

**THE EFFECTS OF INFORMATION TECHNOLOGY
ON THE MARKETING OF CONSUMER GOODS:
A CASE STUDY OF CADBURY NIGERIA PLC (1996-
2005)**

BY

**OLUTIMEHIN, Emmanuel
MBA/ADMIN/39545/2004-2005
G04BAMP7134**

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DECLARATION

I declare that the work in the project report entitled “*THE EFFECTS OF INFORMATION TECHNOLOGY ON THE MARKETING OF CONSUMER GOODS (A CASE STUDY OF CADBURY NIGERIA PLC – 1996-2005)*” has been performed by me in the Department of Business Administration under the supervision of Mallam Yusuf Abdullahi (Chairman, Supervisory Committee) and Mallam T. M. Basheer (Member, Supervisory Committee). The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this project report was previously presented for another degree or diploma at any University.

.....

NAME OF STUDENT

.....

SIGNATURE

.....

DATE

CERTIFICATION

This is to certify that this project titled “THE EFFECTS OF INFORMATION TECHNOLOGY ON THE MARKETING OF CONSUMER GOODS: A CASE STUDY OF CADBURY NIGERIA PLC (1996-2005)” by OLUTIMEHIN,

Emmanuel meets the partial regulations governing the award of the degree of Master of Business Administration (MBA) of Ahmadu Bello University, Zaria and is therefore approved for its contributions to knowledge, and literary presentation.

_____ <i>Malam Yusuf Abdullahi</i> Chairman, supervisory committee	_____ Signature	_____ Date
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_____ <i>Dr. M.N. Maiturare</i> Head of Department	_____ Signature	_____ Date
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_____ External Examiner	_____ Signature	_____ Date
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_____ Dean, Postgraduate School	_____ Signature	_____ Date
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DEDICATION

This project is dedicated first to God almighty who has been my help in ages and my hope for years to come; And to the memory of my late father, Mr. Stephen Olutimehin, who transited to Eternal Glory in 2002 leaving for us his children a legacy that can not be bought; And lastly to my beloved mother, Mrs. Elizabeth Olutimehin, who never went to school but is more enlightened than most elites,

and has so transferred such to me, which is the reason for my undying quest for knowledge, even against all odds.

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ABSTRACT

Information technology is generally believed to be the only tool that has brought the world together as a global neighborhood. It is an unprecedented revolutionary tool that can not be jettisoned or ignored by any forward looking manager of resources, whose objective is to succeed and have an edge over competitors. It is in the light of this that this study attempts to examine some of the attendant effects of information technology on the marketing of consumer goods.

Data for the study was generated mainly from reliable secondary sources and the study makes use of both descriptive and analytical tools in analyzing the data collected. The descriptive tool consists of the use of tables and ratios, while the analytical tool consists of the use of Ordinary Least Square (OLS) regression. The findings of the study reveal that there is linear relationship between Information Technology and Turnover and that they are positively related. The magnitude of their relationship is also very high. Thus, growth in information technology has meaningful impact on growth in sales.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The chief goal of any business organization is to make profit. Following the goal of profit making is to keep being in business and gaining more and more share of the market – growth. Every activity of a business organization is geared towards the success of the organization.

Mullins (2002) opined that “in order to be successful, the primary objectives of the business organization may be seen as:

- a. to continue in existence – that is, to survive;
- b. to maintain growth and development; and
- c. to make profit.

All three objectives are inextricably linked and it is a matter of debate whether the organization survives and develops in order to provide a profit, or makes a profit by which it can survive and develop. If we accept survival as the ultimate objective of the business organization, then this involves the need for a steady and continuous profit.”

In his own words, Drucker (1989) suggested that “the first responsibility (of a business organization – mine emphasis) is to operate at a profit, and only slightly less important is the necessity for growth. The business is the wealth-creating and

wealth-producing organ of our society. Management must maintain its wealth-producing resources intact by making adequate profits to offset the risk of economic activity. And it must besides increase the wealth-creating and wealth-producing capacity of these resources and then the wealth of society.”

It is just pertinent to note here that the business organization can keep being in business only by perpetual profit making. In view of the objectives of profit making, growth, and continuous existence of a business organization, many inventions keep evolving to help business organizations achieve their objectives. Chief among these inventions, and perhaps, the most recent, is information technology. Simply put (in a layman’s definition), information technology is the use of computer-based (or electronic) devices to gather, process, and disseminate information.

Information is very critical to the survival of any business organization. It is not enough for a manager to know how and where to get the right information, it is important for managers to know the techniques for controlling and processing information. This is referred to as ‘manage information’ which describes the manager’s role in obtaining, analyzing, and using information effectively to take decisions.

According to Kotler and Armstrong (2001),

a century ago, most companies were small and knew their customers firsthand. Managers picked up marketing information by being around people, observing them, and asking questions. In more recent times, however, many factors have increased the need for more, better, and faster information. As companies become national or international in scope, they need information on larger, more distant markets. As incomes increase and buyers become more selective, sellers need better information about how buyers respond to different products and appeals. As sellers use more complex marketing approaches and face more competition, they need information on the effectiveness of their marketing tools. Finally, in today's more rapidly changing environments, managers need more up-to-date information to make timely decisions.

Developments in information technology have caused a revolution in information distribution. With recent advances in computers, software, and telecommunication, most companies have decentralized their marketing information systems.

Hitt, Ireland and Hoskisson (2003) noted that, "the internet provides an infrastructure that allows the delivery of information to computers in any location. Access to significant quantities of relatively inexpensive information yields strategic opportunities for a range of industries and companies. Retailers, for example, use the internet to provide abundant shopping privileges to customers in multiple locations."

Developments in the technical systems of communications such as international telephone connections and the increasing use of faxes, mobile telephones and e-mail generating a working climate in which there is a greater expectation of

immediacy of receipt and response; and adding to the dangers of information overload.

Consistent with this research priority, this paper tries to build on previous research on information technology by examining the effects of information technology on the marketing of consumer goods. Specifically, this study seeks to develop and test a normative process model with sales and financial data collected from the Cadbury Nigeria PLC. Cadbury Nigeria is a major and front-lining consumer packaged goods (CPG) company in Nigeria.

More specifically, models such as regression analysis, coefficient of correlation, coefficient of determination, and hypothesis testing, were used to test the interrelationships among information technology and its consequent effects on the marketing of consumer goods.

The study is made up of five (5) chapters. Chapter one is the introduction which gives an overview of the study, relatively to the problem and objectives of the study. Chapter two is the literature review, which employed the relevant contributions of other people on the subject matter, to drive home the point of the study. Chapter three is the research methodology and is about how data were collected. Chapter four is the presentation and analysis of data. This is where the data collected are tested, presented, and analyzed. And lastly, chapter five, which

is the concluding chapter, summarizes findings and gives recommendations on the subject matter.

1.2 STATEMENT OF RESEARCH PROBLEM

Until the 20th century, almost all data processing was done manually. Frequent clerical errors caused transactions to be misrepresented and information was often received too late to serve any meaningful historical purpose.

This necessitated the need to find better, faster, cheaper and more reliable methods of handling information, hence, the advent of information technology. Actually, products of information technology are aimed at detecting and, if possible, improving low-quality information before it reaches the recipient.

However, it is rather bizarre to note that Nigeria, the ‘giant of Africa’ is still way behind the age. Information system is at lowest ebb. No significant data records and the little there is, are statistically incorrect. Adeoti (2004) established that “the availability of secondary data in Nigeria is known to be poor and relatively unreliable (see Mosely, 1992 and Thoburn, 2000). Our search for secondary data in the course of this research confirmed this notion.” Akanji (Guardian: 2006) also noted that “poor governance, wide information asymmetry, and lack of confidence in the integrity of transactions and internal control mechanisms are the biggest investor concerns in Nigeria.”

The reason for the consternating state of information system in Nigeria may not be unconnected with the country's level of developments in information technology. Writers like Toffler (1990), Glastonbury and LaMendola (1992), Frenzel (1996), Naisbitt (1994), and Gates (1995), are of the opinion that,

in the next millennium, information technology would determine the countries that would be leaders and those that would be laggards; those that would be rich and those that would be poor; and those that would be powerful as against those that would be weak. Countries that cannot trade using information technology would be relegated to the periphery of world commerce and international relations. They would thus become the outcasts of the New World System. Equally, companies that do not have an appropriate information technology infrastructure and the promotion of information technology use in their operations, management and communication processes would also suffer an existential debacle in the business arena of the new era.

For a business to thrive, therefore, in a country with such asymmetry of information, like Nigeria, something needs to be done urgently. It is on this premise that this study is carried out to assess the effects of information technology on the marketing of consumer goods.

1.3 OBJECTIVES OF THE STUDY

The primary objective of this study is to examine the effects of information technology on the marketing of consumer goods. However, the study will also try to:

1. Assess the need for information technology in Nigeria;

2. Know the level of development of information technology in the Nigerian consumer goods industry/market;
3. Examine the extent to which information technology has affected consumer goods in Nigeria;
4. Highlight the problems of information technology in marketing consumer goods in Nigeria; and
5. Ascertain how satisfied stakeholders are with the use of information technology in marketing consumer goods in Nigeria.

1.4 HYPOTHESIS OF THE STUDY/ RESEARCH QUESTIONS

To make a decision, it is useful to make assumptions or guesses which are usually untrue. This is what hypothesis is all about. According to Asika (2002), “it is a tentative statement about relationships that exist between two or among many variables. It is a conjectural statement about relationships and need to be tested and subsequently accepted or rejected.” Hypothesis to be tested is known as the null hypothesis, designated (H_0). If the sample result does not support the null hypothesis, we must conclude something else. The conclusion that is accepted contingents on the rejection of the null hypothesis is called the alternative hypothesis, designated (H_1). Thus, the hypothesis to be tested in this study is:

H_0 : Growth in information technology has no meaningful impact on sales.

H_1 : Growth in information technology has meaningful impact on sales.

The problem is sharply focused in form of the following research questions:

1. Why information technology in Nigeria?
2. What is the level of development of information technology in the Nigerian consumer goods industry/market?
3. To what extent has information technology affected the consumer goods in Nigeria?
4. What are the problems of information technology as regards the consumer goods in Nigeria?
5. How satisfactory is the use of information technology in marketing consumer goods in Nigeria?

1.5 SIGNIFICANCE OF THE STUDY

The relevance of information technology in any organization can not be over-emphasized. The world is rapidly turning to a global village. Companies are building electronic networks that link them to consumers, employees, vendors, and suppliers. The use of hand-held computers with internet connectivity, web-enabled mobile phone handsets is expected to increase substantially, soon becoming the dominant form of communication and commerce.

As a result, Cannon and Perreault (1999) noted that “in the sales and marketing literatures, there has been increasing attention paid to the role of shared information, operational linkages, and cooperation as firms in business markets

shift to more closely coupled relationships.” Several researchers have addressed the relationship between information technology and organizational performance. Most of these works implicitly treat the organization as a ‘black box’ – so the impact of information technology on individual tasks, specific processes, or intermediate outcomes (such as the quality of services) is not explicitly evaluated.

This work is also justified on the basis of its focus on the Nigerian experience with the effect of information technology on consumer goods. This is hoped to keep Nigerians abreast and knowledgeable about the virtues and vices of information technology. It is also intended to serve as a scholarly contribution to the subject, thereby serving as a purpose of documentation for posterity sake.

1.6 SCOPE AND LIMITATION OF THE STUDY

Information technology devices such as the internet were introduced into the Nigerian environment in the mid-1990s. The use of trunk phones, faxes, and cellular phones have been prior to this time, though, the Global System of Mobile communication (GSM) came into the Nigerian environment in the early 2000s. Therefore, this study is confined to a 10 year period of 1996-2005.

This study is purely academic and as such, is faced with time and financial constraints. The researcher is therefore limiting his research to Cadbury Nigeria PLC. A research on the effects of information technology on the marketing of

consumer goods should, no doubt, cover the various sectors of the national economy. But because of the peculiar constraints it faced, the study is designed to meet the stipulated time and conditions for submission. Nevertheless, the research is designed to produce meaningful and useful information.

1.7 DEFINITION OF KEY TERMS

Computer – a computer is an electronic device that uses instructions provided to it, which it stores in its memory unit, to accept data input from its peripherals. It processes the data input using its arithmetic logic processing units, and then produces outputs from its internal processing, while storing the results for use in the future. This definition of a computer includes things like handheld computers, palmtops, notebooks, personal digital assistants (PDAs), desktops, workstations, minis, mainframe computers, as well as supercomputers.

Data – data refers to raw facts like numbers, words, images and sounds that are fed to a computer as input. Data is processed to create information.

Information – information is used to refer to data or sets of data that have been processed and/or manipulated to provide something meaningful and useful.

Hardware – computer hardware refers to the physical components of the computer, i.e. those aspects of the computer that are physically manipulable.

Software – software refers to the sets of instructions that are fed into the machine that enable the computer to process data/information.

Input device – input devices are the devices used to enter data into a computer. The most commonly used input devices are the keyboard and the mouse. A keyboard is like the keyboard of typewriters. It is usually the Qwerty board variety that is used. A mouse is a device, which could be held and used to move a pointing device about, usually in the shape of an arrow on the screen of a computer.

Network – a network is a series of computers that are connected electronically and that can share information digitally. When not physically interconnected, communication between computers that are spread out geographically can still take place via the use of a modem.

Modem – a modem converts the digital signal of a computer to analog signals that are transmitted through a communication channel like the telephone line.

Cyberspace – refers to the ether world of electronic communication in which individuals or organizations push data and information around to other individuals or organizations around the world.

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CHAPTER TWO

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, effort is made to review models and theories relevant to the hypothesis and research questions. There is also a critique of current literature based on the relevant variables of the model or theory.

2.2 HISTORICAL BACKGROUND, MODELS/THEORIES RELEVANT TO THE HYPOTHESIS/RESEARCH QUESTIONS

2.2.1 THE CUSTOMER

Arora (2004) submitted that “the customer is the soul, purpose and creator of modern business. He is one of the most vital living assets of every kind and type of economic pursuits.” He further described today’s business in just a simple sentence: “that everyone is eagerly, sincerely and actively committed to serving their respective customers.”

If in the 70s and 80s customers sought and patronized their products and producers, either in terms of goods or services, in today’s business environment, the service provider or seller of goods seeks his customer or buyer. The companies are shifting gears from managing product portfolios to managing customer’s portfolios.

Kotler and Armstrong (2001) opined that “managing demand means managing customers.” According to them, “customers prefer suppliers who can sell and deliver products and services to many locations. They favour suppliers who can solve problems that arise in their different parts of the nation or world, and who can work closely with customer teams to improve products and processes. For these customers, the sale is only the beginning of the relationship.”

Beyond creating short-term transactions, marketers need to build long-term relationships with valued customers. Increasingly, marketing is shifting from trying to maximize the profit on individual transaction to building mutually beneficial relationships with customers. According to Schrage (2001), “the firm’s relationships with its customers are strengthened when it is committed to offering them superior value. In business-to-business transactions, superior value is often created when the firm’s product helps its customers to develop a new competitive advantage or to enhance the value of its existing competitive advantages.”

Evidence suggests that loyalty has a positive relationship with profitability. Selecting customers and deciding which of their needs the firm will try to satisfy, as well as how it will do so, are challenging because of global competition which has created many attractive choices for customers. In the words of Ferguson (2001), “a large set of what appear to be equally attractive choices increases customers’ power and influence relative to companies offering products to them.”

According to him, “some even argue that increased choice and easily accessible information about the functionality of firms’ products are creating increasingly sophisticated and knowledgeable customers, making it difficult to earn their loyalty.”

A crucial decision at any company related to business-level strategy is the one made about the target customers for the firm’s goods or services. To make this decision, Neal and Wurst (2001) suggested that “companies divide customers into groups based on differences in the customers’ needs. Called marketing segmentation, this process clusters people with similar needs into individual and identifiable groups.” According to them, the following are the basis for customer segmentation:

Consumer markets

- i. Demographic factors (age, income, sex, etc).
- ii. Socioeconomic factors (social class, stage in the family life cycle).
- iii. Geographic factors (cultural, regional, and national differences).
- iv. Psychological factors (lifestyle, personality traits).
- v. Consumption patterns (heavy, moderate, and light users).
- vi. Perceptual factors (benefit segmentation, perceptual mapping).

Industrial markets

- i. End-use segments (identified by SIC code).

- ii. Product segments (based on technological differences or production economics).
- iii. Geographic segments (defined by boundaries between countries or by regional differences within them).
- iv. Common buying segments (cut across product market and geographic segments).
- v. Customer size segments.

The focus of this research is on consumer market, otherwise referred to as consumer products or Consumer Packaged Goods (CPG). Therefore, attention shall forthwith be, mainly, on consumer products.

Kotler and Armstrong (2001) observed that “consumer products are products bought by final consumers for personal consumption. Marketers usually classify these goods further based on how consumers go about buying them. Consumer products include convenience products, shopping products, specialty products, and unsought products. These products differ in the ways consumers buy them and therefore in how they are marketed.”

However, Arora (2004) maintained that “the understanding of customers can never be complete due to variety of reasons. Certain amount of estimation, trial and error is, therefore, inevitable.” Some of the reasons, according to him, are:

- i. Customers vary from one another
- ii. Customers have varying feelings about the same object or phenomenon from time to time.
- iii. The response of an individual towards an object is primarily dependent upon his cognition. Cognitions are determined by his needs, drives, past experiences, personality, value system, beliefs and environment surrounding an individual.
- iv. The dynamic nature of customer behaviour can at most enable predictions in probabilistic terms.
- v. Very large number of customers have psychological reasons for buying rather than logical or systematic.
- vi. The customers are always surrounded by the micro and macro environment.
- vii. The education, religion, reference groups, socialization, etc affect the customers.
- viii. Many buying decisions are taken jointly and the relative dominance of individuals in the group varies.
- ix. The customer's actions are substantially affected by the events taking place around him.
- x. The members do not have any direct control over the needs, expectations, motives, perceptions, attitudes, and habits of the customers.

- xi. The customers attempt to satisfy a number of desires simultaneously in a single purchase.
- xii. The act of purchasing is one of the elements of the art of purchasing. It is, therefore, vital if pre-purchase and post-purchase factors are properly analyzed.
- xiii. The customer's need can be met by a variety of different kinds of products and quite often their satisfaction may not necessarily be inherent in the physical product.

2.2.2 CUSTOMER RELATIONSHIP MANAGEMENT

As stated earlier, the ultimate success of an organization lies in how its customers perceive it and reward it in terms of repeat purchases. This underpins the critical need to evolve ways and means customer relationship could be improved, and constitutes the scaffold on which this discourse is constructed.

Although organizations have been performing a set of activities designed to satisfy, delight or excite customers, yet a more systematic process of creating emotional surplus in its transactions with the customers is now available in terms of Customer Relationship Management (CRM). In its simplest form, CRM is an attitude, a mindset, a value that one places on one's business in its

relationship with its customers. It is also seen as a process of organizational evolution in the marketplace and its relationship with the individual customer.

Ovum (2002) viewed Customer Relationship Management (CRM) as “a management approach that enables organizations to identify, attract and increase retention of profitable customers, by managing relationships with them.” A narrow, yet relevant, viewpoint is to consider CRM only as customer retention in which a variety of marketing tactics are used for customer bonding or staying in touch after the sale is made. A more popular approach with recent application of information technology is to focus on individual or one-to-one relationship with customers that integrate data-base knowledge with a long-term customer retention and growth strategy (Kaushik: 2004).

Hitt, Ireland and Hoskisson (2003) described Customer Relationship Management (CRM) as “one form of an information-based network process that firms use to better understand customers and their needs.” They maintained that the effective CRM system provides a 360-degree view of the company’s relationship with customers, encompassing all contact points, involving all business process, and incorporating all communication media and sales channels. The firm can then use this information to determine the trade-offs its customers are willing to make between differentiated features and low cost. Johnston and Marshall (2005) argued that “the burgeoning literature and

use of CRM tools has been so pervasive in modern practice that CRM has evolved as both a business philosophy and a technology.”

This research is in total agreement with Johnston and Marshall, while it agrees in part with the other contributors quoted above. Reason being that, some of these contributors see CRM only as a management process, and some, as a tool. But Johnston and Marshall see it as both. It is the belief of this study that CRM is a permeating management process and management tool aimed at tracking down and managing customer interactions and transactions. However, this study aligns with and adopts Kaushik (2004),

CRM is a comprehensive approach that provides seamless integration of every aspect of business that comes in contact with the customer at various stage such as marketing, service delivery, after-sales-service, etc through the integration of the people, process and technology. CRM is aimed at understanding and influencing customer behaviour through meaningful communications in order to improve customer acquisition, customer retention, customer loyalty and customer profitability.

According to him, the generic constituents of CRM are Acquisition, Customer Retention, and Improved Customer Value, which he represented in a diagram as follows:

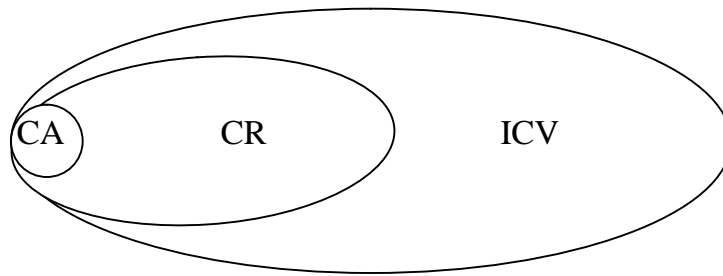


Figure 2.1 Components of CRM

- CA – Customer Acquisition encompasses:
Customer Staff automation
Marketing

- CR – Customer Retention through:
Data warehousing and analytical tools
Customer Service
Call Service
Contact Centre

- ICV – Improved Customer value through:
Marketing automation and Campaign Management
Cross selling and Up-selling

He maintained that the CRM implementation and success rate purely depend upon the process, which includes the future revenue, customer value, customer retention, customer acquisition and profitability. CRM success hinges on accurate, timely, and appropriate information spanning the entire customer life cycle. Targeting sales, according to him, leads to customer acquisition, customer retention and customer extension. Companies that gain a superior strategic customer understanding will be the winners.

2.2.3 THE EVOLUTION OF INFORMATION TECHNOLOGY

Woherem (2000) Information Technology (IT) refers to the new technology of gathering, storing, manipulating and transferring information. At the heart of the technology lies two major branches of the technology, namely: computing and telecommunications. It is believed that information technology is responsible for ushering in the 'post-industrial' era which, we are told, is already with us (Toffler, 1983 and 1990; Bell, 1974; Forester, 1987; and Woherem, 1993).

Information technology made itself felt in the office much before the present push towards an 'electronic office'. The 'mechanized office' started in the second half of the 19th century with the introduction of the typewriter and telegraph. Later additional office technologies appeared e.g. automatically switched telephones, the ticker tape electric typewriter, telex, duplicating machine and other data processing equipment using punched cards etc. these rise brought about a gradual replacement of the mechanical equipment by the smaller, more reliable and more versatile electronic equipments: private branch telephone exchanges, electronic typewriters, visual display terminals, dictating machines, copiers, computers and so on. Piszczalski (2002) submitted that the earliest applications of computers in manufacturing were for industrial control. Military technology developed during the world war 11 vastly improved industrial controls technology. Especially important were new monitoring devices and electromechanical-servo systems created during the war. These technologies soon found their way into petroleum refineries and chemical plants.

Friedman and Cornford (1989) stressed that computer systems had undergone three main phases of development:

- i. Their beginnings are to be found in universities and defense industries in the 1940s, dominated by hardware problems, and lasting until the mid-1960s;
- ii. The second phase lasted from mid-1960s until the early 1980s, and was dominated by software development;
- iii. The third phase centered upon user relations.

However, they predicted a fourth phase which would be focused upon exploiting the strategic potential of new technology, and would be realized through the installation of computer networks linking people and organizations over time and space. With the benefit of hindsight, it is notable that this prediction was an accurate prediction. As Woherem (2000) noted, “today, more and more PCs (personal computers) are being interconnected to form networks. When a group of computers are linked in a network, they increase and improve both personal and group productivity. There are two major types of networks: the LAN (local area network) and WAN (wide area network). They allow two or more computers to be linked together so that they can communicate data and information over short (LAN) or long (WAN) distances.”

According to Woherem (2000),

While the computer is used to store and manipulate data, telecommunications is responsible for transmitting data across distances. Many associate the genesis of modern telecommunications with Samuel Morse's invention of the 'Morse Code' in 1937 (sic – 1837). The Morse code made it possible for people to transmit data, using electrical impulses in the format of dots and dashes. Alexander Graham Bell, in 1876, made it possible for an electrical energy conversion of voice to be transmitted over a wire, using continuously varying voltages, and then converting them back to sound at the other end of the line. Then came the invention of switchboards, which enables two specified lines to be connected by an operator. Today, the telephone is a common device in people's homes, and there are now automatic switches, instead of the manual ones, which allow people to communicate from any location on the globe. Similarly, it is now possible to transfer data between computers, no matter the distance between them.

2.2.4 INFORMATION TECHNOLOGY AND CUSTOMER RELATIONSHIP MANAGEMENT

The idea of preparing product information brochure for purpose of customer services and guide became suboptimal when we consider the subjective nature of one-way written or visual information, which could be opened to multiple interpretations and errors. Historically, the salesperson's role has been defined around information dissemination and information retrieval. Information is conveyed and questions are answered in dyadic discussion between buyer and salesperson. Furthermore, much of the salesperson's time may be spent on reviewing order history and seeking to resolve invoice differences. Indeed, the salesperson is the conduit for all information flow.

However, the introduction of information technology undoubtedly transforms, significantly, the nature of information system in an organization. In the words of Lynch (2000), “information technology bears heavily on the decision-making processes of the organization and increasingly forms an essential part of management information and corporate strategy.” Mullins (2002) noted that “the process of communication are increasingly linked to computer systems with the rapid transmission of information and immediate access to other national or international offices. Improvements in telecommunications mean, for example, that support staff need no longer be located within the main ‘production’ unit.”

Zmud (1984) characterized the role of information technology as consisting of nine typical sub-functions: delivery system (maintenance and database support services), system development (critical or corporate-wide systems construction), support centre (end-user development support), research and development (technology forecasting), technology diffusion (pilot technology testing), planning, internal auditing, and administration.

Much as this study identifies with the all-encompassing role of information technology, it is confined to assessing only its relationship with consumer goods, owing to the constraints it faced. Thus, information technology function provides unique, novel, or exclusive systems and services to support the unique nature of

the firm's products/services. This is the starting point for many organizations seeking to carve out unique markets and opportunities.

With the advent of the worldwide web and the electronic marketplace, many information technology functions have migrated from a 'quality' perspective to that of 'precision'. In this perspective, the information technology function provides highly customized products/services but also delivers this value efficiently (Segars and Hendrickson: 2000).

(NIMN, 2005; Ayo, 2001) classified electronic gadgets into three usage groups:

- i. Office gadgets comprising multimedia – personal computer (PC) + sound + CD + speakers, telecommunication, having telephone (cable and wired) and GSM (wireless).
- ii. Home gadgets comprising telephone, (digital) camera, microwave oven, television, video, etc.
- iii. Internet in which case electronic mail (e-mail) is used with the creation of website (www) in sending information locally and/or internationally.

Thus, information technology has made possible for a Nigerian buyer to shop for a product/service in far away US, place an order for this product/service, and have his desired product sent to him in a matter of a few hours. This could be facilitated through the use of the internet. As Kaushik (2004) noted, the internet with its 24-

hours, seven-day-a-week access, real-time customer interaction and personalized technology has opened new doors for businesses in terms of customer service and satisfaction.

Kotler and Armstrong (2001) opined that,

Perhaps the most dramatic new technology driving the connected age is the internet. Many companies now equip their salespeople with the latest sales automation tools, including the capacity to develop individualized multimedia presentations and to develop customized market offerings and contracts. Many buyers now prefer to meet salespeople on their computer screens rather than in the office. An increasing amount of personal selling is occurring through video-conferences or live internet presentations, where buyers and sellers can interact across great distances without the time, costs or delays of travel.

Dhingra (2004) submitted that “the internet is now being hailed as the technology behind a new model of doing business. It allows anytime, anywhere connections to information, entertainment and communication.” Companies, according to him, are now using the internet to build closer relationships with customers and marketing partners and to sell and distribute their products. They are rapidly converting to Internet for connecting with customers, Intranets for connecting with others in the company, and Extranets for connecting with strategic marketing partners, suppliers and dealers.

Having established the importance of internet as a market space, it is important to know what internet is and how it works as a marketplace. According to Dhingra (2004),

internet is short form for internetwork. It is just an international network of computers linked together. It is a global information highway with unique collection of networks with vast proportion of its own kind. Once you are hooked up and plugged in, you can rocket around the computers across the world, drop into discussion groups, read bulletin boards, share ideas, photos, videos, articles, news and games, visit virtual shopping malls, buy products etc. it is a channel through which millions of scholars, scientists, businessmen, librarians, journalists, software developers and home users are woven into a 'global village' by means of millions of computers interconnected without any central control. The net has a unique combination of anonymity and intrusiveness.

Woherem (2000) noted that "internet is not controlled by any institution, agency, country or individual. It could be called a system based on organized anarchy. It is open." And according to Kotler and Armstrong (2001), "the internet is a vast and burgeoning global web of computer networks with no central management or ownership. The internet links computer users of all types around the world." They maintained that anyone with a personal computer (PC), a modem, and the right software – or a TV with a set top 'web box' – can browse the internet to obtain or share information on almost any subject and to interact with other users.

Internet was created during the late 1960s by the US department of defense (Dhingra: 2004), initially to link government labs, contractors and military installations. Internet usage surged in the early 1990s with the development of user

friendly worldwide web (www) and the rush on the web started increasing, with forward-thinking companies building their own websites.

(Dhingra: 2004) further posited that “the internet population differs demographically from the general population. As a whole, the internet population is still younger, more affluent and better educated.” Another key question is that how many people are connected to internet and what segments do they represent. He identified four user segments as follows:

- i. Recreational consumers represent 27% of the total internet population.
- ii. Occupational consumers represent 12% of the total internet population.
- iii. Corporate users represent 46% of the total internet user population.
- iv. Academic users represent 15% of the total internet population.

He also identified four ways in which marketers can conduct internet marketing: by creating an electronic presence in terms of websites, placing adverts online, participating in internet forums, newsgroups etc, and using online e-mails. Orders and Payments, according to him, can be taken and accepted respectively in the following ways:

Taking orders on the web

- i. Provide order form on a separate page. Customer would enter catalog numbers and quantity in the form and would press ‘submit’ button when they’ve done.

- ii. Everywhere you describe an item and include its price, provide a place for customers to enter a quantity and add a push button labeled 'Add to shopping Cart'.
- iii. Tell customers when to expect delivery. At a minimum, provide your standard shipment policy. Better link your website to your order processing and inventory data-bases and let customers know when they've ordered out of stock items.
- iv. Let customers choose from shipment methods. Make sure your totals include shipping costs and sales tax if that's applicable.
- v. Display calculated discount prominently on order form. Display bold undiscounted total and add your customer's special price.
- vi. Ease of ordering is a crucial factor that can be a website advantage or website liability. So beware! Use it properly.

Accepting Payments

- i. Credit Cards – Get their credit card number. Authenticate information from concerned bank and deliver the goods. But it is vulnerable to hackers.
- ii. House Accounts – Let customers open credit accounts with your company, either in person or over the telephone.
- iii. Digital Cash – An alternative to transmitting credit card numbers over the net. Some companies act as on-line banks. When a consumer opens an account in such a bank, he is given a Personal Index No. (PIN). Now

customer mentions it and not his/her credit card number in all transactions. The merchant concern contacts the bank with this PIN and cash is transferred automatically to merchant's account.

2.2.5 NIGERIA'S EXPERIENCE WITH INFORMATION TECHNOLOGY

Information technology investment among Nigerian firms is largely a post 1990 phenomenon, and most firms have invested only in simple forms of information technology such as desktop computers, laptops, etc (Adeoti: 2004). As was pointed out above, the two major areas of information technology are computing and telecommunications (Woherem: 2000). Whereas computers have diffused widely in Africa, and Nigeria in particular, though still significantly below that of the developed parts of the world, it is in the area of telecommunications that Africa is performing even more abysmally. Many modern offices in the private sector, universities and some government ministries and parastatals now have personal computers (PCs). Thus the problem of effective utilization of information has to do, not so much, with lack of computers, as with lack of telecommunication, or, more accurately, a substandard telecommunications network.

According to the report by NigeriaBusinessInfo.com (2002),

Telecommunication arrived Nigeria over 100 years ago. At independence in 1960, the country only had about 18,724 phone lines for use by a population of roughly 40 million. From independence, various governments made several attempts to increase the number of telephone lines to Nigerians. However, these

attempts failed woefully due to certain reasons, chiefly amongst these are monopoly of this sector by the country's public utility, Nigerian Telecommunications PLC, NITEL, and its inept and corrupt management. By the beginning of 1999, there were roughly 500,000 lines available for a population of around 120 million Nigerians.

NIMN (2005) asserted that one phone is available for 1,500 people in Nigeria, whereas International Telecommunications Union (ITU) recommended one telephone for 100 people. In the words of Woherem (2000), "in terms of telephone density (or number of telephones per 100 inhabitants) Sweden has 68, USA 57, Netherlands 49, Zimbabwe 1.22, Ghana 0.3, Chad 0.07 and Nigeria 0.4. According to a World Bank comparative study on Information and Communication Network between 1994-1997 in some African countries, Nigeria was discovered to have 4 phone lines per 1000 people as opposed to 5 in Cameroon, 9 in Kenya, 11 in Senegal, and 15 in Zimbabwe. Another study contained in the World Development Report, 1999/2000, situates Nigeria as having merely 4.00 mainlines and 0.00 mobile telephones respectively as at 1997.

Woherem (2000) argued that,

Despite government's rhetoric to the contrary, most African countries, especially Nigeria, are yet to realize the importance of information technology. For example, in trying to fill up gaps in the infrastructure of the country and enhance some of the areas that are critical, the Nigerian government earmarked in 1999 the sum of ₦30 billion for the Petroleum Trust Fund (PTF) to be used in rehabilitating roads, water schemes, manufacture of essential drugs etc., in the country. Significantly setting up appropriate infrastructures for participating in the information superhighway was not considered essential by the nation's policy makers. The number

of telephone lines in the country is still abysmally low, estimated at only 700,000, or about 0.4 per 100 inhabitants. The country only recently established an internet gateway, mainly through the effort of the private sector. To provide an internet-leased circuit line of about 64kbps in Nigeria cost about \$400,000, which the government could easily have afforded. That the government did not come up with the fund or actively seek to energize the private sector to do so, shows that the internet is not yet considered an essential infrastructure for the country's development.

The NigeriaBusinessInfo.com (2001; 2002) reported that the government brought us a deregulated telecommunications sector, by auctioning 3 Global Systems for Mobile (GSM) License in January 2001 for \$285 million each and further reserved a license for NITEL. According to the report, only 2 out of the 3 companies at the auction, MTN Communications and ECONET Wireless and NITEL were awarded full GSM Licenses. The 3rd successful company, and the only indigenous firm at the auction, Communications Investment Limited, CIL, was refused a license by the Nigerian Communication Commission (NCC) on the grounds that it did not meet payment deadline by midnight of February 9, 2001. ECONET Wireless was first to commence operations on August 6, 2001, followed by MTN Communications two days later, on August 8, 2001. The 2 companies added over 1 million lines, within 12 months, into the Nigerian environment. It is worthy of note that NITEL has since taken off as M-TEL and another indigenous company, Globacom Nigeria, also started operation in 2003. At the time of this writing, these GSM companies have rolled out more than 19 million GSM lines in Nigeria. It is also worthy of note that, at the time of this writing, voters registrations are being

conducted electronically (the first of its kind in Nigeria), in preparation for the 2007 general elections.

However, Guardian, (2006: 33) contended that

huge divide between the urban centers and rural areas in the country has been identified as a big constraint to expected teledensity growth in the sector. With the telecommunication service providers' presence concentrated in the urban centers at the detriment of the rural areas, nevertheless, has pushed Nigeria back further against the background of the world being a global village. Minister of communications, Chief Obafemi Anibaba, who made this assertion in his paper on 'Rural-Urban ICT Divide and Extending Services to Rural Areas' in Lagos last week, maintained that Nigeria would not be boasting and globally adjudged as one of the fastest growing countries in telecommunications with poor IT presence in rural areas to the advantage of the urban areas.

Okon (FORESIGHT SCOPE 2015) submitted that,

Along with the establishment of the National Information Technology Development Agency (NITDA), it has been noted that Nigeria is one of the largest and fastest growing ICT markets in Africa.

- a. Government has commenced the integration of ICT into the various sectors of the economy through e-government, in a move designed *inter-alia* to reduce bureaucracy drastically in the civil service and make it more functional and efficient.
- b. In the process, the federal government has launched the Public Service Network (PSnet) programme within which it is expected to provide a Wide Area Network (WAN) between NITDA and all public establishments.
- c. Effort is being made to make Nigeria part of the digital revolution and to implement the decisions of the World Summit on the Information Society (WSIS).

He further points out that:

Nigeria currently has an Earth observation micro-satellite named sat-1. It is the first national low orbit remote sensing satellite to be built

by a sub-Saharan African nation. Contract for the development and launching of the satellite was signed between the Nigerian government, represented by FMST, and the Surrey Satellite Technology Limited (SSTL), an agency of the University of Surrey in the United Kingdom. The satellite was successfully launched in Pesetsk, Russia on 27th September, 2003.

This move, according to him, makes Nigeria a member of the International Disaster Monitoring Constellation (DMC) whose other members are Algeria, China, the UK, and Vietnam. Membership enables Nigeria to receive daily images from other satellites of the constellation and participate in the sharing of real time data.

In another development, Guardian (2006: 25) reported that “China Academy of Space Technology – CAST is handling the NIGCOM SAT-1 Communications satellite due for launch in China next year. The CAST President, Yuan Juajin, said that NIGCOM SAT-1 was one of the complicated satellites in the world and was designed to achieve top-level performance during its projected 15 years life span.”

On the provision of internet services in Nigeria, the NigeriaBusinessInfo.com (2001) reported that:

the Nigerian government has also made efforts with an initial capacity of 5,500 points starting with Lagos as the main point of presence (POP) with 3,000 ports. However, this can only be interpreted to show that less than 5% of Nigerians have access to the internet. According to a report from the United Nations, the total internet connectivity in Africa is about 50,000 people and more than 80% of this is in South Africa. Only 9,000 of this figure are Nigerians. However with the deregulation of telecommunications

industry, 108 approvals for licenses have so far been given out. Of this number, 48 companies have paid for their licenses.

Late industrializers, especially in Sub-Saharan Africa, have been left behind in the global competition. But the fact still remains that in the new post-industrial, information-driven era, information technology, and especially telecommunications, is more important and more powerful as a catalyst for development. Nigeria and other African countries need to understand the importance of having a sound telecommunications infrastructure as a primary ingredient for development (Jelilian: 2000; Mshomba: 2000 and Woherem: 2000). Investment in information technology and its application in manufacturing activities can spur substantial productivity increases that would significantly improve the performance of African firms.

Adeoti (2000), in a study he carried out on the progress so far, on information technology investment in the Nigeria manufacturing industry, submitted that,

While some firms especially in the food and beverages sector claimed to apply information technology only for operations management tasks, one of the affiliates of MNEs (Multinational Enterprises) in the rubber and plastics sub-sector claimed to apply information technology in every aspect of its manufacturing activities. The tasks to which information technology has been applied could be classified into 2 categories: viz, operations management related and production process related. Operations management tasks involved include inventory monitoring activities, management information systems applied in staff assessment, payrolls, shares register, expenditure and sales monitoring, accounts processing and invoicing, and financial reporting. Production process related tasks identified include the use of computer in

product design, production planning and control; use of electronic sensors in gas leak detection, in the conditioning room for refrigeration and air conditioning production, and in quality control laboratories of drug companies; production system design and analysis in rubber and plastics firms; computer aided manufacturing (CAM) in injection moulding technology employed by some rubber and plastics firms – CAM is employed in mixing process, heating and moulding of plastic parts and checking the quality standards; quality controls especially the monitoring of dye, dying and wax qualities in the textiles industry; product formulation mix and product quality controls in the chemical industry; production processes are computer guided in some pharmaceutical firms and information technology is employed in quality assessment.

Thus, diverse operations and manufacturing tasks to which information technology has been applied among Nigerian firms indicate that Nigerian manufacturing enterprises have the potential to harness the benefit of information technology.

2.2.6 PROBLEMS / CHALLENGES OF INFORMATION TECHNOLOGY

The major problems/challenges of information technology are as follows:

1. *Lack of basic infrastructure and facility for exchange of information*
 - Standard packages for the technical exchange of digital information are generally lacking in Nigeria as a whole. This includes sophisticated and modern telecommunications exchanges, internet gateways and backbones, intranet pipes and backbones, satellites, ISDN (Integrated Digital Systems Network), packet switching systems, etc. In such an environment, even the most sophisticated information technology system will perform sub-optimally (Woherem: 2000).

2. *Resistance from customers* – customers are often resistant to giving out information because of all too realistic fears of being deluged with junk mail. Micromarketing can lose effectiveness if every company, armed with the same database, bombards the customer with multiple direct mail pieces, causing fatigue and anger (Vern, *et al* 2001).
3. *Organizational threats* – in market sectors where technological change is more rapid, an influx of younger, state-of-the-art trained workers occurs along with an exodus of older workers who are not as technically up-to-date. This relatively loss of experienced decision-makers may have a tremendous impact on organizations resulting in fierce competition for experienced high-tech managers as well as costly competitive mistakes by firms to quickly fill this managerial void. The challenge for organizations is to determine how best to maintain senior managers' technical prowess to retain the benefit of their managerial experience (Segars and Hendrickson: 2000).

Dhingra (2004) also gave the following challenges of internet:

4. *Overloaded lines* – the lines used to carry analog signals of telephones are being used for data transmission on internet. These lines are already congested. With increased pressure, these overloaded lines will result in on-line jams.

5. *Cyberstealers* – these are hi-fi brains that hack your lines, decode your encrypted transactions, come to know of credit card numbers of your customer and then steal money from his account before you could lay your hands on it. With the emerging technology and new security programmes being evolved, they may be blocked to a certain extent in future.
6. *Limited consumer exposure and buying* – although expanding rapidly, internet marketing still reaches only a limited people. Moreover, many web users do more window browsing than actual buying.
7. *Skewed user demographics and psychographics* – although the web audience is becoming more mainstream, online users still tend to be more upscale and technically oriented than the general population. This makes internet marketing ideal for only certain categories of products such as computer hardware and software, electronic products, and financial services etc. it is still less effective in selling mainstream products.
8. *Chaos and clutter* – the internet offers millions of websites and a staggering volume of information. Thus, navigating the internet can be frustrating, confusing and time consuming for surfers. In this chaotic and cluttered environment many web ads and sites go

unnoticed or unopened. Even when noticed, marketers may find it difficult to hold customer attention.

9. *Ethical concerns* – privacy is primary concern. Marketers can easily track website visitors, and many consumers who participate in website activities provide extensive personal information. This may leave consumers open to information abuse if companies make unauthorized use of the information in marketing their products or exchanging electronic lists with other companies.

2.3 CRITIQUES OF CURRENT LITERATURE BASED ON RELEVANT VARIABLES OF THE MODEL OR THEORY

As stated earlier, the concern of business has always been to satisfy its customer, so as to achieve his loyalty and repeat purchase, thereby leading to continuous profitability and growth. This, of course, the businessperson hopes to achieve by maintaining a cordial relationship with the customers. (Adeleye; NIBREW: 2005) submitted that:

Before the advent of electronic media, companies had various ways of communicating with their clients. Communication means such as letters, telegrams, telephones, handbills, meetings, telex and fax had been key media at various intervals. The front office desk officer who in many organizations is referred to as the customer relationship or customer services officer, had to spend much time discussing with the customers by direct physical visits to customer locations or a telephone, or by means of letters, telegrams, telexes, faxes and the like. Sufficient gaps were created between product and services and their buyers. End users of products had to suffer product defects or lack of satisfaction as a result of lack of product knowledge which

was in turn due to lack of proper inter-communication between producer-marketers and buyer-users.

This gap has been abridged as (Kotler and Armstrong: 2001) put it:

Developments in information technology have caused a revolution in information distribution. With recent advances in computers, software, and telecommunication, most companies have decentralized their marketing information systems. In most companies today, marketing managers have direct access to the information network, at any time and from virtually any location.

In this instance, extensive theoretical work exists on the information technology and organizational inputs such as dollar investments in information technology, and outputs such as financial returns (cf. Bharadwaj, Bharadwaj, and Konsynski 1999). Renewed interests in sales technology have spawned an emerging literature that focuses on two areas: sales-CRM (Ahearne, Srinivasan, and Weinstein 2004; Pass, Evans and Schlacter 2004; Plouffe, Williams, and Leigh 2004; Shoemaker 2001; Zablah, Bellenger, and Johnston 2004) and sales automation technologies (Jones, Sundaram, and Chin 2002; Parthasarathy and Sohi 1997; Pullig, Maxham, and Hair 2002; Schillewaert et al. 2005; Speier and Venkatesh 2002).

In Nigeria, Adeoti (2004) carried out an empirical investigation intended to examine the nature and characteristics of investment in information technology hardware and information technology skills in the Nigerian manufacturing industry and their links with manufacturing performance. In the study, he addressed pertinent questions as: have firms in the Nigerian manufacturing sector invested significantly in information technology hardware? Do their investment in

human capital development via information technology skills match their investments in information technology hardware? According to him, World Bank (1989, 109) and Biggs et al (1995) reported that industrial strategy in Africa has tended to overstress the hardware (plant and machinery) and neglect training labour and management to master new technologies. He now poised a question thus: is this misguided emphasis being repeated in the trend of firm's investment in information technology hardware and information technology skills development? This formed the basis of his research. Thus, no mention is made by him of the resultant effects of the use of such technologies.

Hunter and Perreault (2006) noted that “in the sales and marketing literatures, there has been increasing attention paid to the role of shared information, operational linkages, and cooperation as firms in business markets shift to more closely coupled relationships (Cannon and Perreault 1999).” Concurrent with these shifts in the relationships among firms, there has been a reinvention of the traditional sales role. With an increased emphasis on the relationship marketing strategies (Anderson 1996), the sales rep has a responsibility to serve as a consultant to the customer and to strengthen the buyer-seller relationship by helping to develop the customer's business and achieve customer satisfaction (Liu and Leach 2001). To enhance sales performance and buyer-seller relationships, firms in a wide variety of industries – ranging from Customer Package Goods

(CPG) and financial services to chemicals and energy – have made substantial investments in information technology (Shoemaker 2001).

Most of the work that directly models the impact of information technology implicitly treats the organization as a ‘black box’ – so the impact of individual tasks, specific processes, or intermediate outcomes (such as the quality of services) is not explicitly evaluated. More specifically, the contributions to the subject of information technology and the organizations have conspicuously neglected or left out its effect on the marketing of the products, especially in the home front, Nigeria, as a late industrializer. While this is fairly comprehensive, it is by no means exhaustive. However, it is the belief of this researcher that this framework provides a starting point for further investigation.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Progress in this study would, as a matter of fact, be impossible without careful and exhaustive investigation of all the ascertainable evidences of the information collected on the effects of information technology on the marketing of consumer goods. This chapter, therefore, focuses on the methods employed in conducting the study. Also explored here is the profile of the company of study.

3.2 RESEARCH DESIGN

Research design means the structuring of investigation aimed at identifying variables and their relationships to one another. This is used for the purpose of obtaining data to enable the researcher test hypotheses or answer research questions (Asika: 2002). It is just a pattern or an outline of research project's working. It comprises a series of prior decisions that, taken together, provide a master plan for executing a research project. The design adopted for this study is time series on the effects of information technology on the marketing of consumer goods, to see the performance of Cadbury Nigeria over time.

3.3 POPULATION OF THE STUDY

The research is aimed at the marketing of consumer goods. Therefore, the researcher has chosen Cadbury Nigeria PLC, a key player in manufacturing and

distributing consumer packaged goods (CPG), as the company of study. Random sampling was designed and used for the entire population.

3.4 SAMPLING TECHNIQUE AND SAMPLE SIZE

A research on consumer goods is almost an infinite population where most sample subjects can not be reached or the population elements can only be imagined. Again, cost and time are required to conduct the study. It is unarguably expensive and time consuming to conduct. In view of this, the researcher has chosen to use a convenient and non-probabilistic sampling method to carryout the study, using only Cadbury Nigeria as the company of study.

3.5 DATA COLLECTION INSTRUMENTS

The data employed here are mainly secondary data. No room was given for primary data by the company of study, therefore the researcher had to settle for secondary data. However, the researcher did a thorough review of the available secondary data to produce a meaningful result. Relevant information were gathered from textbooks, Cadbury's annual reports and statement of accounts, journals, paper presentations, Nigerian Stock Exchange (NSE) FACTS Book, NSE annual reports and statement of accounts, Federal Office of Statistics, materials from the internet. Also employed are relevant data from other CPG companies, Newspapers and Magazines.

3.6 METHOD(S) OF DATA ANALYSIS

In analyzing the data collected, this study made use of quantitative approach. This is based on the generated turnover and capital expenditure on information technology by Cadbury Nigeria over a period of ten (10) years that the study covers – (1995-2005). Quantitative approaches used are as follows:

- i. Regression Analysis
- ii. Coefficient of Correlation
- iii. Coefficient of Determination
- iv. Hypothesis Testing

The essence is to see how information technology affects the marketing of consumer goods. In other words, it is to determine the relationships that exist between information technology and the marketing of consumer goods.

3.6.1 SIMPLE REGRESSION ANALYSIS

Regression is the relationship between two or more variables. It is called simple when only two variables are involved and multiple when more than two variables are involved. Simple regression is based on Ordinary Least Square (OLS). OLS is estimate that allows us to get the value of our regression line, that is, our parameters; the intercept and that of the explanatory variables, hence, it is the most reliable method.

ASSUMPTIONS OF SIMPLE REGRESSION ANALYSIS

There are certain assumptions under which OLS can work under the simple regression analysis.

- i. There must be linearity between the variables such that when the independent variable changes, the dependent variable also changes.
- ii. Our error term must be normally distributed, that is fewer at the lower and upper parts but concentrated at the center.
- iii. The sum of our error term (deviation) must give us zero. That is the positive and negative value of error should cancel themselves.
- iv. There should be constant variance of our error term and that is known as Homoscedasticity.
- v. There should be no-serial-correlation. When looking at time series, the error term should not be related with the other error term. This is otherwise known as no-auto-correlation by some authors.
- vi. There should be non-stockastic variable, rather it should be a deterministic variable. Any value for explanatory variable should give a corresponding value for dependent variable.

3.6.2 COEFFICIENT OF CORRELATION (r)

Coefficient of correlation is a measure of the magnitude of the relationship (degree of association) between independent variable and the dependent variable. Here we

want to see the magnitude and direction towards which the level of growth in information technology has influenced the level of growth in sales.

3.6.3 COEFFICIENT OF DETERMINATION (r^2)

Coefficient of determination is the variation in our population that is explained by one simple regression line. That is the reaction of sample of population changes. Here we want to determine how the variation in growth causes the variation in consumption.

3.6.4 HYPOTHESIS TESTING

A hypothesis is an assumption which we make about a population parameter.

Hypothesis concerning the value of population parameter is tested by:

- i. Formulating the null and alternative hypotheses. A null hypothesis is the hypothesis which we wish to test on the basis of our sample estimate. It implies that there is no difference between the true parameter and the hypothesized value, or the difference between the true value and the hypothesized value is nil. Symbolically, $H_0: \mu = \mu_0$ (Koutsoyiannis: 1977). Thus, the null hypothesis (H_0) of this study is, H_0 : Growth in information technology has no meaningful impact on growth in sales. Alternative hypothesis (H_1) is an alternative assumption about the population parameter, a counter proposition to the null hypothesis. It is conventionally denoted by H_1 and may take the form $H_1: \mu > \mu_0$ (Koutsoyiannis: 1977).

- Thus, the alternative hypothesis in this study is H_1 : Growth in information technology has meaningful impact on growth in sales.
- ii. Choosing the level of significance of the test (α). Here in this study, it is set at 5%.
 - iv. Choosing the location of the critical region.
 - v. Choosing the appropriate test statistic (e.g. z, t, χ^2 , f) and finding from the relevant tables the value(s) of the chosen statistic. In this study, t-statistic is used. This is because the sample size covers a period of 10 years, which is less than 30.

3.7 METHODOLOGICAL DIFFICULTIES

For every research in which the primary objective is to search for time and facts, there are always some peculiar problems that make findings a bit difficult. This ranges from secretive nature of Nigerian businessmen, cost, distance, time and language barrier. In this research, the following major difficulties were encountered:

- i. Getting respondents interviewed was a problem. Cadbury's annual reports and statement of account were given and further interview were disallowed. The researcher was referred to Cadbury Nigeria's website (at www.cadburynigeria.com) for further enquiries and additional information.

- ii. There was also the problem of finance. This has reduced the range of coverage, and invariably the quality of the study.
- iii. The time given for the research project (collection and submission) by the school authority is another major constraint of the study. The time was too short for in-depth coverage of the subject matter. The project work was divided between academic works, and as such, there was insufficient time for thorough research.

3.8 A PROFILE OF THE CASE STUDY

Cadbury Nigeria PLC is a member of Cadbury Schweppes PLC, a major player in the global confectionery and beverages markets with 40,000 employees and business operations in 200 countries. Cadbury's initial objective in the 1950s to source cocoa and prospect for a market in Nigeria led to the establishment of a manufacturing facility in Ikeja, North of Lagos, in 1965. Cadbury Nigeria PLC was incorporated on the 9th January, 1965 when the current 42-hectare factory site was also opened, and went public in 1976. The initial staff strength of less than 200 has grown to more than 2000. The company has since grown organically to become one of the leading manufacturers in Nigeria, with a rising profile in the Europe, Middle East and Africa (EMEA) Region, one of the five operational regional groupings of Cadbury Schweppes. In turn the beginning of Cadbury Schweppes go back to the founding of Schweppes, a mineral water business, by Jacob Schweppes in 1783 and the opening of a shop that sold cocoa products by

John Cadbury in 1824. The businesses were merged in 1969 to create Cadbury Schweppes PLC.

Cadbury Nigeria engages in the food processing business. Its major product lines consist of food, food drinks, sugar confectionery, chocolate and seasoning cubes, which are market leaders in the confectionery. The Cadbury Schweppes group of United Kingdom, which provides the company with technical services under a Technical Service Agreement, approved by National Office for Technology Acquisition and Promotion (NOTAP), holds 46.6% of the issued share capital while the balance is held by the Nigerian public. Following the conversion of the ICLS into shares and subsequent market activity, Cadbury Schweppes has raised its stake in Cadbury Nigeria (as of March 18, 2006) from 46.4% to 50.02% and the remaining 49.98% are held by a highly diversified spread of Nigerian individual and institutional shareholders. Cadbury Nigeria has been listed on the Nigerian Stock Exchange (NSE) since 1976, and is in the top 10 of the 258 quoted equities by market capitalization as of year end 2003.

Cadbury Nigeria is principally engaged in the manufacture and sales of a wide variety of branded Fast-moving Consumer Goods mostly to the Nigerian market, but increasingly for exports as well. Each product is carefully designed to offer maximum value and enduring benefits to the users.

The company has evolved as a robust and vertically integrated business due to the imperative to secure product quality and maintain a better control of the supply chain. The Industrial Material Unit (IMU) is a business unit of the company which comprises of intermediate products businesses notably, the Cereal Conversion in Lagos and the tomato puree factory in Jos. This business unit manufactures key inputs – glucose syrup, sorghum extract and tomato puree – to feed the three mainline businesses, and for sale to third parties, especially in the food and pharmaceutical industries. The heartland of this unit, the Cereal Conversion Plant is an enduring example in technological innovation. While commissioning the Cadbury’s Cereal Conversion Plant (CCP) on the 13th October, 1990, General Ibrahim Babangida, the then President and Commander-in-Chief of the armed forces of Nigeria, made the following own-hand-written comments: *“My visit to Cadbury Nigeria’s Plant and commissioning of the CCP this morning has further re-inforced my belief in the capabilities of our great country. It’s a great achievement. Congratulations.”*

The company also owns a subsidiary business, Stanmark Cocoa Processing Company, Ondo, a fully integrated export-oriented unit with a singular mission to be the preferred supplier of cocoa butter, cocoa liquor and cocoa powder to a select group of discerning user customers around the world.

Stanmark cocoa processing company is a joint venture between Cadbury Nigeria PLC and Stanmark Holdings LTD. the Cadbury stake has grown from 30% at the inception of the venture to over 50% today. Cadbury took a majority stake in 1996 thus providing management control. In spite of the volatility in this industry, and the large adverse impact of the market leader. The business has however provided considerable experience of the disciplines of operating in the international arena, as Stanmark has been accorded the Export Processing Factory status by the Federal Government of Nigeria in acknowledgement of its accomplishment in establishing the Stanmark brand in the international market.

Products

Manufacturing operations are benchmarked against international standards, and the current assessment is extremely gratifying. The brand in each business unit category includes:

- i. **Confectionery:** TomTom, Buttermint, Éclairs, Malta Sweet Trebor Mints, Jollies Lollipop range, Hacks and Cadbury Chocolate range are the main brands in the confectionery stable. Each one has grown to become a household name, and hold market leadership in their categories.
- ii. **Food drinks:** The lead brands are Bournvita, Pronto, Richoco, Chocolate Drink and Cadbury's Cocoa. These brands collectively hold market share leadership in their category. The brands offer nutritional

benefits that help to supplement the dietary intake of consumers, and in some cases help defray the deficiencies in the routine diet.

- iii. **Foods:** Knorr Seasoning Cubes, Tomapep, Cheff Pepper Soup Cubes, and Dawadawa. This group features innovative products and is a good example of creatively adapting indigenous product concepts for modern presentation. Cheff pepper soup cubes and Dawadawa are pioneering efforts in this regard. Knorr seasoning is manufactured and sold under a comprehensive franchise agreement which expired in November 2005. Unilever Nigeria PLC has since acquired Best Foods from the previous owners of the brand. The relative contributions of the Confectionery, Food Drinks, and Foods businesses in 2005 were 31%, 42% and 16% respectively. Stanmark Cocoa Processing Company accounted for 11% of sales revenue.

TABLE 3.1 CADBURY'S KEY BRANDS

S/N	BRAND	YEAR LAUNCHED
1	BOURNVITA	1960
	<i>(Local production commenced)</i>	1965
2	GOODYGOODY	1966
3	TOMTOM	1970
4	TREBOR BUTTERMINT	1976
5	MALTA	1979
6	ECLAIRS	1989
7	TREBOR PEPPERMINT	1989 <i>(Acquisition)</i>
8	TREBOR LUCKIES	1989 <i>(Acquisition)</i>
9	TREBOR KOFFSTICKS	1989 <i>(Acquisition)</i>
10	RICHOCO	1996
11	TREBOR KOFFDROPS	2000
12	TREBOR CELEBRATIONS	2003
13	HALLS AHOMKA GINGER	2004
14	BUBBA BUBBLE GUM	2004
15	CHOKI	2004
16	HALLS TAKE 5	2004
17	PASCALL CRÈME ROLLERS	2005

Source: *Cadbury Nigeria PLC Annual Report & Accounts 2005.*

Consumers have come to develop special relationships with these brands and this makes them the obvious preferred choice. With this choice comes a responsibility on Cadbury to offer access to its products, and this informs its investment in distribution networks that provide competitive advantage. Consumers desire to have ready access to their favorite brands whenever they choose. The combination of preference and presence when sustained assures the quality of performance delivered. This also makes the protection of their reputation an essential ingredient of Cadbury's long-term success.

Cadbury's brands now come with a Quality Guarantee, a demonstration of the company's commitment to product standards. Cadbury Nigeria was the first manufacturing concern in Nigeria to print a quality guarantee statement on the packaging of all its products and it is worthy of note that no other company in Nigeria carries this guarantee on their brands. To successfully maintain its position at the head of its key markets, Cadbury must consistently provide affordable products of consistent quality. The various investments in factory upgrades and new technology, and the process through which Cadbury products must go to live up to the promise of quality, are very significant.

Productivity

The company has continued to pursue a vigorous productivity improvement program, using the internally acclaimed concepts and tools of Total Quality Management (TQM). This accords with the corporate philosophy of the pursuit of excellence and has produced results in tangible cost reduction and efficiency improvement. The company's Value Based Management (VBM) programme provides new horizons for advancing its quest for international standards.

The governing objective for the company is growth in shareholder value over time. The under-girding philosophy of the pursuit of excellence forms the foundation for the conduct of all relationships, spanning commercial accomplishments, productivity and social responsibility obligations. Growth in

shareholder value is accomplished by competing in potentially high growth market with strong brands, and by focusing on innovation and creative new product development programme. This is continually under-girded by the company's operational cost competitiveness.

The company is owner of a patent and numerous registered trade marks and domain names, and has access to Cadbury Schweppes patented designs, know-how, trade secrets and technology which relate to its products and processes for their production, the packaging used for its products together with associated marketing materials and design and operation of various processes and equipment used in its business. This rich heritage of the company has been carefully nurtured over the years and is today recognized across the country as the caring house of quality. It was voted Nigeria's Most Respected Company in 2005, in a survey among CEOs nationwide, facilitated by PriceWaterhouseCoopers.

Reaching the Customer

The company's wide portfolio of high quality branded products are heavily supported with strong advertising. On-going investment in the development of rout-to-market has ensured a nationwide distribution coverage, and a key source of competitive advantage. With a network of 19 depots, consumers in all 36 states of the country are served products that offer real value for the money spent.

The national distributor of the company's products is John Holt Ventures, which provides warehousing facilities on a nationwide basis from where customers are serviced. There are well over 400 distributors and 1000 attachees. Products reach the ultimate consumer through a chain of strategic key Accounts, Wholesalers and Retailers spread across the nation. Stocks are adequately covered by insurance throughout the supply chain, with responsibilities clearly demarcated. An increasing proportion of the brands are now offered to the export markets as well.

Cadbury's strong distribution network has long been a source of competitive advantage. Product dispatches from the Ikeja factory are carefully monitored through the various channels. Confectionery is largely impulse purchase and quite often Cadbury has helped establish new channels, in a socially responsible way, to bring the brands closer to the reach of the consumer where it matters the most. By contrast the Food Drinks category is more planned purchase, and the route to market architecture is designed to ensure success. Modern tools for inventory management are used to track stocks through critical points in the trade, and provide support to customers. As key players in the food industry, Cadbury endeavors to provide leadership in helping consumers make informed choices, especially in view of emerging concerns over health and nutrition. This commitment covers the full span of product formulation, choice of ingredients, process and technology, disclosure and labeling as well as advertising and communication.

Cadbury Nigeria has always been in the vanguard of advancing the ideals of ethics and high standards in its commercial relationships. The company continues to work with the supply chain partners, sharing knowledge and technical advice to help them assure quality and ethical standards. It ensures consumer advice, while information and labeling are of the highest industry standards. For this reason, the CSR agenda now reflects a growing consumer interest on issues of diet, nutrition, and healthy lifestyle. It has created a consumer relations desk to provide consumer information in a proactive manner, and to respond openly and fairly to consumer complaints received from time to time.

Competition

The confectionery, food drinks, and foods industry segments are highly competitive and Cadbury brands compete with other multinational, national and regional companies and private label suppliers. Cadbury Nigeria competes actively in terms of quality, nutritional benefits, taste and product price; and it seeks to develop and enhance brand recognition through the introduction of new products, innovative packaging, responsible advertising and promotional programmes. Cadbury Nigeria is market leader by sales volume in confectionery and food drinks (AC Nielson Retail audit). In the foods category the company is among the top three seasoning cube manufacturers. It operates essentially in the high quality branded segments of the key markets, though it often has to compete with

unbranded products in some of the fragmented segments, especially in the confectionery market.

Technology absorption

Continued thrust in the area of product, packaging and process development yielded good results. Modern technology is readily deployed and on-going development work reflects a substantial absorption of leading edge manufacturing technology. Service equipment have had to be upgraded as well to meet the expansion in the manufacturing lines. Information Technology capabilities have been upgraded in recent years and the company expects to begin to benefit from the significant investments it has made in its Information Technology infrastructure. In 2002 alone, ₦ 237,500,000 was earmarked for Information Technology and communications Network. Thus, Cadbury Nigeria is targeting a turnover level of \$1billion by 2010.

New product development activity is geared to meeting the needs of the Nigerian and other West African Consumers. The acquisition of Adams Confectionery by Cadbury Schweppes in 2003 makes Cadbury Schweppes the global leader in confectionery. That acquisition has made leading brands and their associated technologies available for development in Nigeria, which Cadbury Nigeria is already exploiting. Furthermore, the five-region and five-function matrix structure of Cadbury Schweppes has been further enhanced with the creation of a sixth

function, Science and Technology (S&T). The elevation of S&T in the CS Group means that Cadbury Nigeria can get even better support, especially as it relates to product development based on new technologies.

The factory operation continues to run 100% on own-power-station, and has been so for over 28 years. This raises significant issues about energy management, and emissions. Some key installations are now fuelled by natural gas, thus improving standards of energy efficiency and quality of emissions. Planning work is at an advanced stage to improve the recycling of heat energy generated from power plant, with the deployment of modern technology in tri-generation. The company has completed the replacement of refrigeration plant that run on refrigerant based on chlorofluorocarbon, CFC, material, with the installation of a further 600T capacity Absorption Chiller. This makes the manufacturing facility free of CFC-based refrigerants completely, well ahead of the 2010 deadline set by the Montreal Protocol. Conclusive steps have also been taken to ensure that the electrical installations, especially oil-cooled power transformers, capacitors and high power motors, conform to international standards with regard to Polychlorinated Biphenyls (PCB). The effluent plant remains a reference point in the manufacturing industry, ensuring that all discharges meet the standards stipulated by the environmental protection authorities.

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CHAPTER FOUR

DATA PRESENTATIONS, ANALYSIS AND INTERPRETATIONS

4.1 INTRODUCTION

This chapter gives the formal presentation, analysis and interpretations of data used. Results were regressed and generated electronically using E-VIEW (see tables 4.3 and 4.4), as well as manually (see table 4.5).

4.2.1 DATA PRESENTATION

In this section, data used for the analysis are presented below:

TABLE 4.1 TURNOVER AND EXPENDITURE ON INFORMATION TECHNOLOGY BY CADBURY NIGERIA PLC (1996-2005)

YEAR	TURNOVER (N' 000)	IT EXPENDITURE (N' 000)
1996	8276134	15750
1997	6435317	21000
1998	7659633	38000
1999	8898107	14250
2000	10144899	42750
2001	13230837	28500
2002	16014709	133000
2003	20576177	71250
2004	22152651	261250
2005	29454185	163500

SOURCES: CADBURY'S Annual Report and Accounts - Various Issues

Table 4.1 above shows the turnover generated by the company of study and their expenditures on information technology over the period under study. This financial records show that the company consistently generated an increase in turnover over the period, except in 1997 when its turnover dropped from

₦8,276,134,000 (generated in 1996) to ₦6,435,317,000. However, within a period of 10 years that the study covers, the rate of turnover rose from ₦8,276,134,000 in 1996 to ₦29,454,185,000 in 2005, which represents 355.9% increase. On the other hands, the records show an inconsistency in the company's expenditure on information technology over the period under study. For example, ₦15.7million was expended on information technology in 1996. This kept increasing yearly until 1999 when it dropped to ₦14million and it kept going up and down yearly. There has been a sharp increase in the company's expenditure on information technology since 2002 when the company expended ₦133million. The reasons for this inconsistency may not be unconnected with the fact that, gadgets acquired in a given year may not necessarily need replacement until after a considerably long period. Similarly, staff may not necessarily need to be trained on information technology skill yearly.

TABLE 4.2 PERCENTAGE CHANGE IN TURNOVER AND EXPENDITURE ON INFORMATION TECHNOLOGY (1997-2005)

YEAR	% CHANGE IN TURNOVER	% CHANGE IN IT EXPENDITURE
1996	-	-
1997	-22.24	33.33
1998	19.02	80.95
1999	16.17	-62.50
2000	14.01	200.00
2001	30.42	-33.33
2002	21.04	366.67
2003	28.48	-46.43
2004	7.66	266.67
2005	32.96	-37.42

SOURCE: COMPUTED by the Researcher from Table 4.1 above

Table 4.2 above shows the percentage change in turnover and expenditure on information technology.

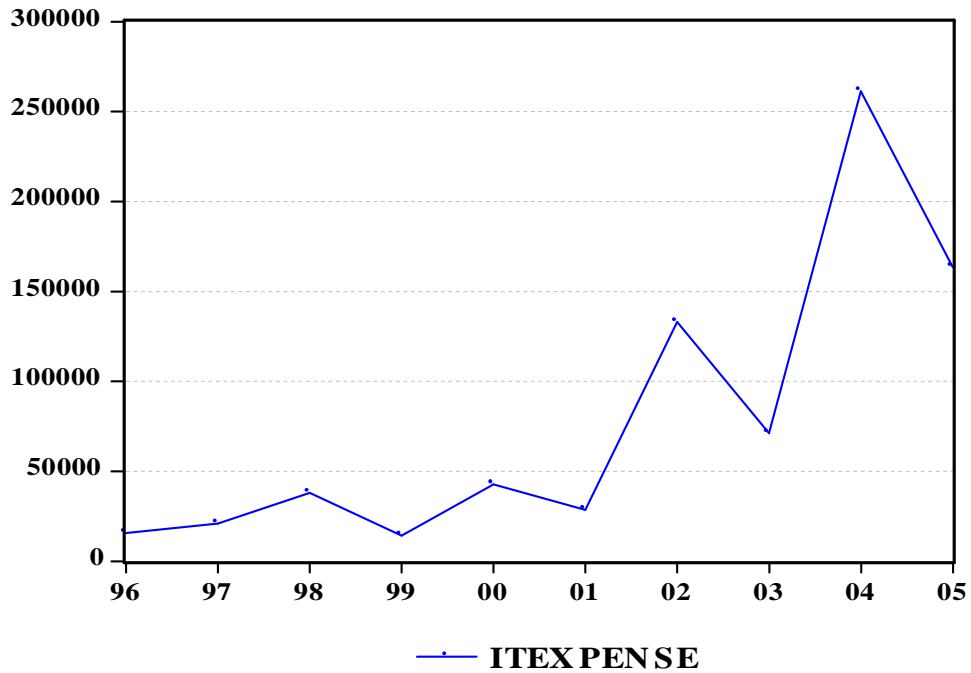
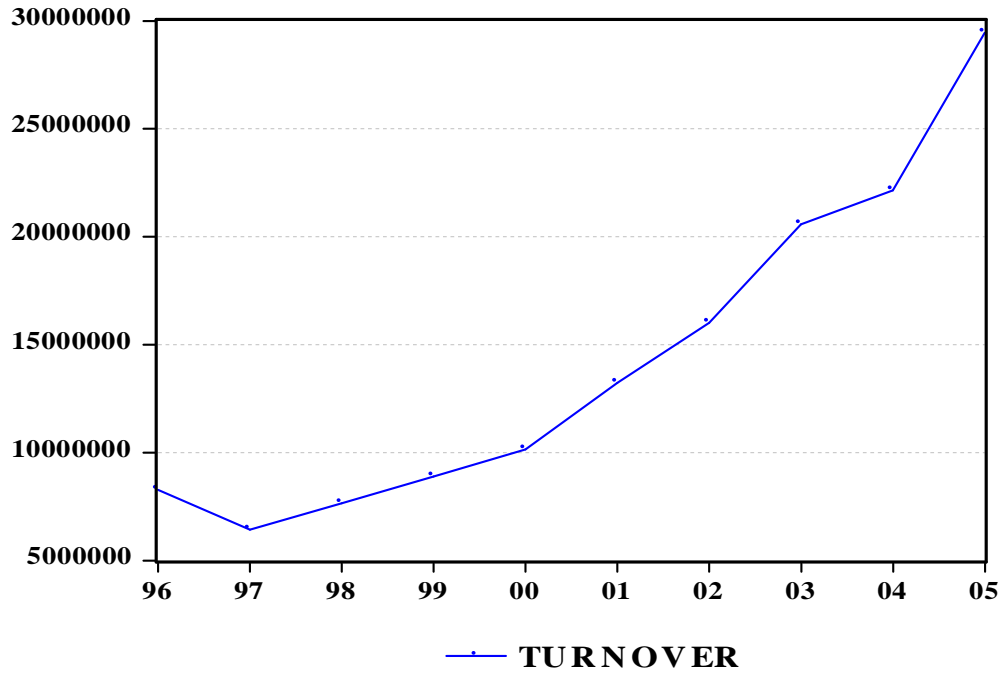


FIGURE 4.1 TRENDS OF TURNOVER AND EXPENDITURE ON INFORMATION TECHNOLOGY

Figure 4.1 above is the graphical representation of the trend in turnover and expenditure on information technology over the given period of study.

4.2.2 ANALYSIS OF DATA

Here we analyzed the data presented above, present our results and discussed the results relatively with the objectives and hypothesis of the study.

a. REGRESSION RESULTS – Through E-View.

TABLE 4.3 RESULT OF DESCRIPTIVE STATISTIC ON THE VARIABLES

STATISTICS	TURNOVER	ITEXPENSE
Mean	14284265	78925
Median	11687868	40375
Maximum	29454185	261250
Minimum	6435317	14250
Std. Dev.	7626450	81944.26
Skewness	0.795528	1.247839
Kurtosis	2.427899	3.341626
Jarque-Bera	1.191149	2.643798
Probability	0.551246	0.266628
Observations	10	10

The regression result gotten through the Ordinary Least Square (OLS) method with the use of the data in table 4.1 above is presented in tabular form below.

TABLE 4.4 REGRESSION RESULT

Dependent Variable: TURNOVER
 Method: Least Squares
 Sample: 1996 2005
 Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8512611.	2254763.	3.775391	0.0054
ITEXPENSE	73.12834	20.35325	3.592956	0.0071
R-squared	0.617396	Mean dependent var	14284265	
Adjusted R-squared	0.569570	S.D. dependent var	7626450.	
S.E. of regression	5003497.	Akaike info criterion	33.86603	
Sum squared resid	2.00E+14	Schwarz criterion	33.92655	
Log likelihood	-167.3301	F-statistic	12.90933	
Durbin-Watson stat	2.486857	Prob(F-statistic)	0.007054	

$$\text{TURNOVER} = b_0 + b_1 \text{ITEXPENSE} \dots\dots\dots 4.1$$

Substituted Coefficients:

$$\text{TURNOVER} = 8512611 + 73.12834 \text{ITEXPENSE} \dots\dots\dots 4.2$$

We derived equation 4.2 by using OLS on our variable data of table 4.1. The result indicates a ‘good fit’ in the statistical sense given that $R^2 = 0.617396$ and the adjusted R^2 , which is better measure of goodness of fit, = 0.569570, indicating that over 50 percent variation in our independent variable is explained by the explanatory variable.

We observed that both Coefficients are significant based on the fact that the T-statistics for the constant term and ITEXPENSE given as 3.775391 and 3.592956 are both greater than the T-critical value of 1.860 (at 5 percent LOS with N = 10

and 2 degree of freedom and a one tail test). The constant term shows that with zero value for our explanatory variable, the value of TURNOVER will be 8.512611 billion Naira.

The signs of the variables also confirm to a priori expectation. That is they are both positive, indicating a positive relationship between ITEXPENSE and TURNOVER.

b. REGRESSION RESULTS – Manual.

TABLE 4.5: MODEL AND ESTIMATED VALUES OF TURNOVER AND EXPENDITURE ON INFORMATION TECHNOLOGY

YEAR	Y	X	$x=X-\bar{X}$	$y=Y-\bar{Y}$	y^2	x^2	xy
1996	8.276	0.016	-0.063	-6.0083	36.09967	0.003969	0.378523
1997	6.435	0.021	-0.058	-7.8493	61.61151	0.003364	0.455259
1998	7.66	0.038	-0.041	-6.6243	43.88135	0.001681	0.271596
1999	8.898	0.014	-0.065	-5.3863	29.01223	0.004225	0.35011
2000	10.145	0.043	-0.036	-4.1393	17.1338	0.001296	0.149015
2001	13.231	0.029	-0.05	-1.0533	1.109441	0.0025	0.052665
2002	16.015	0.133	0.054	1.7307	2.995322	0.002916	0.093458
2003	20.576	0.071	-0.008	6.2917	39.58549	6.40E-05	-0.05033
2004	22.153	0.261	0.182	7.8687	61.91644	0.033124	1.432103
2005	29.454	0.164	0.085	15.1697	230.1198	0.007225	1.289425
TOTAL	142.843	0.79	0	0	523.4651	0.060364	4.42182
$\bar{Y} \text{ \& } \bar{X}$	14.2843	0.079					

SOURCE: Researcher's workings

$$\bar{Y} = \sum Y/n = 142.843/10 = \mathbf{14.2843}$$

$$\bar{X} = \sum X/n = 0.79/10 = \mathbf{0.079}$$

SIMPLE REGRESSION: MODEL AND INTERPRETATION

$$C = a + bY + \mu$$

Where

C = dependent variable i.e. Turnover Ratio.

Y = independent or explanatory variable i.e. Expenses on Information Technology

a = the intercept i.e. value of Turnover Ratio when Expenses on Information Technology = 0

b = magnitude or rate of change

μ = error or disturbance term or other factors affecting Turnover Ratio

a, b are estimated coefficients.

The estimated values can also be written as

$$\hat{C} = \hat{a} + \hat{b} Y + \mu$$

This can also be written in the form

$$Y = \beta_0 + \beta_1 x$$

Where $Y = C$, $\beta_0 = a$, $\beta_1 = b$, and $x = Y$

Next

Calculate values for β_0 and β_1

$$\beta_0 = \bar{Y} - \hat{\beta}_1 \bar{X} \text{ and } \beta_1 = \frac{\sum xy}{\sum x^2}$$

(See values i.e. $\sum xy$ and $\sum x^2$, from table 4.5)

$$= 4.42182/0.060364 = 73.25260089$$

$$\beta_1 \approx \mathbf{73.253}$$

Hence

$$\beta_0 = 14.2843 - (73.253)(0.079)$$

$$= 14.2843 - 5.786987$$

$$\beta_0 = \mathbf{8.497313}$$

$$Y = 8.497313 + 73.253x$$

So that

$$C = \mathbf{8.497313 + 73.253x}$$

INTERPRETATION

- i. The function above shows the linear relationship between expenses on information technology and turnover ratio
- ii. Turnover is positively related to information technology
- iii. The intercept 8.497313 shows the value of Turnover Ratio when Expenses on Information Technology = 0 (i.e. when Expenses on Information Technology is zero, the rate of Turnover is ~~N~~8.497313 billion).

COEFFICIENT OF CORRELATION AND ITS INTERPRETATIONS

Next we find the coefficient of correlation which is given by

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = \frac{4.42182}{\sqrt{(0.060364)(523.4651)}}$$

(see table 4.5 for values i.e. $\sum xy$, $\sum x^2$ and $\sum y^2$)

$$= \frac{4.42182}{\sqrt{31.5984473}} = \frac{4.42182}{5.621249621}$$

$$= 0.786625803 \approx 0.79$$

$$r = \mathbf{0.79}$$

INTERPRETATIONS

- i. Information Technology and Turnover are positively related.
- ii. There is high magnitude of relationship between them (i.e. 79 percent)

COEFFICIENT OF DETERMINATION AND INTERPRETATION

This is given by

$$r^2 = (\sum xy)^2 / \sum x^2 \sum y^2 = (4.42182)^2 / (0.060364)(523.4651)$$

(see table 4.5 for values i.e. $\sum xy$, $\sum x^2$ and $\sum y^2$)

$$= 19.55249211 / 31.5984473$$

$$= 0.618780154 \approx 0.62$$

$$r^2 = \mathbf{0.62}$$

INTERPRETATIONS

This tells us that 62% variation in turnover ratio is caused by 38% variation in information technology. In essence, we can say that 38% variation in turnover is brought about by factors such as lack of adequate skill on information technology, breakdown in information technology gadgets, poor accessibility or poor network reception, poor infrastructure and social amenities, amongst others.

4.3 HYPOTHESIS TESTING AND INTERPRETATIONS

The first thing to do here is to set the null and alternative hypotheses

$$H_0: \beta_1 = 0$$

$$H_1: \beta_1 > 0$$

$$\text{Next we set the level of significance } (\alpha) = 5\% = 0.05$$

$$\text{So our degree of freedom} = n-2 = 10-2 = 8$$

$$\text{Hence our t- table} = n = 2 \alpha = 8 \quad t_{0.05} = 1.860$$

Also calculated $t = t$ ratio

$$\beta_1 / S \beta_1$$

$$\begin{aligned}
\text{But } S \beta_1 &= \sqrt{S^2e / \sum x^2} \quad \text{and} \quad S^2e = (1-r^2)(\sum y^2) / (n-2) \\
&= S^2e = (1-0.62)(523.4651) / (10-2) = (0.38)(523.4651) / (8) \\
&= S^2e = 198.916738 / 8 = 24.86459225
\end{aligned}$$

$$\begin{aligned}
\text{Now } S \beta_1 &= \sqrt{S^2e / \sum x^2} = \sqrt{24.86459225 / 0.060364} = \sqrt{408.2884252} \\
&= 20.2061482
\end{aligned}$$

$$\begin{aligned}
\text{Thus t-ratio} &= \beta_1 / S \beta_1 = 73.253 / 20.29919279 = 3.625282725 \\
&\approx \mathbf{3.63}
\end{aligned}$$

DECISION RULE

$$T_c > T_t \quad \text{i.e.} \quad 3.63 > 1.860$$

Therefore, we reject H_0 and accept H_1

Thus, growth in information technology has meaningful impact on growth in sales.

4.4 SUMMARY

The research findings have shown that there is linear relationship between Information Technology and Turnover and that they are positively related. The magnitude of their relationship is also very high and the variation between them (i.e. 38%) is caused by underutilization of information technology which may be due to factors such as lack of adequate skill on information technology, breakdown in information technology gadgets, poor accessibility or poor network reception, poor infrastructure and social amenities, amongst others.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

In this study, we set out to empirically investigate the effects of information technology on marketing consumer goods with annual time series covering the period 1996 – 2005. Some statistical tools were employed to explore the relationship between these variables.

Using the Ordinary Least Squares (OLS) regression on the turnover ratio and expenditure on information technology of the company of study indicated that growth in turnover is influenced by growth in information technology. There is correlation between the variables employed since the coefficients were significant and of good fit. This, therefore, suggests that information technology is very relevant in marketing consumer goods.

We observed from the study that information technology is a recent phenomenon in Nigeria and, therefore, can not compare with what is obtainable in the developed world, where information technology originated from. However, it was also noted that Nigeria is Africa's fastest growing information technology economy and as such, is in the eye of the world. This essentially suggests a vibrant prospect for optimal development, not only in information technology, but the general economy of Nigeria, in a not-too-distant future.

5.2 CONCLUSION

Information technology has turned the world into a global village where someone, thousands of miles away, can be reached and interacted with, just at the press of a button, even from the comfort of your bedroom. This global connectedness, no doubt, has transformed the interface of business activities. Whether an organization would be successful or not now depends on the extent to which it is investing in information technology and using information technology in an innovative manner.

From the findings of the study, we can infer that the Nigerian business environment is grappling with the pressure to catch up with the rest of the world especially in the area of information technology, so as not to be stifled as they exchange electronic data and information and their general business activities. Though the Nigerian government has made considerable investment in information technology in the last five years or thereabout, especially with the deregulations of the telecommunication sector and the launching of the Earth observation micro-satellite named sat-1, a lot still need to be done if the country would not be left behind.

It is however the believe of this study that with the deregulation of the telecommunication industry coupled with more government participation in the provision of information technology for its citizenry, Nigeria will soon leapfrog

into the eye of the world, thereby occupying a center stage in the world, given its large market and fast growing economy.

5.3 RECOMMENDATIONS

Based on the findings of this study, the following suggestions/ recommendations are, therefore, offered.

1. Nigerian government should build better and optimal infrastructural facilities that will serve as backbone for communication in the Nigerian business environment. This can be achieved by encouraging participation of the organizations themselves.
2. Emphasis should be placed on the importance of maintaining existing infrastructure and equipment. Vandals and poor attitude to public facilities should be discouraged and eradicated by employing stringent measures against offenders.
3. Government should formulate policies that would encourage investments in the information technology industry, thus allowing for more participation and usage. This to our mind will encourage competition thereby enhancing quality of service and a lower cost.
4. There is the need to professionalize information technology systems development, use and management in the Nigerian business environment.

5. Organizations should come together to collaborate in sourcing some new and common technologies such as the VSAT.
6. Government should encourage the participation of various stakeholders by reducing import duties, taxation and the time it takes for information technology equipment to be cleared at the ports.
7. Government should encourage mass literacy of its citizenry in the area of information technology skill by introducing it as a compulsory course at all levels (i.e. from elementary schools to tertiary schools).
8. The general public should be enlightened on the importance and advantages of information technology. This will go a long way to check people's mindset on any apprehension entertained.
9. Government should attract foreign investors in the area of information technology and possibly sign pacts that will make for transfer of these technologies.

FRONTIER FOR FURTHER STUDY

Findings and expansion in research are always submissive tone constraint of the other. Thus, much work needs to be done to better understand the relationship between information technology and the marketing of consumer goods. As e-commerce increases in strategic importance, businesses must carefully examine the management, context, and trajectory of information technology as well as the people who develop and maintain the asset. Although the study thoroughly

explored the management of customers, using information technology tools, it did not capture the managers themselves. We therefore propose that the issues we outline should be considered a lens for establishing direction among the community of practice. In addition, the propositions provide a context for further inquiry within the research community regarding the dynamic linkages among products, structure, personnel, and other sector variables and adopt more complex models that can be developed from panel data.

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