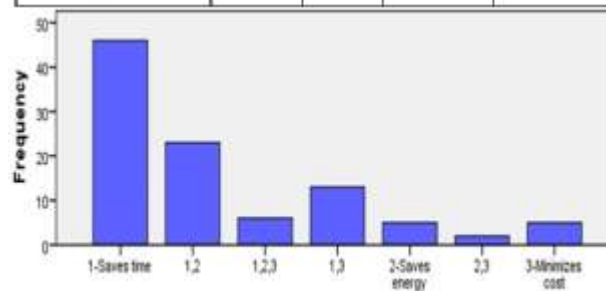
##### Benefits Derived from using ICT

Table 2 illustrates that 46 respondents representing 46% sees the use of ICT as saving time, 23 respondents representing 23% also said that the use of ICT in business operations saves time and saves energy, 6 respondents which represent 6% said that the use of ICT saves time, saves energy and minimizes cost and 13 respondents representing 13% also said that the use of ICT saves time and minimizes cost. 5 respondents representing 5% also said that the use of ICT saves energy, 2 respondents representing 2% said that the use of ICT saves

energy and minimizes cost and 5 respondents representing 5% said that the use of ICT minimizes cost. This shows that the use of ICT in business operations in this era helps customers to save time and energy as compare to cost minimization.

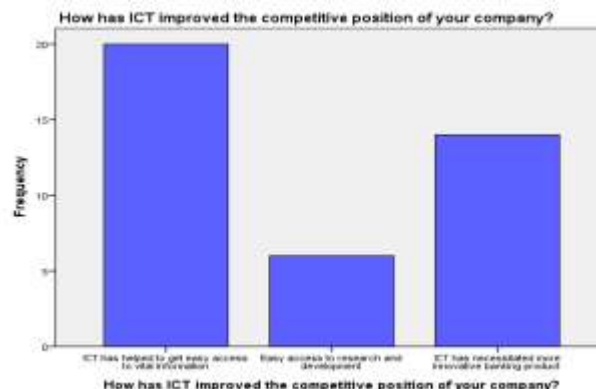
**Table 2:** Benefits derived from using ICT

	Frequency	Percent	Valid Percent	Cumulative Percent
1-Saves time	46	46.0	46.0	46.0
1,2	23	23.0	23.0	69.0
1,2,3	6	6.0	6.0	75.0
1,3	13	13.0	13.0	88.0
Valid 2-Saves energy	5	5.0	5.0	93.0
2,3	2	2.0	2.0	95.0
3-Minimizes cost	5	5.0	5.0	100.0
Total	100	100.0	100.0	



Benefits of using ICT

Source: Field survey, June 2014.



Source: Field survey, June 2014

#### Hypothesis Testing

**Hypothesis I (H0 1):** ICT has not improved business competitiveness in new Juabeng municipality.

#### One-Sample Statistics

**Table 4:** A table describing a one-sample statistics on null hypothesis I

	N	Mean	Std. Deviation	Std. Error Mean
How has ICT improved the competitive position of your company?	40	1.85	.921	.146

From table 4, the test was conducted on 40 respondents, with mean of 1.85, standard deviation of 0.921 and a standard error mean of 0.146. Hence, the null hypothesis that ICT has not improved business competitiveness in New Juabeng Municipality is rejected. This implies that ICT has significantly improved business competitiveness in New Juabeng Municipality.

**One-Sample Test**

**Table 5:** A table describing a one-sample test output on null hypothesis I.

	Test Value = 13.33					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
How has ICT improved the competitive position of your company?	-78.812	39	.000	-11.480	-11.77	-11.19

From table 5; the significant level of the result is 0.000, which is below  $\alpha=0.05$ . Hence, the null hypothesis that ICT has not improved business competitiveness in New Juabeng Municipality is rejected. This implies that ICT has significantly improved business competitiveness in New Juabeng Municipality.

**Hypothesis II (H0 2):** ICT has not contributed to the success of businesses in new Juabeng municipality.

**One-Sample Statistics**

**Table 6:** A table describing a one-sample statistics on null hypothesis II

	N	Mean	Std. Deviation	Std. Error Mean
How has ICT contributed to the success of your organization?	40	1.93	.797	.126

From table 6; the test was conducted on 40 respondents, with mean of 1.93, standard deviation of 0.797 and a standard error mean of 0.126. Hence, the null hypothesis that ICT has not contributed to the success in New Juabeng Municipality is rejected.

**ne-Sample Test**

**Table 6:** A table describing a one-sample test output on null hypothesis II

	Test Value = 13.33					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
How has ICT contributed to the success of your organization?	-90.500	39	.000	-11.405	-11.66	-11.15

From table 6; the significant level of the result is 0.000, which is below  $\alpha=0.05$ . Hence, the null hypothesis that ICT has not contributed to the success of businesses in New Juabeng Municipality is rejected. This implies that ICT has significantly improved business competitiveness in New Juabeng Municipality.

**Analysis from Hypothesis**

The researchers found out from the hypothesis test conducted that ICT has improved the competitive position of businesses and also contributed to the success of business in New Juabeng Municipality. Since the significant level of both test results were 0.000, which is below  $\alpha=0.05$ . Hence. This implies that ICT has significantly improved business competitiveness in new Juabeng Municipality, and ICT has significantly contributed to the success business competitiveness in New Juabeng Municipality.

**Analysis from Customers Responses**

From customer’s response, analysis can be deduced that, ICT is becoming the main tool customers use in their business operations. The information needed by customers to help them carry out their daily transactions is being provided by ICT. This helps customers to be more informative and knowledgeable about the banks and its products. ICT offers more information in the market place. General search engines like Google and Yahoo help organize the information collected about business and finance on the internet, essentially providing people in business and finance with access to a slew of information.

Moreover, response from customers deduced that the use of ICT in business operations has made business move from being good to very good. Customers are now more conversant with internet operations than direct business operations, due to its enablement and customer service in which conversations with customers is created to solve problems.

Furthermore, researchers found that, information insecurity, copyright problems, laws, lack of trust and computer literacy are not the only major problems encounter by customers, but also network overload and technical problems are also major problems. Customers encounter. These problems can be dealt with by regular maintenance of ICT systems and also a little more investment in technology as suggested by a lot of respondents. The expensiveness between internet transaction and direct business transaction are seen on equal view, but the benefits derive by customers makes the difference.

**Analysis from Management Responses**

From management response, analysis can be deduced that, banks who use ICT gain competitive advantage through rebranding of their products and services. It is the close alignment between ICT and business processes that can provide competitive advantage to organizations and produce high quality products and services at lower cost resulting in a strategic.

The use of ICT by companies has made companies gain success through its accuracy and fastness in business transactions. Sending e-mails to potential customers is faster and comes with minimal cost and opposed to having brochures printed and distributed through sales agents. Management also responded that the operations of the organization can be improved with the help of ICT through staff training, investment in technology and effective distribution of information.

Moreover, responses from management deduced that organization involve in the using of ICT encounter a lot of challenges and problems such as information insecurity, computer literacy, laws and lack of trust. It was also deduced from management's response that, challenges faced with the use of ICT affects the operation of the organization which brings down sales and slows down business transactions. The use of ICT personnel, security codes and proper scheduling on business activities can all minimize the challenge faced by companies using ICT.

Finally, researchers deduced from management responses that, regardless of the benefit; faster transaction and easy access to information gained as a result of ICT, customers still gather complaints to organizations.

## 5. Conclusion

Base on the result of the study presented, conclusion can be drawn that ICT has developed in recent years and has created a favorable impact on improving business competitiveness. It was also drawn that in all companies or business organizations, there must be an adoption of ICT to increase sales and attain customer satisfaction. Therefore it is the researchers wish and endeavor that organizations should adopt ICT in their business operations to adapt to the fast changing environment created by increase in technology in recent years.

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