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**FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION**

**Model of Elements Affecting The Embracement of e-Commerce in Nigerian  
Banks**

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- Synthesis of the model
- Analysis of the model
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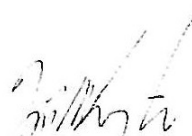
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Souhlasím s prezenčním zpřístupněním své práce v Univerzitní knihovně.

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## **Abstract**

The aim of this study is to know the models of elements affecting the embracement of e-commerce in Nigerian banks. We can look at the models from both the positive and negative perspective. But we will be focusing on the negative models based on Nigeria and there banks not accepting or not fully embracing e-commerce. This are some reasons for concentrating on this topic: 1) The banking sector has improved to be more successful, 2) For the third consecutive year in 2007, e-commerce merchants named Nigeria as the world's riskiest country for online trade (Cybersource.com), 3) Nigeria is well known for its extraordinary capturing in anything you present into its market, 4) Previous studies have not focused on both positive and negative elements.

An empirical study of banks, users and non users of e-commerce in Nigeria was conducted to answer the research question through the examination of websites of banks. And also a questionnaire was designed for banks, users and non users of e-commerce to look into their use of e-commerce and recognize the model of elements affecting the embracement of e-commerce in Nigerian banks. Based on findings, answer reflects that some models of elements are setting up cost, accessibility, privacy and confidentiality, data security, network reliability, credit card threat, national's income, value and education.

Analytical hierarchy process methodology was used to decide on which element is more important and which bank is affected more. The rank of the elements affecting the embracement of e-commerce (in descending order of impacts) is: Accessibility, Privacy and Confidentiality, Cost, Security, Value, Network Reliability and Education.

**Keywords: E-commerce, Banking, Nigerian Banks, Positive, Negative, Analytical hierarchy process**

## **Content**

<b>1 Introduction.....</b>	<b>8</b>
1.1 Backgroud and overview of e-commerce.....	8
1.2 Brief history of e-commerce.....	9
1.3 Theatrical role of e-commerce in banking industry.....	10
1.4 Overview of e-commerce in Nigeria.....	11
1.5 Nigerian Banks under Study.....	12
1.6 Research Question.....	14
1.7 Research Objectives.....	14
1.8 Outline of the Thesis.....	14
<b>2 Theoretical Framework.....</b>	<b>16</b>
2.1 Research Variables.....	16
2.1.1 Embracement of e-Commerce.....	16
2.1.2 Accessibility.....	16
2.1.3 Privacy and Confidentiality.....	17
2.1.4 Cost .....	17
2.1.5 Security.....	17
2.1.6 Value.....	18
2.1.7 Network Reliability.....	18
2.1.8 Education.....	18
<b>3 Methods and Methodologies.....</b>	<b>20</b>
3.1 Research Purpose.....	20
3.2 Research Approach.....	21
3.3 Knowledge Acquisition.....	21
3.3.1 Questionnaires Survey.....	22
3.3.2 Interviews.....	23
3.4 Sample Population.....	24
3.5 Analytical Hierarchy Process Methodologies – Background.....	26
.....	26
<b>4 Synthesis of the model.....</b>	<b>29</b>

4.1 Analytical Hierarchy Process.....	29
<b>5 Analysis of the model.....</b>	<b>32</b>
5.1 Accessibility.....	32
5.2 Privacy and Confidentiality.....	32
5.3 Cost.....	33
5.4 Security.....	33
5.5 Value.....	33
5.6 Network Reliability.....	34
5.7 Education.....	34
5.8 Ranking of the elements affecting the embracement of e- commerce.....	34
5.9 Ranking of the banks affected by the elements.....	34
<b>6 Conclusion and final discussion.....</b>	<b>36</b>
6.1 Limitation of Study.....	36
6.2 Contribution.....	37
<b>References.....</b>	<b>38</b>
<b>List of Tables.....</b>	<b>40</b>
<b>List of Figures.....</b>	<b>40</b>
<b>List of Appendix.....</b>	<b>40</b>



# 1 Introduction

This chapter begins with a background of the selected sector, followed by a brief introduction. The background begins with a brief background and overview of e-commerce and a brief history of e-commerce. Later it goes on with its deals in banking industry and an overview of e-commerce in Nigeria. It covers all this to give the reader a better understanding of the research problem.

## 1.1 Background and overview of e-commerce

Speed, accessibility, globalization and information are four key attributes of e-commerce [5] (Page 12). E-commerce also known as electronic commerce refers generally to all forms of transactions relating to commercial activities, involving both organizations and individuals, that are based upon the processing and transmission of digitized data, including text, sound and visual images [3] (Page 11). However there is one problem with the statistics on the electronic commerce market is that there is no single accepted way of defining or measuring electronic commerce [8] (Page 166).

E-commerce is fundamentally changing both companies' business processes and the value chains in which they operate [4] (Page 2). Companies or firms engage in e-commerce in order to achieve better management of commercial transactions and transaction-generated information and to increase business efficiency [3] (Page 11).

Reckoning on the type of people you ask, it might be defined in different ways as follows:

**From a communications view**, Electronic commerce maybe defined as the bringing of information, goods and services or payment through telephone lines, computer networks, or any other appropriate means [1] (Page 3).

**From a business process view**, Electronic commerce maybe defined as the application of technology for business transactions and workflows.

**From a service view**, Electronic commerce is a tool that addresses the desire of firms, consumers, and management to cut service costs while improving the quality of goods and increasing the speed of service delivery [1] (Page 3).

**From an online view**, Electronic commerce provides the capability of buying and selling products and information on the internet and other online services [1] (Page 3).

All the above definitions are well grounded.

In spite of the global reach of e-commerce not all countries have taken advantage of e-commerce. There is a big breach in internet and e-commerce embracement between the developed and developing countries, while developed countries have invested, and continue investing, in the improvement of their IT infrastructure and services, most countries developing countries have continued to do, little or nothing.

## **1.2 Brief history of e-commerce**

Before e-commerce captured public resourcefulness and business participation, the internet was picked up by conservative and banks as at best just another distribution channel. The take-up of the internet was accelerated tremendously by the innovation of the World Wide Web in 1991 at CERN by Tim Berners-Lee and Robert Caillau, and the subsequent development of the browser like Mosaic, Netscape and Explorer [8] (Page168). The coming of e-commerce has changed such perception. Now all financial institutes have realized that it has no choice but to invest in an internet strategy. Electronic commerce is now developing rapidly on the basis of the internet and the WWW [8] (Page 168).

The demand for e-commerce roots from the demand within business and government to make better apply computer technology to improve customer interaction, business processes, and information exchange both within an enterprise and across enterprises [1] (Page 5).

During the 1970s, the introduction of electronic funds transfer (EFT) between banks over secure private networks changed financial markets. Electronic funds transfer optimized electronic payments with electronically provided remittance information [1] (Page 5). Today there are varieties of EFT variants, including the debit card whose use is becoming ubiquitous at points of sales in grocery stores and retail outlets [1] (Page 5). Each day, over \$4 trillion change hands via EFT over the computer network connecting banks, automated clearing houses, and companies [1] (Page 5). Also another technology called electronic interchange (EDI) was innovated. It helps to prolong inter-business transactions from financial institutions to other types of business and also allows for transactions and information exchanges to customers from suppliers. Nevertheless, the former system development was restricted to peculiar networks such as big corporations; which are expensive and complex to deal with for small business.

With the commercialization and progress of internet made e-commerce possible.

### **1.3 Theatrical role of e-commerce in banking industry**

The number of internet users has rapidly increased because of the substantial power of the World Wide Web (WWW) and e-commerce. It has created marvelous business chances for its exploiters. The most usual use of e-commerce is to substitute or raise traditional market lines by opening web-based storefronts. Joined with modern business thinking, technology is speedily changing the path personal and corporate financial services are projected and delivered to customers.

Like other companies, banks are taking steps to expand the use of networking technology in their business operations [2] (Page1). They increasingly turn to the direction of technology to help minimize operating costs and still provide adequate customer services. Technology has converted the interaction amongst banks and its customers. It has enabled the following possible: electronic access to bank statement, online delivery of bank brochures, requesting for transfer of funds between two accounts or more, online payment and micro payment.

A review of the banking industry's response to e-commerce suggests that even as recently as years ago, banks involvement with the internet was quite limited [2] (Page 2). A bank might set up a website to provide customers with information about its services; however the banking transactions still took place at the branch. But now of recent many banks have begun to use the internet as a supplementary channel for delivery traditional products to customers and business [2] (Page2).

#### **1.4 Overview of e-commerce in Nigeria**

The utilization of internet in Nigeria is relatively slow compared to developed nations and therefore e-commerce is still in a basic level, despite the increasing awareness of the benefits and opportunities arising from e-commerce amongst Nigerians. While developed countries have invested, and continue investing, in the improvement of their IT infrastructure and services, most developing countries have continued to do, little or nothing. However, much more is needed than access to information to make electronic commerce work [8] (Page 168). Essential functionality first of all includes reliable and high-capacity communications infrastructure [8] (Page 168).

Nigeria is well known for its extraordinary frogging, in anything you present into its market. E-commerce in Nigeria hasn't really been well adopted but steadily growing as a result of vast improvement in some areas such as in the IT infrastructures and services. The recent advances in the telephony services market, especially GSM telephones, and the enthusiastic up take of the services by Nigerians, demonstrate the potential market for information communication technology services generally in Nigeria which, when combined with Nigeria's sizeable population and its history of enterprise in both domestic and international trade, confirm that Nigeria is a yet to be fully tapped but potentially very lucrative market for electronic commerce services [6].

An important function of e-commerce is handling payment over the internet. Implementation of payment system for e-commerce is still developing in Nigeria. Today, four basic ways to

pay for purchase that dominate both traditional and electronic business to consumers commence are cash, checks, credits cards, debit cards, but in Nigeria today, cash and checks are the main ways used to pay for purchase but credit card is by far the most popular form of consumer electronic payment online in the developed nation but as a very limited use in Nigeria [7] (Page2). But an obvious area of advancement is in a specific area of electronic banking been innovated into Nigerian banks. Online banking is gradually gaining ground, banks have set up websites that publish information's and allow customers to do some form of transactions that are restricted in most cases. Beside the growing focus on online banking not all banks are maturing together, some still have sites with only information and the actual transaction is still done in the bank branch.

## **1.5 Nigerian Banks Under Study**

Based on the latest data issued by the Central Bank of Nigeria ([www.cenbank.org](http://www.cenbank.org), 2009) 24 commercial banks in this 20 are domestic banks while the remaining 4 are foreign banks. The lists are shown in the Table 1 below.

<b>Name of bank</b>	<b>Established</b>	<b>Description</b>	<b>No. of branches</b>	<b>Ownership</b>
Access Bank		Adopter	120	Domestic
Afribank		Non-adopter	300	Domestic
Citibank		Adopter		Foreign
Diamond Bank	1991	Adopter	186	Foreign
Ecobank	1985	Adopter	500	Foreign
Equitorial Trust Bank	1990	Adopter	70	Domestic
Fidelity Bank	1988	Non-adopter		Domestic
First Bank	1894	Adopter	410	Domestic
First City Monument Bank	1982	Adopter	140	Domestic
First Inland Bank		Limited Adopter	170	Domestic
Guaranty Trust Bank	1990	Adopter	152	Domestic
Intercontinental Bank	1989	Adopter	54	Domestic
Oceanic Bank	1990	Adopter		Domestic
Platinum Habib Bank		Adopter	205	Domestic
Skye Bank	2006	Limited adopter	213	Domestic
Stanbic-IBTC	2007	Limited adopter	60	Foreign
Standard Chartered Bank	1969	Adopter	25	Foreign
Sterling Bank		Adopter		Foreign
Union Bank	1917	Adopter	405	Domestic
United Bank For Africa	1961	Adopter	700	Domestic
Unity Bank		Limited adopter	215	Domestic
Wema Bank	1945	Limited adopter	110	Domestic
Zenith Bank	1990	Adopter	170	Domestic

**Table 1:** List of Nigerian banks

## 1.6 Research Question

This study focuses on understanding the models of elements affecting the embracement of e-commerce in Nigerian banks. The specific question for this thesis can be formulated as:

**What are the main models of elements affecting the embracement of e-commerce in Nigerian banks?**

This area could be explained in two (2) phases, the positive models of elements which are the elements that make the Nigerian banks wants to accept or make some of them embrace e-commerce. And the second phase which is the negative models of elements that as discouraged Nigerian banks or limiting them from embracing e-commerce. This study will be based or focused on the negative models of elements that are stopping or limiting the adoption of e-commerce in Nigerian banks.

## **1.7 Research Objectives**

The objective of this research is to understand the negative elements affecting the embracement of e-commerce embracement in Nigerian banks and to know the ranking also to know the bank that is affected the most and the rank and, the largest back populace in Africa; an assessment of the level of participating of major banks as well as the level of participation of the citizens.

## **1.8 Outline of the Thesis**

This thesis is divided into six chapters as shown in figure 1 namely the Introduction, Theoretical Framework, Methods and Methodologies, Synthesis of the Model, Analysis of the Model, and Conclusion and Final Discussion.

**Chapter one:** This chapter gives an introduction to the research topic, problem area and research questions are also outlined there.

**Chapter two:** Second chapter provides theoretical issues and review.

**Chapter three:** This chapter deals with the methods and methodologies implemented in the study.

**Chapter four:** This chapter will look in the synthesis of the model, which is given or showing an end result.

**Chapter five:** In this chapter we will analysis the collected data against research model.

**Chapter six:** Finally on this last chapter will present the conclusion of the whole study, and final discussion.

## **2 Theoretical Framework**

The aim of this chapter is to establish the theoretical framework for the study. Questionnaires were designed for banks, users and non users of e-commerce and observing websites based on the results, seven major variables were identified and used in the research.



## **2.1 Research Variables**

The research question is concerned with what elements are discouraging Nigerian banks from embracing or fully embracing e-commerce. Each of the variables (figure 2) has been discussed below.

### **2.1.1 Embracement of e-commerce**

The dependent variable here is the embracement of e-commerce. In this study the embracement of e-commerce is defined as the utilization of internet and computer networks for sharing business information and doing of business transactions.

### **2.1.2 Accessibility**

This is one of the independent variables for this study. Accessibility can be defined as the degree to which the needed technology for e-commerce is accessible to banks and individuals to make use of. Also how convenient can banks and citizens have access to the needed technologies for e-commerce such as electricity, internet etc. Nigeria been a developing nation still suffers from good power supply.

### **2.1.3 Privacy and Confidentiality**

Banks and citizens are afraid to disclose their personal information based on a judgment of risk and also with the simplicity with which there transactions can be conquered online even with encryption and other nominal forms. A number of experts within the field of internet security and privacy believe that security doesn't exist, 'privacy is dead- get over it' according to Steve Rambam, private investigator specializing in internet privacy cases [9]. So it can be

defined as the level that banks and citizens think that e-commerce will not endanger their privacy.

#### **2.1.4 Cost**

E-commerce requires investments in new technology and infrastructures that can touch many of a bank's core business processes. It requires significant investments in hardware, software, staffing and training. It can be defined as the overall amount that will cost the bank to enforce it. Banks that have not still embraced it or have not fully, believe that the cost of applying e-commerce is too high.

#### **2.1.5 Security**

The internet provides world wide access, but banks must protect their assets and customers information against accidental or malicious misuse. Therefore it can be defined as the level to which customers believe that his or her transactions online are free from illegitimate use. Although there is a close relationship between security and privacy, there are still some differences. Privacy is related to what companies consciously decide to do with consumers data, while security is concern with any inadvertent compromise of consumers data to a third party [10] (Page 750). Also from a survey conducted by Cyber Source Corps Nigeria was mentioned as the world's riskiest for online trade. To mention more the advanced fee fraud popularly know in Nigeria as 419 fraud, Nigerian scam, Nigerian bank scam etc From this people assume that information is not secure on internet.

#### **2.1.6 Value**

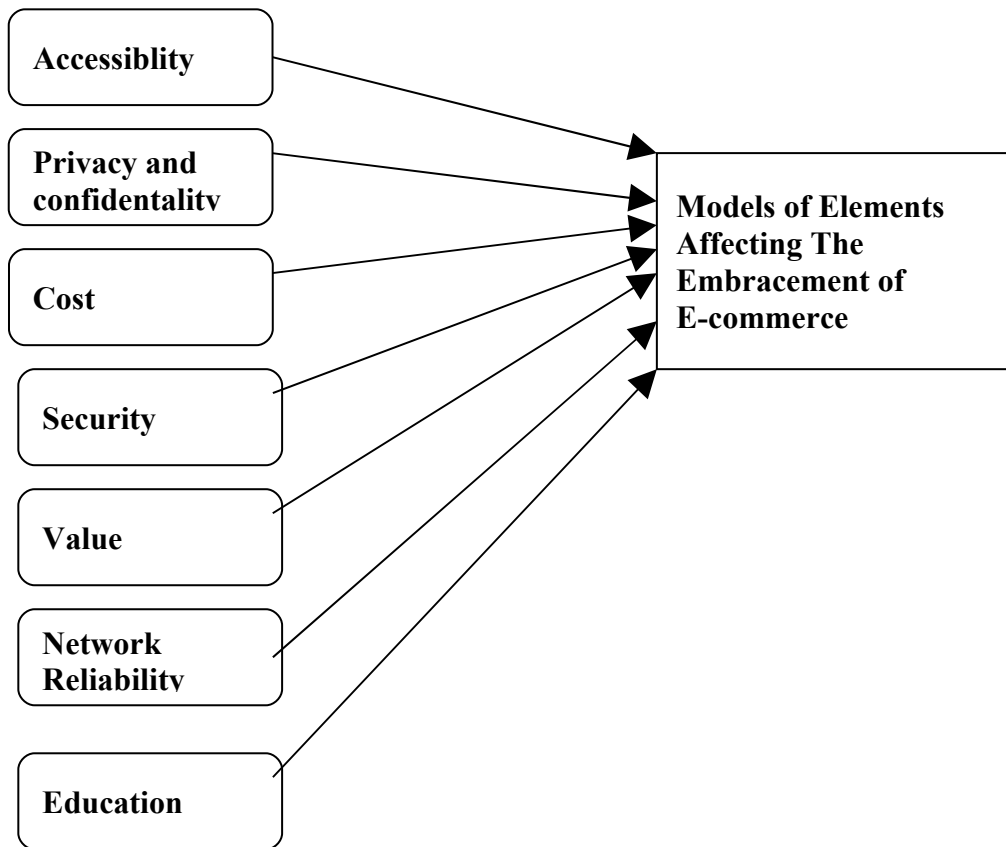
Banks want to know that their investments in e-commerce system will be profitable. This can be defined as the extent to which the implementation of e-commerce will be profitable to them such as cost reduction, business-process automation etc.

### **2.1.7 Network Reliability**

This can be defined as the power of a bank to rely on the transfer of its secret and vital data's over the internet. The country been a developed nation still suffers good communication network. There are few Internet Service providers and even those that provide internet services provide bad services to the extent that most internet users waste most of their time browsing through the internet without signal [7] (Page 3).

### **2.1.8 Education**

In the context of e-commerce, education can be defined as the process by which society, through schools, colleges, universities, and other institutions, transmits its accumulated knowledge of e-commerce, values, and skills to citizens. The level of education of the populace hampers the use of e-services. Customers will rather visit the Banking halls and interface with people than use a more convenient channel to carry out their transactions.



**Figure 1:** Research Model

### **3 Methods and Methodologies**

In this chapter a brief discussion regarding methodology will be presented. The research purpose and the research approach that has been used in this research will be talked about. Also discusses the Knowledge acquisition (KA) adopted in the research and also the Analytical Hierarchy Process method. In order to answer the research questions, we conducted an

empirical study of banks that have not started using e-commerce, also banks that have not fully embraced it and the customers (citizens of Nigeria). And it is also explained why we have chosen these ways of conducting the research. The sample selection, detailed data collection and analysis method will also be explained.

### **3.1 Research Purpose**

We have several ways by which we could carry out the research based on research problem area. When dealing with research problem, one can use any of the three classification of research and apply own personal motivation to perform a scientific study [12]. The purpose of academic research can be in three classifications namely exploratory, descriptive, or explanatory. Exploratory research is a type of research conducted because a problem has not been clearly defined [13]. Exploratory research mostly reasons that a problem does not actually exist. It assists to know the best research design, data collection, methods and selection of subjects [13].

Descriptive research outlines data and characteristics about the population being studied [14]. It is basically used to get information pertaining to the population to describe “what exists” as regards to variables in a circumstance. In this work researchers select variables that have already existed or at present, and analyzes their relationship without manipulating the variables.

Explanatory research is to realize the nature of the relationship between the independent and dependent variable. When we face an issue that is already known and have a description of it, we might begin to think why it’s this way they are. The desire to know “why,” to explain is the purpose of explanatory research. This research is used when it’s essential to show that one variable determines the measure of other variables.

My research purpose and question reveal that this study is mainly exploratory. It is exploratory because all data’s have been collected through questionnaires, carefully looked into websites and semi-structured interview to find out the relations between the dependent

and independent variables of the model. Exploratory is often used when problem is not well known, since we aim to find out model of elements affecting the embracement of e-commerce in Nigerian banks.

### **3.2 Research approach**

Apart from the exploratory, descriptive and explanatory classification, there are also two choices of research approach that can be used, namely the quantitative and qualitative research approach. In quantitative approach, it studies variables with some precision numeric scale. While qualitative research aims to provide a deeper understanding to the phenomena with the use of words. It involves the use of data such as interviews, documents etc. Quantitative and qualitative approaches both have the aim of making a better understanding of society through digging how individuals, institutes act and regulate one another. Thus a quantitative approach will be suitable for our study because all the results are presented by numeric digits and the approach is more structures which meets the requirement for the objectives of this research.

### **3.3 Knowledge Acquisition**

A quick definition of knowledge is that it is equivalent to expertise. And what is expertise? It is the ability of people to do effective and efficient work and to deal with complex situations [15] (Page 1). It is indeed a quantitative approach.

Knowledge acquisition is therefore the activity of capturing expertise knowledge from one or more sources [15] (Page 1). In this research the human experts includes managers, IT consultants in Nigerian banking industry, who are experienced in e-commerce. The knowledge captured from the experts represents the objective of the research, which is:

- a) To explore and define the main elements affecting the embracement of e-commerce in Nigerian banks.

There are several techniques that have been developed to capture the expert's knowledge such as questionnaires survey, interview, case studies etc. But this research will capture only the knowledge using questionnaires survey and interviews. The information's obtained from the knowledge acquisition are used to develop a model based on the Analytical Hierarchy Process. Details are discussed in the following sections.

### 3.3.1 Questionnaires Survey

Questionnaires survey is one of the most common ways of capturing the expert knowledge. Questionnaires can be defined as a formal set of questions or statements designed to gather information from respondents that will accomplish the goals of the research. It needs to be designed to meet the aim and objective of the research. Researchers need to consider three basic keys before designing the question.

- a) What is the purpose of the survey?
- b) What kind of questions the survey would develop to the answer?
- c) What sort of results will be considered from the questionnaires?

In this research the questionnaires were used to gain general picture of the elements affecting the embracement of e-commerce. There are at least two major parties involved in e-commerce transaction or process. They are the customers (the individual who is interested in making use of e-commerce services) and the bank (the institute who is interested in offering some goods and services through e-commerce). Therefore two separate sets of questionnaires were administered across (banks and customers):

- **Banks:** A total of 6 questionnaires were administered to banks by email, all though there are other major ways of sending the questions such as by hand, survey

through postal services etc But in this research all questions were send by email because of the following reasons:

- a) Distance between the researcher and respondents.
- b) To avoid the possibility of getting a low response rate.
- c) And because of time limitation.

The questionnaires consist of pertinent questions that after are related to the possible elements affecting the embracement of e-commerce. These 6 banks were later divided to adopters, limited adopters and non adopters of e-commerce (Table 1.1 above), this was done to know the reasons why all the limited and non adopters have not embraced e-commerce and to know the problems those that have embraced it are facing.

- **Customers:** A total of 10 questionnaires were administered and 5 of them were returned, relevant questions that are related to the possible elements affecting the embracement of e-commerce were administered to them by email also. This group was also divided to users and non users of e-commerce. This was done to know the reasons why all the non users have not been using it and to know the problems those people using have been facing.

### 3.3.2 Interviews

It is a process of collecting information through direction communication between the interviewer and respondent. There are different kind of ways of conducting interview; face-to-face, by telephone and video conference. This research was base on a bit of telephone communication because of distance reasons.

There are three types of interview:

- a) **Structures interview:** - It uses a systematic approach and orally distributed questionnaires of doing interview.



- b) **Semi-structured interviews:** - it uses open-ended questions but seeks specific information.
- c) **Unstructured interview:** - It is informal. Only needs simple planning and it is a brief way of understanding problems.

In this research a semi-structured interview was conducted. It is used to understand the data collected from survey. People within the banking industry, who have experience with e-commerce and I.T generally, were chosen for the interview. Also customers care centers. The interview was taped by note taking. The interview was made up of questions relating to economic and business elements affecting the embracement of e-commerce in Nigerian banks.

### 3.4 Sample Population

A total of six banks were chosen for this research. Four limited adopters were selected and in the group are First Inland Bank, Skye Bank, Wema Bank and Stanbic-IBTC Bank, while in the non-adopters is Fidelity Bank and Afri Bank. Questionnaires were sent out to each bank.

The banks were classified as limited adopters and non-adopters using the model of Chung and Payter [19] (Page 3) who evaluated websites of some banks in New Zealand. According to them the websites can be used to study the effectiveness, functionalities and internet strategies of these banks. The classification instrument is shown as below:

<b>Components</b>	<b>Elements</b>
Information	Company Information Customer Information Product Information
Legal Statement	Legal Disclaimer Privacy Policy

	Security Policy
Order	Check Account Balance Transfer Funds Between Accounts Purchase Banks Products(e.g. Open An Account) Download Account Information Make Payment Order Cheque or Deposit Book Request Loan Changes Cheque Reconciliation Change Password After Sales Services(e.g. Email Enquiries)
Ease Of Use	Frequent Asked Questions(FAQ) Tutorial/ Demonstration Search Function Help Function
Performance	Update Frequency(Daily) Response Time(Within 5 Seconds) Download Time(Within 10 Seconds) Technical problems

**Table 2:** Evaluation Of website

The existence and absence of each element was checked against the information displayed on the bank websites, especially on the site maps that list what is available. Contact was made with the customer service departments of the banks before final classification.

### **3.5 The Analytical Hierarchy Process Methodology - Background**

The Analytical Hierarchy Process (AHP) is based on the experience gained by its developer, T.L. Saaty in 1970's, while directing research projects in the US arms control and disarmament agency. It was developed as a reaction to the finding that there is an easy-to-implement methodology to enable the taking of complex decisions [11] (Page 15). It aims at quantifying relative priorities for a given set of alternatives on a ratio scale, based on the

judgment of the decision maker and stresses the importance of intuitive judgment of a decision maker as well as the consistently comparison of the alternative in the decision making process[16].

Looking at its ease of use and simplicity, the AHP has found ready acceptance by busy managers and decision makers. It helps structure the decision-makers thoughts and help in organizing the problem in a manner that is simple to follow and analyze [11] (Page 15).

There are four major steps in applying AHP method (decomposing, weighing, evaluating, selecting) :

**1) Decomposing:** The aim is to structure the problems to humanly –manageable sub-problems [17]. Structuring the decision problem as a hierarchy is fundamental to the process of the AHP [11] (Page 16). The most effective way of doing this is to downward from the focus of top-level criteria to the second level, followed by the third level criteria. The bottom level of the hierarchy contains the resources to be allocated, or the alternatives from which the choice is to be made.

**2) Weighing:** Here you assign a relative weight to each criterion, based on its importance within the node which it belongs to. The sum of all the criteria belonging to a common direct parent criterion in the same hierarchy level must equal 100% or 1 [17]. The valued assigned to a comparison can range from  $1/9$  to 9, where  $1/9$  would imply that the one element is extremely less important than the other and 9 implies that the element is extremely more important than the other [16]. A case of equality is indicated by the value 1. Also the importance of one element with respect to another is the reciprocal of the value assigned to the importance of the second compared to the first. Thus while comparing two criteria's X and Y we assign the value the values in the following manner (Table 3): 1 if X and Y are equally important, 3 if X is weakly more important than Y, 5 if X is strongly more important than Y, 7 if X is very strongly more important than Y, 9 if X is absolutely more important than Y, reciprocal values are used when X and Y are interchanged.

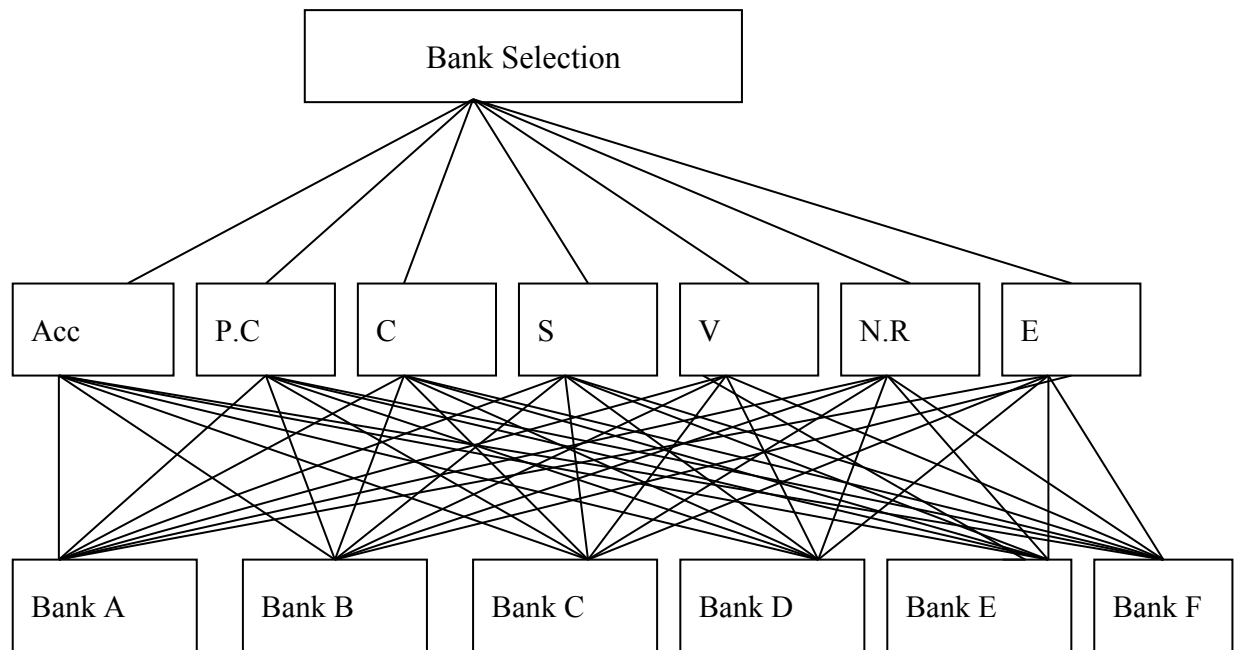
<b>Intensity of importance</b>	<b>Definition</b>	<b>Explanation</b>
1	Equally important	Two activities contribute equally to the objective.
3	Weakly more important	Experience and judgment slightly favor one activity over another.
5	Strongly more important	Experience and judgment strongly favor one activity over another.
7	Very strongly more important	An activity is strongly favored and its dominance demonstrate in practice.
9	Absolutely more important.	The evidence favoring one activity over another is the highest possible order of affirmation.

And 2,4,6,8 intermediate values between.

**Table 3 :** AHP pairwise comparison Scale

**Figure 2** presents the decision problem as formulated under AHP, where :

Acc is Accessibility, P.C is Privavcy and Confidentiality, C is Cost, S is Security, V is Value, N.R. is Network Reliability and E is Education. Also Bank A is Fidelity Bank, Bank B is Afri Bank, Bank C is Weba Bank, Bank D is First Inland Bank, Bank E is Stanbic – IBTC Bank and Bank F is Skye Bank.



**Figure 2:** Hierarchical structure of the bank selection problem

The top level of the hierarchy represents the objective of the decision problem; in this case, selection of the bank is the decision problem being addressed. The set of choices from which selection has to be made is the last level of the hierarchy. In this case, for the sake of illustration, we are considering six banks. The problem formulated above is that of selecting a bank from the 6 alternatives, viz Bank A, B, B, D, E and F.

- 3) **Evaluating:** Score alternatives and compare each one to others [17]. Using AHP, a relative score for each alternative is assigned to each leaf within the hierarchy, then to the branch the leaf belongs to, and so on, up to the top of the hierarchy, where an overall score is computed.
- 4) **Selecting:** Compare alternatives and select the one that best fits the requirements.

## 4 Synthesis of the Model

In this chapter the data from the survey is analyzed on the basis of the research model. Microsoft excel was used for the Analytical Hierarchy Process Methodology.

#### 4.1 Analytical Hierarchy process

A pair wise comparison matrix was generated by taking the geometric mean of pair wise. Table 4 presents the pairwise comparison matrix for the criteria.

	Acc	P.C	C	S	V	N.R	E	Geomean
Acc	1	3	3	3	7	5	5	3,348995
P.C	1/3	1	5	3	7	4	6	2,616702
C	1/3	1/5	1	3	5	3	6	1,511209
S	1/3	1/3	1/3	1	9	5	7	1,420434
V	1/7	1/7	1/5	1/9	1	3	3	0,455712
N.R	1/5	1/4	1/3	1/5	1/3	1	5	0,476232
E	1/5	1/6	1/6	1/7	1/3	1/5	1	0,24495
<b>Total</b>								10,07423

**Table 4 :** Pairwise comparison matrix

After obtaining the geometric means for the criteria (as per the AHP process) of each of these, the priority weights of the criteria were obtained as shown in Table 5.

Criteria	Weights	Ranking
Acc	0.332432	1
P.C	0.259742	2
C	0.150007	3
S	0.140997	4

V	0.045235	6
N.R	0.047272	5
E	0.024314	7

**Table 5 :** Importance weights of criteria

An objective was served by the foregoing analysis, that is a general picture emerges regarding the importance of given to various criterias in selecting a bank

After the important weights are determined for the attributes, the various alternatives , i.e. the potential banks, were been ranked using a synthesis process. Where by comparing alternatives with criterias to obtain weights for the alternatives(i.e. The banks under study) with respect to each them. The following table (Table 7) was then constructed using the relative weights of the seven criterias, and the weights of the six banks with respect to each of the seven criterias.

In Table 7 the scores or figures where generated as a result of comparing the alternatives on each of the criteria. Thus for Accessiblity (Acc) was compared with each banks on the Acc aspect. As shown below in table 6

ACC	FID.BANK	AF.BANK	WE.BANK	FIN.BANK	ST.BANK	SKY.BANK
FID.BANK	1	3	3	3	3	3
AF.BANK	1/3	1	3	3	3	3
WE.BANK	1/3	1/3	1	3	3	3
FIN.BANK	1/3	1/3	1/3	1	3	3
ST.BANK	1/3	1/3	1/3	1/3	1	3
SKY.BANK	1/3	1/3	1/3	1/3	1/3	1

**Table 6:** Comparing alternatives on criteria.

The same process is repeated on the remaining 6 elements to obatin weights for banks. Then the important weights of criteria (Table 5) was multiplied by the weights gotten from comparing alternatives on criteria (Table 6).

<b>CRITERIAS</b>	<b>BANK A</b>	<b>BANK B</b>	<b>BANK C</b>	<b>BANK D</b>	<b>BANK E</b>	<b>BANK F</b>
<b>ACC</b>	0,114679	0,079514	0,055132	0,038226	0,026505	0,018377
<b>P.C</b>	0,08814	0,068597	0,035983	0,026693	0,025895	0,014434
<b>C</b>	0,047566	0,035286	0,024466	0,019419	0,012584	0,010686
<b>S</b>	0,039957	0,033931	0,026931	0,016312	0,012101	0,011763
<b>V</b>	0,014298	0,011348	0,006874	0,005456	0,004047	0,003212
<b>N.R</b>	0,01426	0,009887	0,007848	0,00713	0,004944	0,003204
<b>E</b>	0,006688	0,005308	0,004213	0,003344	0,002654	0,002107
<b>SUM</b>	<b>0,325587</b>	<b>0,243872</b>	<b>0,161446</b>	<b>0,11658</b>	<b>0,08873</b>	<b>0,063784</b>
<b>RANKING OF BANKS</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>6</b>	<b>4</b>

**Table 7:** Final Selection-Illustration

The scores for each bank in respect to each criteria was gotten from the weights of each bank to a criteria multiplied by the weights of the criteria.

## **5 Analysis of the Model**

This chapter discusses the results from the AHP. The results from the analytical hierarchy Process methodology are analyzed based on the research model. At the end of the chapter the models of elements affecting the embracement of e-commerce in Nigerian banks are ranked and the banks also sampled are been ranked according to the one that is affected morebased on the pairwise comparison matrix.



## **5.1 Accessibility**

It seems limited adopters and non-adopters of e-commerce in the banking industry have a major problem in implementing e-commerce because of access to basic amenities. The lack of internet at homes has an adverse impact on e-commerce. The weight of the non adopters was significantly higher than that of the limited adopters.

Therefore we conclude that accessibility negatively affects the embracement of e-commerce.

## **5.2 Privacy and Confidentiality**

The results of the pairwise comparison matrix indicates that privacy and confidentiality is a significant element affecting e-commerce embracement in the country which as a side effect on the banks not to make them embrace e-commerce.

Although the result is expected if one looks in to the high level of internet fraud and scams especially in Nigeria, no one wants to transmitt their bank or personal informations online or via the internet. Thus we conclude that an high level of privacy and confidentiality negatively affects the embracement of e-commerce in Nigerian banks.

## **5.3 Cost**

Cost ranked third on the pairwise comparison matrix and there was a significant difference between the limited adopters and non-adopters. The non-adopters tend to believe that when the basic amenities(accessibility) are not available to the customers and them the cost of implementing it will be very high. E-commerce requires significant investments in new technologies that can touch many of a company's core business processes. As with all major

business systems, electronic commerce systems require significant investments in hardware, software, staffing, and training. Businesses need comprehensive solutions with greater ease-of-use to help foster cost-effective deployment.

#### **5.4 Security**

Security emerged as the fourth on the pairwise comparison matrix, the difference between the non-adopters and limited adopters was not large. Poor security associated with online transactors in Nigeria are still worrying about transmitting their credit and debit card information over the internet and innovation payment technologies which should improve the security data and payment method is impossible due to their cost.

#### **5.5 Value**

Value emerged as the sixth on the pairwise comparison but there was still a big difference between the non-adopters and limited adopters. Banks want to know that their investments in e-commerce systems will produce a return but when the customers can make use (accessibility) of e-commerce because of lack of amenities their investment will be a waste.

#### **5.6 Network Reliability**

Network reliability emerged sixth among all other variables. But still there was difference between the scores obtain from the banks studied.

## **5.7 Education**

Education emerged as the last among all. The score was abit low but still shows how it affects the embracement of e-commerce by banks. The customers will rather come to banks to perform there transactions rather than doing it online or in a convenient way. Some still look at e-commerce as an inconvenient way of doing their transactions.

## **5.8 Ranking of the elements affecting the embracement of e-commerce**

The ranking is shown in table 5 above.

- Accessibility (Acc)
- Privacy and confidentiality (P.C)
- Cost (C)
- Security (S)
- Network Reliability (N.R)
- Value (V)
- Education (E).

## **5.9 Ranking of the Banks Affected by the elements**

The ranking is shown in table 7 above.

- Fidelity Bank ( Bank A)
- Afri Bank ( Bank B)
- Wema Bank ( Bank C)
- Skye Bank (Bank F)
- First Inland Bank (Bank D)
- Stanbic-IBTC Bank (Bank E).

## **6 Conclusion And Final Discussion**

This study aims at identifying the elements affecting the embracement of e-commerce in Nigerian banks. The objectives of the study was to understand the negative elements affecting

or that could deprive banks and as well as citizens from using e-commerce in Nigerian banking industry; and to rank the importance of such elements and also to know the bank that is been affected the most and rank the importance to the elements.

Results from our decision making model based on the AHP technique has been illustrated for knowing the most important elements affecting the embracement of e-commerce in Nigerian banks and the most affected banks by rank. Out of the elements regonised accessiblity as been discorved to be a top priority. However the study also stressed that factors such as privacy and confidentiality, cost, security, value, network reliability and education are also significant and are of concern to banks and its customers. Basically majority of all the elements affecting the embracement of e-commerce by Nigerian banks are influenced by the customers cause the services are really been innovated for the customers to use.

The rank of elements affecting the embracement of e-commerce(in decending order of impacts) are: Accessiblility, Privacy and Cofidentialitiy, Cost, Security, Value, Network Reliability and Education. And the bank that are the most affected (in decending order of impacts from elements) are: Fidelity Bank, Afri Bank, Wema Bank, Skye Bank, First Inland bank, Stanbic-IBTC Bank. This study provides practitioners, banks and researchers with new set of elements affectingthe embracement of e-commerce in Nigeria.

## **6.1 Limitation of Study**

There was limitation in the area contacting some banks. Some contacted declined to give the necessary information and some that questonnaires that was sent out was not returned. It was very difficult getting the banks on telephone but got through. Emails were not replied quickly it took so long to get answers back.

## **6.2 Contribution**

The study provides new insights to the elements affecting the embracement of e-commerce in Nigerian banks. To tackle the problem of accessibility the country should should invest in insfractures to be able to provide constant power supply for the banks and citizens and

improve the communication networks so as to encourage non adopters, limited adopter and as well as citizens embrace the e-commerce. Sophisticated security measures so that hackers and so called yahoo boys wont be able to use or manipulate peoples data's or credit cards and bank details. Also there should be seminars organized or televisin awareness programs about the benefit and convinence of e-commerce.

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## List of Tables

Table 1 - List of Nigerian banks.....	13
Table 2 - Evaluation Of website.....	25
Table 3 - AHP pairwise comparison Scale.....	27
Table 4 - Pairwise comparison matrix.....	29



Table 5 - Importance weights of criteria.....	30
Table 6 - Final Selection-Illustration.....	31

### **List of Figures**

Figure 1 - Research Model.....	19
Figure 2 - Hierarchical structure of the bank selection problem.....	28

### **List of Appendix**

- Appendix 1 – Questionnaire for the Banks
- Appendix 2 – Questionnaire for the Customers
- Appendix 3 – Results from AHP

### **Questionnaire survey**

Electronic commerce provides the capability of buying and selling products and information on the internet and other online services.

Please rate moderately in your own opinion.

Where

1 equally important

3 weakly more important than

5 strongly more important than

7 very strongly more important than

9 absolutely more important than

How do you think this factors are affecting e-commerce in nigeria.

### **1) ACCESSIBILITY**

How would you rate accessibility as an element affecting e-commerce in nigerian banks to this other factors.

- a) privacy and confidentiality ?
- b) cost?
- c) security ?
- d) value ?
- e) network reliability ?
- f) education ?

### **2) PRIVACY AND CONFIDENTIALITY**

How would you rate privacy and confinedtality as an element affecting e-commerce in nigerian banks against this other factors ?

- a) accessibility ?
- b) cost ?
- c) security ?

- d) value ?
- e) network reliability ?
- f) education ?

### **3) COST**

How would you rate cost as an element affecting e-commerce in nigerian banks against this other factors?

- a) accessibility ?
- b) privacy and confidentiality ?
- c) security?
- d) value ?
- e) network reliability ?
- f) education ?

### **4) SECURITY**

How would you rate security as an element affecting e-commerce in nigerian banks against this other factors ?

- a) accessibility ?
- b) privacy and confidentiality ?
- c) cost?
- d) value ?
- e) network reliability ?
- f) education ?

### **5) VALUE**

How would you rate value as an element affecting e-commerce in nigerian banks against this other factors ?

- a) accessibility ?
- b) privacy and confidentiality ?
- c) security ?
- d) cost ?
- e) network reliability ?
- f) education ?

#### **6) NETWORK RELIABILITY**

How would you rate network reliability as an element affecting e-commerce in nigerian banks against this other factors ?

- a) privacy and confidentiality ?
- b) cost?
- c) security ?
- d) value ?
- e) accessibility ?
- f) education ?

#### **7) EDUCATION**

How would you rate education as an element affecting e-commerce in nigerian banks against this other factors ?

- a) privacy and confidentiality ?
- b) cost?

- c) security ?
- d) value ?
- e) network reliability ?
- f) accessibility ?

### **Questionnaire survey for customers**

- 1) Sex**
  - a) Male
  - b) Female

**2) Educational background**

- a) Primary
- b) Secondary
- c) OND
- d) B.SC or HND
- e) Other

**3) For the study purpose, I am primarily**

- a) Employed
- b) Unemployed
- c) Student
- d) Others

**4) Have you used E-Commerce before ?**

- a) Yes
- b) No

**5) If no, have you heard about E-Commerce ?**

- a) Yes
- b) No

**6) If your answer is yes, for how long have you been using it**

.....

**7) For how long have you heard about E-Commerce use in Nigeria**

.....

**8) How would you rate the use of E-Commerce in Nigeria ?**

- a) 20%
- b) 40%
- c) 60%
- d) 80%
- e) 100%

**9) Do you prefer E-Commerce to the traditional face to face transaction?**

- a) Yes
- b) No

**10) What type of people make use of it ?**

- a) Rich
- b) Average
- c) Poor

- d) Educated
- e) a) and d)

**11) What are some of the main challenges to implement E-Commerce in Nigeria?**

- a) Low computer literacy level
- b) Cost
- c) Low income of citizens
- d) Fear of security

**12) What are the benefits of E-Commerce in your own opinion ?**

- a) Higher sales and lower cost
- b) encourages new types of competition
- c) Increase the speed and accuracy with which business can obtain information
- d) d) increase purchases opportunity

**13) Is the technology in E-Commerce available for you in Nigeria?**

- a) Yes
- b) No

**14) Is the cost of implementing E-Commerce a problem in Nigeria banks?**

- a) Yes
- b) No

**15) I am not afraid of privacy and confidentiality issue**

- a) Yes
- b) No

**16) Is the network reliable for E-Commerce in Nigeria?**

- a) Yes
- b) No

**17) If E-Commerce was implemented by banks would you be able to use it ?**

- a) Yes
- b) No

**18) Would you prefer to use it ?**

- a) Yes
- b) No

**19) The internet is considered to be a reliable communication medium to transact business**

- a) Yes

b) No

**20) Do you consider yourself been safe for online purchase?**

a) Yes

b) No

**21) What will determine your use of E-Commerce in the next few years ?**

a) Improve security

b) Cost effectiveness

c) Solution to internet and communication service provider problem

d) Skills to use it

e) Dont know

f) Others

First step (Pair Wise Comparison Matrix on Criterias)

	Acc	Privac&C	Cost	Security	Value	Net.Rela	Educa	Geomean	Weights
Acc	1	3	3	3	7	5	5	3,348995	0,332432
Priva&C	1/3	1	5	3	7	4	6	2,616702	0,259742
Cost	1/3	1/5	1	3	5	3	6	1,511209	0,150007
Security	1/3	1/3	1/3	1	9	5	7	1,420434	0,140997
Value	1/7	1/7	1/5	1/9	1	3	3	0,455712	0,045235



Net.Rela	1/5	1/4	1/3	1/5	1/3	1	5	0,476232	0,047272
Educa	1/5	1/6	1/6	1/7	1/3	1/5	1	0,24495	0,024314
Total								10,07423	1

2nd step (Compare All Alternatives On Each Criteria)

### ACCESSIBILITY

ACC	FID.BANK	AF.BANK	WE.BANK	FIN.BANK	ST.BANK	SKY.BANK	GEOMEAN	Weights
FID.BANK	1	3	3	3	3	3	2,49805	0,344969
AF.BANK	1/3	1	3	3	3	3	1,732051	0,239188
WE.BANK	1/3	1/3	1	3	3	3	1,200937	0,165844
FIN.BANK	1/3	1/3	1/3	1	3	3	0,832683	0,11499
ST.BANK	1/3	1/3	1/3	1/3	1	3	0,57735	0,079729
SKY.BANK	1/3	1/3	1/3	1/3	1/3	1	0,400312	0,055281
Total							7,241383	1

### PRIVACY AND CONFIDENTIALITY

Privac&C	FID.BANK	AF.BANK	WE.BANK	FIN.BANK	ST.BANK	SKY.BANK	GEOMEAN	WEIGHTS
FID.BANK	1	3	2	3	3	4	2,44949	0,339336
AF.BANK	1/3	1	4	4	3	3	1,906369	0,264096
WE.BANK	1/2	1/4	1	2	2	2	1	0,138534
FIN.BANK	1/3	1/4	1/2	1	2	2	0,741836	0,102769
ST.BANK	1/3	1/3	1/2	1/2	1	5	0,719633	0,099693
SKY.BANK	1/4	1/3	1/2	1/2	1/5	1	0,401142	0,055572
Total							7,21847	1

### COST

Cost	FID.BANK	AF.BANK	WE.BANK	FIN.BANK	ST.BANK	SKY.BANK	GEOMEAN	WEIGHTS
FID.BANK	1	3	2	2	3	3	2,182247	0,31709
AF.BANK	1/3	1	3	3	3	2	1,61887	0,235229
WE.BANK	1/2	1/3	1	2	3	2	1,122462	0,163099

FIN.BANK	1/2	1/3	1/2	1	3	2	0,890899	0,129451
ST.BANK	1/3	1/3	1/3	1/3	1	3	0,57735	0,083891
SKY.BANK	1/3	1/2	1/2	1/2	1/3	1	0,49028	0,07124
Total							6,882109	1

## SECURITY

Security	FID.BANK	AF.BANK	WE.BAN K	FIN.BANK	ST.BANK	SKY.BANK	GEOMEAN	WEIGHTS
FID.BANK	1	2	2	2	3	2	1,906369	0,283391
AF.BANK	1/2	1	2	3	3	2	1,61887	0,240653
WE.BANK	1/2	1/2	1	3	3	2	1,284898	0,191006
FIN.BANK	1/2	1/3	1/3	1	2	2	0,778272	0,115694
ST.BANK	1/3	1/3	1/3	1/2	1	2	0,57735	0,085826
SKY.BANK	1/2	1/2	1/2	1/2	1/2	1	0,561231	0,08343
Total							6,72699	1

## VALUE

Value	FID.BANK	AF.BANK	WE.BAN K	FIN.BANK	ST.BANK	SKY.BANK	GEOMEAN	WEIGHTS
FID.BANK	1	3	2	3	3	2	2,182247	0,31608
AF.BANK	1/3	1	3	3	3	3	1,732051	0,250873
WE.BANK	1/2	1/3	1	2	2	2	1,049115	0,151956
FIN.BANK	1/3	1/3	1/2	1	2	3	0,832683	0,120607
ST.BANK	1/3	1/3	1/2	1/2	1	2	0,617715	0,089471
SKY.BANK	1/2	1/3	1/2	1/3	1/2	1	0,49028	0,071013
Total							6,904091	1

## NETWORK RELIABILITY

Net.R	FID.BANK	AF.BANK	WE.BAN K	FIN.BANK	ST.BANK	SKY.BANK	GEOMEAN	WEIGHTS
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FID.BANK	1	2	3	2	2	3	2,039649	0,301656
AF.BANK	1/2	1	2	2	2	2	1,414214	0,209157
WE.BANK	1/2	1/2	1	2	2	2	1,122462	0,166008
FIN.BANK	1/2	1/2	1/2	1	3	3	1,019824	0,150828
ST.BANK	1/2	1/2	1/2	1/3	1	3	0,707107	0,104578
SKY.BANK	1/3	1/2	1/2	1/3	1/3	1	0,458243	0,067772
Total							6,761499	1

## EDUCATION

Educ	FID.BANK	AF.BANK	WE.BANK	FIN.BANK	ST.BANK	SKY.BANK	GEOMEAN	WEIGHTS
FID.BANK	1	2	2	2	2	2	1,781797	0,275066
AF.BANK	1/2	1	2	2	2	2	1,414214	0,21832
WE.BANK	1/2	1/2	1	2	2	2	1,122462	0,173281
FIN.BANK	1/2	1/2	1/2	1	2	2	0,890899	0,137533
ST.BANK	1/2	1/2	1/2	1/2	1	2	0,707107	0,10916
SKY.BANK	1/2	1/2	1/2	1/2	1/2	1	0,561231	0,08664
Total							6,47771	1

3rd step Then We Obtained

CRITERIA	Weights	FID.BANK	AF.BANK	WE.BANK	FIN.BANK	ST.BANK	SKY.BANK
ACC	0,332432	0,114679	0,079514	0,055132	0,038226	0,026505	0,018377
Prvc&C	0,259742	0,08814	0,068597	0,035983	0,026693	0,025895	0,014434
Cost	0,150007	0,047566	0,035286	0,024466	0,019419	0,012584	0,010686
Security	0,140997	0,039957	0,033931	0,026931	0,016312	0,012101	0,011763
Value	0,045235	0,014298	0,011348	0,006874	0,005456	0,004047	0,003212
Net.R	0,047272	0,01426	0,009887	0,007848	0,00713	0,004944	0,003204
Educ	0,024314	0,006688	0,005308	0,004213	0,003344	0,002654	0,002107
Sum		0,325587	0,243872	0,161446	0,11658	0,08873	0,063784
Ranking		1	2	3	5	6	4