



BLEKINGE INSTITUTE OF TECHNOLOGY
School of Management

MBA Thesis Report

ON

**The Impact of Product Innovation on Sales Volumes of
Consumer Goods.**

(A case study of Royal Philips Electronics N.V)

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ABSTRACT

Studies have shown that application of innovation in products and marketing as strategy is important to the survival of a firm. However, only few companies are adopting this concept as a major strategy due to their obliviousness to its imminent contribution to the corporate goal. Many of the early adopters of this concept are also failing to achieve the most from it due to their lack of proper understanding of its fundamental and benefits. This study analysed empirically the impact of product innovation on sales volume of consumer goods using Philips consumer electronics, a division of Philips B.V as a case study. Identified hypothesis concerning the relationship between product innovation and the company corporate goal were tested with the use of telephone interviews and questionnaire to stimulate responses from staff of the firm and the consumer of its products.

Analysing of the responses obtained from the field study showed that lack of product innovation could affect the organisation's profit and consumer satisfaction because of its great impact on consumers' buying decision. Monitoring and responding accordingly to changes in consumers' taste will ensure success in product innovation. Evidently, adoption of product innovation can lead to increase in sales volume of a firm's product. The finding of this research work will be useful to the firm used as a case study in regards to better development of its innovation funnel with feedback from market trends and consumer dynamic needs. Although, this research work used a single company for analysis, however the result of the findings can be adequately applied to other firms especially firms within the same industry.

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CHAPTER ONE

1.1 INTRODUCTION

Technological oriented companies have begun to recognize that a blend of innovation and marketing in their overall strategy is vitally important to the achievement of the corporate goal of the firm. The corporate goal of a company could be multifarious but the most common one that cut across many firms in a competitive market is SURVIVAL, which is achieved partly through profits. To achieve this goal, the blend of product innovation and marketing concept philosophy must be harmonized with the company's global strategy.

Product innovation on the other hand involves the introduction of a new good or service that is new or substantially improved. This might include improvements in functional characteristics, technical abilities, ease of use, or any other dimension [1].

Product innovation can be separated into three basic categories : (1) line extensions, (2) me-too products, and (3) new-to-the-world products. Line extensions are products still familiar to the business organization but new to the market. Me-too products are considered new to the business organization but familiar to the market; that is, imitations of competitors' products. New-to-the-world products are considered new to both the business organization and the market [2].

At the declining stage, it will be necessary to innovate product, in order to make it withstand the strong competition from competing products and to suit the changing desires of the customers that consumes the product. As it is widely recognized, needs

changes over time and companies must reflect these changes in their products if they are to achieve the economic objective of maximizing profit and satisfaction.

Throughout modern history, product innovation receives increasing support and attention. The underlying reason is that markets are highly dynamic. What was a profitable product yesterday may not be profitable tomorrow.

Furthermore, successful new products command substantially higher profit margin than mature or declining products. Successful new products are profitable –at least for a while before competitors roll out their own me-too products to the market and eventually compete on price basis. Most companies face the inevitable choice of product innovation on gradually fading products for the market.

However, it should be noted that product innovation is not only carried out at the declining stage of a product, it can also be done to a totally novel product at the introductory stage.

Marketing of new product goes through a period of growth, reach a peak, and eventually decline. In addition, profit tends to reach a peak and usually begin to decline earlier than sales volume. Optimum sales volume is often reached only after competitors have entered the field, price rivalry has become intense and profit margin have been shortened. To sustain profit, new products/ services may be needed long before sales of established product/ services have begun to fall.

The salient causes of product/ services lifecycles include:

- Instability of consumer demand

- Instability of competitive position.

Profit calculation relating to innovated products must be based on forecasting. Consider the formula below:

$$R = (D \cdot (p - c) \cdot L - (d \cdot (p - c) \cdot L) - (d \cdot (p - c) \cdot L^2 \dots dx(p - c)L^n)$$

Where R= Total long term net profit

D= Average total units of sales per year

P= average sales per unit

C= Average cost per unit

L= Expected life of the product/ services in years.

The above formula means that the planned products may either increase or reduce the profitability/benefits of every other product. If profit optimization is assured to be a firm's major goal, new product and services should be chosen to maximize resource utilization.

As earlier mentioned, the opportunity to market a new product or undergo product innovation is increased if management understands the adoption and diffusion processes.

The adoption process is the decision making capacity of an individual through which a new product, the innovation is accepted. It is the acceptance and continued use of a product or brand. The diffusion of the new product is the process by which the innovation is spread through a social system over time. The rate of diffusion is measured by the number of consumers who have adopted an innovation at various periods from the time it was innovated.

According to Ogbechi [23], Adoption process involves the following stages:

- Awareness: This is when the consumer becomes aware of the innovation but lack information about it.
- Interest: Here, the consumer's interest is stimulated to seek for information about the innovation. e.g, price, benefit, warranty, availability etc.
- Evaluation: Here, the consumer decides whether to try the innovation. This he does by considering the product cost features and benefits.
- Trials: At this stage, potential consumer tries the new product to improve his /her estimate if its value.
- Adoption: The consumer decides to make full and regular use of the innovated product.
- Innovated products have consistently proved overtime that higher sales volume is a dividend attached to such innovation.

1.2 PURPOSE OF STUDY

The objective of the study is to examine critically the impact of product innovation as a tool to increase sales volume of consumers' goods. Therefore, this study will examine the following:

- a. Investigate how lack of innovation will likely affect Philips Consumer Electronics profit and consumer satisfaction.

- b. Find out whether lack of innovation by Philips Consumer Electronics will likely affect her profit and consumer satisfaction.
- c. Determine how the activities of competitors bring about product innovation.
- d. Evaluate the impact of product obsolescence on product innovation in Philips Consumer Electronics product.
- e. Find out whether inadequate research about the needs of consumers before introducing the product brings about the failure of the product.
- f. Evaluate the extent to which product innovations have impact on consumer's buying decision.
- g. Identify the likely impact of consumers' taste in bring about product innovation.
- h. To examine the possibility of firms redesigning their innovation management process, through the knowledge of market performance of innovation products

The motive of this study stems from the fact that many companies have failed to recognize that the blend of product innovation and marketing is vital to the achievement of the corporate goal.

Product, which is one of the major factors of marketing mix of achieving customers' satisfaction as well as corporate goal, must be well addressed. In view of this, the study is designed to show the impact of product innovation on success of consumer goods using Senseo, a coffee brewing system product under the Consumer Goods of Philips consumer electronics division.

1.3 SCOPE OF STUDY

The scope of this research is strictly within the framework of the stated objectives. It is an effort to study the impact which product innovation has on the on Sales Volumes of Senseo. The respondents are therefore the company personnel and it must also be emphasized that this is not a general survey; attention will be focused on the Senseo product group

1.4 SIGNIFICANCE OF STUDY

The output of this thesis project will be of great value to companies that are involved with technological products, not only consumer electronics. Firms will be able to apply market performance knowledge of innovation products in designing their innovation funnel and not inhibit their innovative capacity by using fixed rules and standard to all products. The analysis from market trend can help to decide on the type of innovation strategy to embark upon, how to effectively use product innovation as a distinct strategy. In addition, this project will also highlight ways through which this important aspect of product development can be improved upon.

The output of this research will also be to the following categories of people:

- 1) The organization takes as case study: The result and recommendations from this research work will help product managers to see product innovation as part of their task by bringing them out of the shell of just rolling out products without monitoring its life cycle.

2) To the industry of which the case study belongs: This will also assist in fashioning the business model to maximize profit and consumer satisfaction, re-tailoring their product to meet the changing tastes of the consumers.

1.5 STATEMENT OF PROBLEM

The statement of problem in this research work includes:

- a. Investigating how lack of innovation will likely affect Philips Consumer Electronics profit and her consumer satisfaction.
- b. Finding out whether lack of innovation by the firm will likely affect her profit and consumer satisfaction.
- c. Determining how the activities of competitors brings about product innovation.
- d. Evaluating the impact of product obsolescence on product innovation in Nigerian Breweries product.
- e. Finding out whether inadequate research about the needs of consumers before introducing the product brings about the failure of the product.
- f. Evaluating the extent to which product innovations have impact on consumer's buying decision.
- g. Identifying the likely impact of consumers' taste in bringing about product innovation.

1.6 RESEARCH QUESTIONS

The research will seek to address the following questions:

- a. Are the existing products produced by Philips Consumer Electronics unable to meet the needs of the consumers?
- b. Can the lack of innovation by the firm likely affect the organisation's profit and consumer satisfaction?
- c. Does the activities of competitors bring about product innovation?
- d. Is product obsolescence responsible for product innovation?
- e. To what extent does inadequate research about the needs of consumers before introducing the product bring about the failure of the product?
- f. How does product innovation done by the firm have impact on consumer's buying decision?
- g. What are the likely impacts of consumers' taste in bringing about product innovation?

A research study of this nature is susceptible to obstruction in the depth of information offered by company officials due to non-disclosure agreements and company executives might not be willing to divulge vital information due to the fear of their competitors.

1.7 BRIEF HISTORY OF THE COMPANY

Koninklijke Philips Electronics N.V. (Royal Philips Electronics N.V.), usually known as Philips, is one of the largest electronics companies in the world [3]. In 2006, its sales

were €26.976 billion and it employed 121,732 people in more than 60 countries. Philips is organized in a number of divisions: Philips Consumer Electronics, Philips Lighting, Philips Medical Systems and Philips Domestic Appliances and Personal Care.

The Philips Consumer Electronics division is actually the focus of this research work, while Philips' first product was manufactured in 1891; the first product that would fit in the Consumer Electronics division was a television, experimentally manufactured in 1925. In 1927, Philips began producing radios. Only five years later, Philips had sold one million of them. One other major product release came in 1963, when the Compact Cassette was introduced.

1.8 THE PRODUCT SENSEO

The product for this case study, Senseo coffee system is the product of the strategic alliance between Philips consumer electronics a division of Philips and Sara Lee Coffee and Tea, a division of Sara Lee Corporation. Both companies are market leader in their respective markets, Philips in domestic appliances and Sara Lee in quality coffee,

Concept

The Senseo coffee machine, is a single-serving, low-pressure coffee maker [19], which combines a patented brewing system from Philips with high quality coffee pods from Sara Lee's Douwe Egberts, one of Europe's premiere coffee. The gourmet coffee system delivers a fresh brewed cup of coffee featuring a unique smooth frothy coffee layer. The Senseo coffee machine automatically uses the right amount of water and ensures that the water passes through the coffee pods quickly and evenly, maximizing the flavor from the

coffee bean. The brewing process guarantees a perfect cup of fresh coffee within a minute every time. The companies claimed to have spent more than 10 years in development and market research, before launching the product in 2001 in Europe. The appliance has a modern design and is available in three colors: cobalt blue, raven black and white



Figure 1.1 Philips Electronics - Senseo™ Coffee System

Marketing

The partnership between an appliance manufacturer (Philips) and an FMCG company (Sara Lee International) has enabled the companies to make the best use of their respective areas of expertise and has led to the outstanding performance of the SENSEO® coffee system[13]. A strong marketing program has played a key role in this success. This program includes significant above-the-line materials (including TV, outdoor, radio and co-op advertising campaigns) and below-the line materials, as well as communications aimed specifically at the trade and a comprehensive direct to consumer

program by employing the concept of market fragmentation with emphasis on variability. The machine is also marketed not as a simple coffee machine, but as an epitome of a new life-style

The SENSEO® coffee pod system was developed to meet changing consumer coffee-drinking needs and habits. Strong consumer trends, such as increasing individualization, the decrease in the average number of persons per household, and a growing focus on speed and convenience in food and drink preparation suggested consumers would welcome an alternative to brewing a traditional pot of coffee. Consumer research also showed that the types of coffee available often failed to meet people's expectations in terms of taste, which offered great opportunities to explore better ways of improving home coffee quality.

At the same time, the stagnant coffeemaker market showed limited growth in terms of value and virtually no growth in terms of volume. Although drinking coffee has become a way of life throughout the world, the coffee market is currently undergoing change and is under increasing pressure. Falling prices, decreasing interest in hot beverages among young people and the growth in the cold beverage market are all influencing the coffee market. Similarly, the market for coffee machines is at saturation point and research shows that consumers are only buying new machines when their old one needs replacing, so there was an urgent need for breakthrough innovation.

Philips announced the 10 millionth sale of the Philips SENSEO® coffee pod system after four years of launching. Following a successful pilot market launch in the Netherlands in February 2001, the revolutionary coffee concept went on to launch in Belgium and France in March 2002. The European roll out in September 2002 continued with the launch in Germany (DACH) and Denmark in October 2003. The SENSEO® coffee pod system launched in the UK and US in March 2004 and in Australia in January 2005.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter brings together the views, ideas and opinion of different authors and professionals in the field of marketing and innovation in respect of the research topic.

The various information in this chapter are therefore collected from secondary sources like recitation, quotations and personal reviews of magazines, journals, seminar papers and textbooks.

2.2 BUSINESS OBJECTIVES

Survival is the major objectives of every business organization. A viable business will be able to survive the various unfavorable business conditions. This is mostly achieved when there is a proper co-ordination of all business activities of the organization. Hence, a successful company will be able to make a reasonable amount of profit if all its efforts are channeled towards satisfying the consumers.

2.3 MARKETING CONCEPT

The satisfaction of the consumers has now become one of the means through which an organization could survive. The consumers who are regarded as “Kings” are now governing the business environment. In essence, we are now in the consumers’ or buyers’ market and a company with intention of making profits will have to include customer satisfaction as part of its strategy.

Marketing concept is now the new philosophy in the business world. In [5] this concept was described as:

“Marketing concept is a business philosophy which assumes that ‘consumer-need satisfaction’ is the economic and social justification for a firm’s existence. It is a guide to business planning which aim at analysing and maximizing company objectives while satisfying consumer demand. The concept believes that instead of a Firm trying to market what is easiest for it to make, it must Find out ore about what customers wants and is willing To buy”

In other word, the marketing concept is a new concept whereby all company’s planning and operations should be customer-oriented while profitable sales should be firm’s goal.

The purpose of adopting this new philosophy of business is to improve customer relations because better relationships would also benefit the firm as earlier mentioned.

Profit enables a firm to grow and even provide many satisfactions to customers and to strengthen the economy as a whole. Many firms do set goals of increased sales or a greater share of the market. However, if they incurred huge expenses in the process of achieving the increased in sales, increased sales may lead to loss in profit rather than more profit.

This theory is captured in [6] and stated as:

“One goal of business firm is to make profit, for without profits the business will eventually fail:

2.4 PRODUCT LIFE CYCLE

Product, like any normal human being has a life cycle, which dictates the strategy to be adopted by the product developers or managers. The stage in which the product is in the life cycle could be determined or known through the sales performance of the product in the market

Omotunde, Ayozie and Asolo in [5], said that;

“product life cycle is a model that describes a product’s sales, profits, customers, competition and marketing effort from its introduction to its removal from the market”

It can also be described as a graphical portrayal of the sales history of a product, the time when it is introduced to the point when it is withdrawn.

Product life cycle has four major stages, which are described below:

1) **Introduction:** This is the period during which a new product is introduced into the market. The product is newly launched or just fully commercialized.

This stage in the product life cycle is usually over burdened with high production cost as well as other marketing costs.

In addition, this stage is usually accompanied by heavy promotional activities because of the need to inform potential buyers of the existence, uses, application and advantages of the new product. For highly innovating products, price are usually high to cover cost of production and marketing, profits, if any, are small in this phase of the life cycle. This stage is characterized with the risk because the product can either fail or succeed.

2) **Growth:** If a product survives the introductory stage, it moves into the growth stage of the life cycle. This stage starts with the acceptance of the product in the

market. The first symptom of the appearance of the growth stage is therefore a rapid increase in the sales volume. Due to the improvement in sales volume, some of the cost will now be absorbed and so there will be the emergence of profit.

This stage will equally witness the moving up on the curve of the product in terms of sales and profit. This is equally noted by competing firms, who will quickly come up with identical products. There is an increase in demand.

It is of vital importance to mention at this stage of product innovation will be necessary at this stage of product's life cycle. The innovation could be partial innovation or total innovation. This is because consumers always want "*new*" products because they feel the quality of the "*new*" product will be better than the already existing one.

3) Maturity: The emergency of this stage is usually accompanied by an increase in both sales and profit but at a decreasing rate. Most products that exist today are in the maturity stage. Normally, this is the longest stage of the cycle, competitive activities are now at its tightest, and many rival companies are now seriously competing for the market. Some emulators may be coming up with an inferior version of the product to enable them penetrate into the market.

Promotional activities are very moderate since the brand is already established in the market. Advertising efforts will be directed towards reminding the consumers about the existence and potentials of the product in the market.

4) Decline: A continuous decrease in profits and sales are the two major symptoms of the appearance of this stage in the product life cycle. Since the product is making minimal or no contribution to profit, weak competing firms will be forced to leave the market. Therefore, very few firms will be left in the market. The rate of decline

is governed by how rapidly consumers' taste change and/or substitute products are adopted. The rapid decrease in sales will push cost up, thereby eliminating profits either entirely or into the very low level.

It is of great importance to note here that not all products face an inevitable death as they move along the life cycle. Sometimes they can be given new life through repositioning, product modification or product innovations.

A PRODUCT'S LIFE-CYCLE DIAGRAM

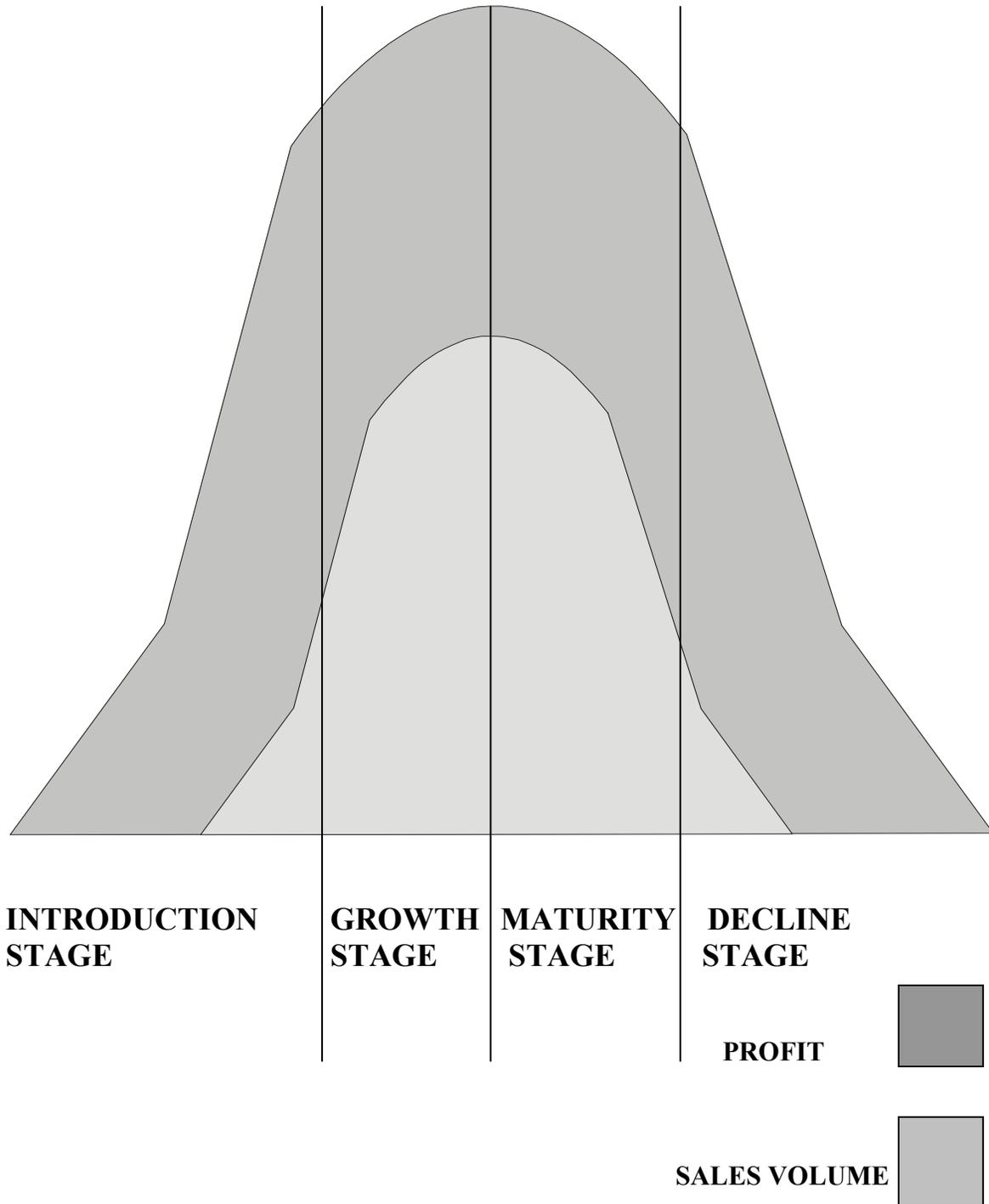


Figure 2.1 Sales Volume Curve and profit Curve in Relation to a Product's life cycle

2.5 PRODUCT INNOVATION

The word innovation has now become a popular vocabulary among managers ***“the watchword for management now is innovate or die”***. This in essence means that a company that fails to innovate its product will ultimately die.

Gordon put in this way in [10]

“It (innovation) covers all that goes on from the beginning of an idea, to an invention, through to the marketing of a new product and the use of a new process .Innovation, in fact, continues until the new product or process has been completely introduced into the economy, along with any modifications and improvements. It could be said that innovation begins with an idea and ends with a the widespread use of new product and widespread new process diffusion”

Product innovation encompasses all the efforts put into a product from conception to development and commercialization to meet the needs and expectations of customers and all stakeholders. This concept has also become an essential strategic approach for creating competitive advantages in the dynamic, highly competitive global business environment.

It has become a common belief that a business enterprise has only two basic functions: Marketing and Innovating. Various studies have shown that the growing industries are those that are oriented to new products. Product innovation has become a powerful tool for keeping the company aligned with changing market conditions. Companies develop new products to meet shifting consumer demands, to capitalise on new technologies and to keep ahead of competition. Being innovative is seen as a necessary strategy for the modern day businesses.

Generally, a product cannot continue to satisfy target market or consumers and contribute to achieving an organizational overall goal indefinitely. To maintain an

effective product mix, a firm just has to modify its existing products or introduce new ones. This is known as INNOVATION.

Recently, consumers have been more selecting in their choice of products. As consumer's disposable income has increase, and as an abundance of products has become available, consumers have fulfilled many of their wants with the idea of dumping any product into the market, consumers have now become more selective. In view of this, a company that wants to survive just has no opinion than to innovate than imitate.

Stanton, in [9] states that;

“If market satisfaction in terms of quality does exist to some extent, it follows that consumers may be more critical in their appraisal of new products. While the consumer is being selective, the market is being delayed with products that are imitations or that offers only marginal competitive advantages. This situation may be leading to “product indigestion”. The cure is to develop really new products – to innovate and not just imitate”

Product innovation could make an old product become new. An obsolete product could be modified to satisfy the needs of it users more than ever before. Thus, one is now compelled to ask, what is a new product? This question has become inevitable because of the impression created on product through product innovation, which makes an obsolete product to be new again.

It will be difficult to have a definition of what a new product is. However, the most important fact is that new products are in categories. Each separate category may require different marketing program's to ensure a reasonable profitability of market success. William J. Stanton describes the three categories of new products as follows.

- a) “Product that is really innovated (new-to-the-world products) – truly unique produce for which there is a real need but for which no existing substitutes are considered satisfactory. An example is 3M’s introduction of Post-it-Note and Sony’s introduction of the Walkman
- b) Replacements for existing products that are significantly different from the existing goods (line /product extension).An example is 3M’s extension of its original 1-in by 1-in post it note into a wide range of different sizes
- c) Imitating products that are new to a particular company but not new to the market (me-too /new-to-us products). The company simply wants to capture part of an existing market”. An example is Panasonic’s clone of Sony’s Walkman.

The word “new” could mean minor changes in the quality, size, packaging, price or any other attributes of the product. A product may be a failure in the market probably because it’s bad packaging or quality. Hence, a good product manager will just have to make necessary corrections if the product is to gain market acceptance. The necessary corrections which is innovation will make the product to be appear seemingly new to the consumers.

In essence, product innovation focuses on improving the product delivery capability and strategic position of the organization through creativity and leadership. Product innovation includes several essential areas as stated in [11]:

- 1) Examining the needs for new products, processes and services.
- 2) Determining the proper direction and fit for new products.
- 3) Establishing the appropriate game plan of the entire management system for developing and commercializing new products.

- 4) Selecting new product opportunities for investment.
- 5) Enhancing the organizational capabilities to create successful new products.
- 6) Creating the new product and executing the new-product development (NPD) program.

2.6 PURPOSE OF PRODUCT INNOVATION

The social and economic justification for the existence of a business is its ability to satisfy its customers. A company meets its basic responsibility to the society through its product. Unless it fulfils this mission, a firm should not exist. In actual sense, the competing forces in our socio-economic system do not permit it to exist, at least not for long.

A product that fails to meet the changing taste of the customer may end up as a failure in the market thereby causing the failure of the company as a whole, which could led to its closure. Williams J. Stanton highlights this fact in [9] thus:

***“A company cannot successfully sell out a poor product over a long the long-run. Often, it is easy to create a demand for initial sales. But a company needs a good product to get repeat sales, and repeat sales are needed to stay in business.*”**

Product innovation is essential for growth. A company that does not make innovation may die down or remain stagnant. In recent years, consumers have been more selective in their choice of products. If market satisfaction does not exist to some extent, it follows that consumers may be more critical in their appraisal for new products. Thus,

product innovation will enable a company to attract the consumers through its ever-dynamic product range.

Product innovations also enable company to increase its profit. This is possible through the additional sales volume brought about by the innovation of the products. Since product innovation aims at a best satisfying the needs of the consumer, there s the tendency for the consumers to go for such product, and in the long run the profit of the company will increase.

In addition, the company's profit can also be increase through the innovation of product. This can be done when the cost of a product is reviewed with the intention of reducing the cost of production. This concept is known as VALUE ANALYSIS.

Furthermore, product innovation affords the company the opportunity to fight competitors successfully. A company that fails to innovate its product may have to be edged out of the market by competitors.

Product innovation provides a company with opportunity to continue to exist in the market. This can be due to the satisfaction of customers changing needs of the companies. Phillips Kotler in his own contributions to the impact of product innovation has this to say [8],

“Under modern condition of competition, it is risky for a company to rely only on its existing product(s) customers want and expect a stream of new and improve products. Competition will do its best to meet this desire. A company's programme that induce searching for new product is necessary”

David L. Rainey in [11] put it this way;

“The primary objectives of product innovation are to create value and to achieve long-term success through the development and commercialization of new products and services”

Product innovation could be resorted to when there are shortages of materials. The shortages could force the company to look for other substitute, which will force the product to have a different outlook. For example, in the brewing industries, the shortage of wheat has forced these industries to use maize as substitute to wheat.

2.7 EFFECT OF PRODUCT INNOVATION

Product innovation may have different impact on the old product in different companies. In some companies, product innovation may lead to the withdrawal of the old product from the market. In some other companies, the old product will be marketed alongside with the new product. This could in a way increase the market share of the company.

2.8 COST OF PRODUCT INNOVATION

The companies shy away from product innovation because of the cost involved in carrying out innovations. The cost of carrying out this activity varies from one company to another depending on the type of innovation it wishes to perform on the product(s). In a situation where total product innovation is done, the cost could be so much because it will have to undergo series of processes, which requires more time, skill and money.

The company also stands the risk of product failure. The new product may not be acceptable if the innovation is not properly carried out. Moreover, the company may

stand the risk of having to loose its hold of the present market share to competitors if its new product does not meet the expectations of the consumers.

In a situation where partial innovation is done on a product, the cost may be minimal since such innovations will not require much time, skill and money. The risk involved in the innovation is reduced to the minimum.

2.9 CONSUMERS' REACTION TO PRODUCT INNOVATION

Consumer reacts to production innovation in various ways depending on the type of product innovation that is carried out on the product and the marketing methodology. In addition, the performance of the old product and the market reputation of the product manufacturer may determine the subsequent reactions of the customers.

The success or otherwise of product innovation depends largely on the reaction of the consumers which of course could be influenced by some of the activities of the manufacturers of the product.

It is obvious that not all “new” products quickly become a success. Consumers react positively or otherwise to a product with the price of the product acting as a determining factor. In a situation where the consumers view the price as being exorbitant, they will look for other brands with better prices. On the other hand, if the price is fair enough, the product is surely going to enjoy and win the loyalty of the consumers.

In addition, the quality of the product also determines the success of failure of the product. A product of high quality will definitely enjoy repeat purchases while poor or badly produced product will scare the consumer away from the first trial.

CHAPTER THREE

RESEARCH METHODOLOGY AND THEORY

3.1 INTRODUCTION

This section of the study shall adequately take care of the research procedure as much as possible bearing in mind that research findings should be valid and reliable. It will explain the researcher procedure used to arrive at various conclusions in the study such that if any other researcher should carry out work on the same topic, he would be able to arrive at the same result bearing in mind that the same process and procedure is followed.

It is the preliminary sketch of the research work to be done. The population of study, of data, sample size sampling techniques method of data collection instrument and method of data presentation analysis and data interpretation shall be discussed.

3.2 RESTATEMENT OF THE RESEARCH QUESTION

The research question will seek to address the following questions:

- a. Are the existing products produced by Philips Consumer Electronics unable to meet the needs of the consumers?
- b. Can the lack of innovation by the firm likely affect the organisation's profit and consumer satisfaction?
- c. Does the activity of competitors bring about product innovation?
- d. Is product obsolescence responsible for product innovation?

- e. To what extent does inadequate research about the needs of consumers before introducing the product bring about the failure of the product?
- f. How does product innovations done by the firm have impact on consumer's buying decision?
- g. What are the likely impacts of consumers' taste in bringing about product innovation?

3.3 RESEARCH THEORY

These are tentative statements on which responses to questions are to be tested for agreement or otherwise. Therefore, in order to ensure the reliability of the positive outcome of this study, a number of theories/hypothesis will be outlined and considered which will help in gathering necessary information.

The theories that will be tested are;

- 1) Lack of product innovation can affect Philips Consumer Electronics profit and consumer satisfaction;
- 2) Product obsolescence is responsible for product innovation;
- 3) Product innovation has impact on consumer's buying decision;
- 4) Changes in consumer's taste motivates product innovation
- 5) Product innovation can lead to increase in sales volume of a firm's product.

3.4 SOURCES OF DATA

The sources of data for research work will come from the two main source of statistical data collection method, which are often used by marketing researcher. These are primary and secondary sources of data.

PRIMARY DATA: These are sourced by the researcher newly and primarily from the respondents to solve the project at hand. This is normally carried out with the use of questionnaire. Questionnaire will be used to obtain the primary data from the employees of Philips Consumer Electronics.

SECONDARY DATA: They are collected by the researcher by consulting existing information within or outside the organization for solving the project at hand other than the current investigation. The use of questionnaire is the only specific approach used in collecting data in this study.

3.5 SAMPLE SIZE AND SAMPLING TECHNIQUE

The sample is a representative fraction of the larger population. For the purpose of this research work, a sample size of 10 subjects will be used due to constraint on logistics and the sample shall be made up of individuals from the population of study in the appropriate proportions.

However, the stratified random sampling technique will be used to select the sample of the staff of Philips Consumer Electronics with the staff strength being the classification criterion. Each stratum will be selected based on their importance in the population.

Simple random sampling technique will also be used to select the appropriate individuals to which the questionnaire shall be administered to in each stratum.

3.6 DATA COLLECTION INSTRUMENT

The data collection instrument to be used in this study shall be questionnaire, which will be administered to the respondents. The choice of questionnaire is that it guarantees a higher level of anonymity of the individual, which most respondents will prefer. It also enhances the use of standardized questions.

3.7 METHOD OF DATA COLLECTION

Data collection consists of presenting stimuli to a respondent and recording his/her response. The stimuli may be verbal questions, clearly identified tasks in the laboratory, complex activities in the market place or modifications of the situations.

Thus, the aim of data procedures is to get worthwhile data for the problem as defined. For the study, both primary and secondary data will be used. Primary data are drawn from their original source for the purpose of the study at hand, while, secondary data are taken from journals, textbooks, officials compilations, newspapers, periodicals, etc. as the case may be.

3.8 DATA PRESENTATION

The completed questionnaire will be collected serialized coded and analysis sequentially done according to the research question. Simple percentage means, standard deviation and hypothesis testing shall be used to analyse the data.

3.9 DATA ANALYSIS-HYPOTHESIS TESTING

Hypothesis testing involves specification of two conflicting theories are expected to be mutually exclusive and exhaustive i.e. if one is true, the other must be false. These hypotheses are termed the null hypothesis (H_0) and the alternative hypothesis (H_a). Hypothesis is a value judgment, it is statement based on an opinion about a population. It is developed in order to make an inference about that population [].

Type I and Type II Errors

Hypothesis test is prone to two types of errors, namely Type I and Type II Errors, Type I errors (the "false positive") is the error of rejecting an hypothesis that should have been accepted while Type II errors (the "false negative") is the error of accepting an hypothesis that should have been rejected. Alpha (α) is the probability of Type I Error, which is defined as $P(\text{Rejecting } H_0 \text{ when } H_0 \text{ is true})$; it is based on a predetermined level of significance. Beta (β) is the probability of Type II Error, which is defined as $P(\text{Failing to reject } H_0 \text{ when } H_0 \text{ is false})$.

Power & Confidence Level

The power of a test against the associated correct value is $1 - \beta$, this is the Probability of rejecting H_0 when H_0 is false and the confidence level is expressed as $1 - \alpha$, this is the Probability of failing to reject H_0 when H_0 is true.

Table 3.1 Error Table

	True	False
True (Accept Ho)	Correct decision Probability = $1 - a$	Type II error Probability = b
False (Rejects Ho)	Type I error Probability = a	Correct decision Probability = $1 - b$

Level of Significance

The level of significance set will correspond to the probability that we are willing to be wrong in our conclusion if a type 1 error was committed. α is a predetermined value by convention usually 0.05 which corresponds to a 95% confidence level will be used for this research work. With this setting, we are accepting the risk that out of 100 samples, we would reject a true null hypothesis five times.

Test Statistic

After stating the hypotheses to be started, the test statistic is computed. The test statistic for testing a null hypothesis regarding the population mean can be a z-test or a t-test depending on the sample size and knowledge of the population variance. Due to the small sample, size (less than 30) of this research work the t-test will be employed.

CHAPTER FOUR

EMPIRICAL AND DATA ANALYSIS

4.1 INTRODUCTION

The objective of this chapter is to describe and interpret the result of the survey and use them to answer the research questions.

4.2 PRESENTATION

The data collected from the respondents through the questionnaires were analysed using the percentage, the “student” “t” distribution to test and analyse the data relating to the hypothesis while other data in the questionnaire were analysed with the percentage method.

For easy analysis, the information obtained from the respondents was quantified with numerical scores and converted to percentages as indicated below. The analysis of section A which was directed to the staff of Philips Consumer Electronics (PCE) in marketing/sales, production, research/development and accounts departments and section B was directed to the consumer of the product.

Question 1 *was asked to find out whether PCE engages in product innovation. The outcome of the finding is as follows:*

Table 1:

1: Does the company engages in product innovation ?			
Answer	Number of Answers	Percentage	Graph
Yes	10	100.00%	
No	0	0.00%	

Table I shows that all respondents agree that the company engages in product innovation. This finding does confirm that the company is an ideal one as a case study for the topic of this project research.

Question 2 was used to find out how the company engages in product innovation, that is, what type of product – innovation does the company engages in. The result of the findings is as shown below:

Table II:

2: How does the company engages in product innovation?			
Answer	Number of Answers	Percentage	Graph
Total innovation	0	0.00%	
Incremental innovation	0	0.00%	
Combination of the two	5	50.00%	
Situation determines the type to use	5	50.00%	

The above table shows that 50% of the respondents are of the belief that the company adopted a combination of both total and partial innovation while 50% of the respondents are of the belief that the prevailing circumstance determines what type of innovation to use.

Question 3 was used to find out why the company engages in product innovation. The result is shown in the table below:

Table III:

3: Why does the company engage in product innovation ?			
Answer	Number of Answers	Percentage	Graph
To improve product's performance	0	0.00%	
To fight competitors	0	0.00%	
To attract more customers	0	0.00%	
To increase company's profit	3	30.00%	
All of the above	7	70.00%	

Table III above shows that 30% of the respondents believed that the only reason why the company engages in product innovation is to increase company's profit while 70% of the respondents are of the view that the company engages in product innovation because of the above reasons.

Question 4 was used to find out when the company engages in product innovation. The findings are as shown below in table IV.

Table IV:

4: When does the company engages in product innovation?		
Answer	Number of Answers	Percentage Graph
At the introductory stage	0	0.00% 
At the growth stage	0	0.00% 
At the maturity stage	1	10.00% 
At the declining stage	1	10.00% 
Could be any of the above stages depending on the prevailing circumstances	8	80.00% 

The result in table IV above shows that 80% of the respondents, agreed that the prevailing circumstances determines when product innovation could be carried out on a product, while only 10% of the respondents belief that product innovation is done at the declining stage, and another 10% of the respondents belief that product innovation is done at the maturity stage .

Question 5 was used to find out whether product innovation has helped the company in achieving its corporate goals. The outcome of the findings is as shown below:

Table V:

5: Has product innovation helped the company in achieving its corporate goals?			
Answer	Number of Answers	Percentage	Graph
Yes	10	100.00%	
No	0	0.00%	

The result in table V shows that all the respondents agreed that product innovation has helped the company in achieving its corporate goals.

Question 6 which was used to find out how product has helped the company in achieving its corporate goals, has the following result:

Table VI:

6: If yes, how ?			
Answer	Number of Answers	Percentage	Graph
Increase in sales	0	0.00%	
Survival of the product	0	0.00%	
Fight competitors	0	0.00%	
All of the above	10	100.00%	

From the above table, all the respondents agreed that product innovation helps to achieve corporate goals through increase in sales, survival of the product and to fight competitors.

Question 7 was included in the questionnaire to find out if product innovation has helped to reduce production cost:

Table VII:

7: Has product innovation helped in reducing production cost?			
Answer	Number of Answers	Percentage	Graph
Yes	10	100.00%	
No	0	0.00%	

All the respondents interviewed were of the opinion that product innovation helps in reducing production cost. From this result, it can be concluded that product innovation reduces production cost.

Question 8 was used to find out whether product innovation has helped in the maximization of the company's profit. Table VIII bellows shows the result of the findings:

Table VIII:

8: Has product innovation helped the company in maximisation of its profit?			
Answer	Number of Answers	Percentage	Graph
Yes	10	100.00%	
No	0	0.00%	

From table VIII, all respondents interviewed agreed that product innovation helps in maximization of the company's product.

SECTION B

This section of the questionnaire is directed to the consumers in order to get some valuable information in the determination of the impact of product innovation on consumer producers.

In all, 41 consumers participated in the survey. Below are the analysis of the relevant data in the questionnaire and the responses of the respondents.

***Question 1** was used to determine if the respondents are really qualified to supply the information needed for the research work, below is the result,*

Table IX:

1: What brand of Coffe Maker do you use?			
Answer	Number of Answers	Percentage	Graph
Espresso Coffee Maker	9	21.95%	
Philips Senseo	26	63.41%	
Magimix LA Cafetiere	0	0.00%	
Philips Cafe Duo	1	2.44%	
0 Gevalia?			
1			

	bialetti
2	cafetiere
3	traditional!
4	keurig
5	machinetto
6	Saeco Espresso Machine
7	simple espresso maker

From the table above, 63.41% of the total respondents use the Philips Senseo coffee machine. This shows that 26 of the 41 respondents are fit to supply the necessary information.

Question 2 was used to find out how long the respondents have been using the various types of products choose in question 9, below is their response

Table XI

2: How long have you being using the product?			
Answer	Number of Answers	Percentage	Graph
Less than one year	15	36.59%	
Between 1-3 years	13	31.71%	
More than 3 years	1	2.44%	

Question 3 was used to ask how often the consumer uses the products, below are their responses

Table XII:

3: How often do you use the product ?			
Answer	Number of Answers	Percentage	Graph
Regularly	17	41.46%	
Occasionally	7	17.07%	
Seldomly	4	9.76%	
In the absence of better brands	1	2.44%	

From above, it is clear that most of the respondents use the product regularly. This shows that they are capable of supplying necessary information for the study.

Question 5 was used to find out why respondents prefer the Philips Senseo brand

Table XIII:

5: Why do you prefer the Philips Senseo brand?			
Answer	Number of Answers	Percentage	Graph
The price is reasonable	9	21.95%	
The Performance is satisfactory	6	14.63%	
The quality is high	3	7.32%	
The packaging is attractive	2	4.88%	

I am attracted by the marketing style	0	0.00%	
All of the above	2	4.88%	
0	it is common property of the group		
1	it's fast		
2	all except marketing		

Question 10 was used to find out why the few respondents who prefer other brands do so, below is the result;

Table XIV:

10: Why do you prefer other brands besides the Philips Senseo?			
Answer	Number of Answers	Percentage	Graph
The price is too high	3	7.32%	
The performance is unsatisfactory	5	12.20%	
The quality is low	4	9.76%	
I am not aware of its existence	2	4.88%	
0	free gift		
1	it is a childish invention. Poor coffee for lazy people who like silly toys.		
2	the coffee is weak!		
3	coffee tastes not so good, ecologic failure		

4 I like to prepare coffee myself, it is nicer than pushing the button

The table above shows that the respondents prefer other brands of product because of the reasons highlighted above.

Question 7 was used to find out if customers are satisfied with the innovated product

Table XV:

7: Are you satisfied with the Philips Senseo brand?			
Answer	Number of Answers	Percentage	Graph
very satisfied	8	19.51%	
satisfied	14	34.15%	
neither satisfied nor dissatisfied	3	7.32%	
dissatisfied	4	9.76%	
very dissatisfied	0	0.00%	

Question 6 was used to know how product innovation has been able to satisfy the needs of those who believe that product innovation has really satisfied their needs. The reasons are as follows:

Table XVI:

6: What features of the Product do you like?			
Answer	Number of Answers	Percentage	Graph
It is fast and easy to use	21	51.22%	
It is stylish	1	2.44%	
it is easy to clean	0	0.00%	
Brew satisfactory coffee drink	6	14.63%	

4.3 TESTING AND INTERPRETATION OF DATA

Having given a careful analysis of the responses obtained from the respondent interviewed, the hypothesis earlier formulated in the first chapter of this project will now be tested and the result or implication are fully discussed below.

In all, there are four hypotheses, which are to be tested, and in doing so, the **One Sample t – Test is employed, with** α value of 0.05 that corresponds to a 95% confidence level.

The formula for student “t” distribution is:

$$t = \frac{P - P_0}{\sqrt{\frac{P_0(P_0 - 1)}{n - 1}}}$$

Where: n = Number of sample size

P = Sample proportion

$!! = \text{The hypothetical proportion}$

The “t” test statistical analysis method is adopted for the purpose of this research work. It is used because the sample size is not more than thirty (30), so also the sample mean are equal, and there is homogeneity and equality of the variances of the population.

HYPOTHESIS 1

H_i: That product innovation can affect the organisation’s profit and consumer satisfaction

H_o: That product innovation cannot affect the organisation’s profit and consumer satisfaction

To test hypothesis 1, question 5, 6 and 8 from section A of the questionnaire could be used. However, only table VII of question 8 was used.

$$t = \frac{P - !!_o}{\sqrt{\frac{!!_o (!!_o - 1)}{n - 1}}}$$

$$P = \frac{10}{10} = 1$$

$$!! = \frac{1}{2} = 0.5; n = 10$$

$$t = \frac{1 - 0.5}{\sqrt{\frac{0.5 (0.5 - 1)}{n - 1}}}$$

10 -1

$$t_c = 3.00$$

Degree of freedom (n-1) = 9

Using the Student's - t distribution table (Appendix 3)

$$t_\alpha = 1.833$$

DECISION RULE

Accept H_0 , if calculated " t_c " is less than ($<$) tabulated " t_α " otherwise reject.

FINAL DECISION

Since calculated " t_c " is greater ($>$) than tabulated " t_α ", it is significant therefore, we reject H_0 , and accept H_1 which states that **lack of product innovation can affect the organisation's profit and consumer satisfaction.**

HYPOTHESIS II

H_1 : That product obsolescence is responsible for product innovation

H_0 : That product obsolescence is not responsible product innovation.

To test hypothesis II, question 5 of section A in the questionnaire was used.

$$t = \frac{P - \mu_0}{\sqrt{\frac{\mu_0(\mu_0 - 1)}{n - 1}}}$$

$$P = \underline{10} = 1$$

10

!! = $\frac{1}{2}$ = 0.5; n = 10

$$t = \frac{1 - 0.5}{\sqrt{\frac{0.5(0.5 - 1)}{10 - 1}}}$$

$t_c = 3.00$

Degree of freedom (n-1) = 9

Using the Student's - t distribution table (Appendix 3)

$t_\alpha = 1.833$

DECISION RULE

Accept H_0 , if calculated " t_c " is less than (<) tabulated " t_α " otherwise reject.

FINAL DECISION

Since calculated " t_c " is greater (>) than tabulated " t_α ", it is significant therefore, we reject H_0 , and accept H_1 which states that **product obsolescence brings about product innovation.**

HYPOTHESIS III

H_1 : That product innovation has impact on consumer's buying decision

H_0 : That product innovation has no impact on consumer's buying decision.

To test hypothesis III, questions 5 and 6 were used.

$$t = \frac{P - p_0}{\sqrt{\frac{p_0(1-p_0)}{n-1}}}$$

$$P = \frac{10}{10} = 1$$

$$p_0 = \frac{1}{4} = 0.25; n = 10$$

$$t_c = 5.1962$$

Degree of freedom (n-1) = 9

Using the Student's - t distribution table (Appendix 3)

$$t_\alpha = 1.833$$

DECISION RULE

Accept H_0 , if calculated " t_c " is less than ($<$) tabulated " t_α " otherwise reject.

FINAL DECISION

Since calculated " t_c " is greater ($>$) than tabulated " t_α ", it is significant therefore, we reject H_0 , and accept H_1 which states that **product innovation has impact on buying decision.**

HYPOTHESIS IV

H_1 : That changes in consumer taste bring about product innovation

H_0 : That changes in consumers' taste does not bring about product innovation.

To test /hypothesis IV, questions 6, 7 and 8 were used.

$$t = \frac{P - P_0}{\sqrt{\frac{P_0(P_0 - 1)}{n - 1}}}$$

$$P = \frac{10}{10} = 1$$

$$P_0 = \frac{1}{2} = 0.5; n = 10$$

$$t = \frac{1 - 0.5}{\sqrt{\frac{0.5(0.5 - 1)}{10 - 1}}}$$

$$t_c = 3.00$$

Degree of freedom (n-1) = 9

Using the Student's - t distribution table (Appendix 3)

$$t_\alpha = 1.833$$

DECISION RULE

Accept H_0 , if calculated " t_c " is less than ($<$) tabulated " t_α " otherwise reject.

FINAL DECISION

Since calculated " t_c " is greater ($>$) than tabulated " t_α ", it is significant therefore, we reject H_0 , and accept H_1 which states that **changes in consumer taste brings about product innovation**

The theory that product innovation can lead to increase in sales volume of a firm's product could not be tested with the questionnaires however, telephone interview with the Senseo project executive confirmed that a tremendous increase in sales volume was experienced by the Senseo compared to similar Philips coffee maker products in the same category.

4.4 RESEARCH FINDINGS

The findings from this research work are as follows:

- 1) That lack of product can affect the organisation's profit and consumer satisfaction;
- 2) That product obsolescence is responsible for product innovation;
- 3) That product innovation has impact on consumer's buying decision;
- 4) That changes in consumers' taste brings about product innovation.
- 5) That product innovation can lead to increase in sales volume of a firm's product

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 SUMMARY

This research brings to light some of the benefits of product innovation, which can be regarded as marketing *survival strategy*. Product innovation can be described as a situation where product is improved upon to meet the ever-changing needs of consumers. An “old” product can be placed as a “new” product in the market after making some minor changes. On the other hand, an entirely new product can also be introduced into the market as a result of research findings. Most technology based company innovations are mostly technology-driven contrary to market-driven technology, which is stimulated by the consumers’ needs.

Products like any other living beings undergo a normal lifecycle and at every stage of the life cycle, the product experience some changes in the demand for them. Product innovation can be also be carried out on product already in the market.

This study was based on some hypotheses, which were tested; they include:

- 1) That lack of product innovation can affect a firm’s profit and consumer satisfaction;
- 2) That product obsolescence is responsible for product innovation;
- 3) That product innovation has impact on consumer’s buying decision;

- 4) That changes in consumer's taste brings about product innovation by an organization satisfying them.
- 5) Product innovation can lead to increase in sales volume of firms' products.

In order to test whether the above assumptions are right, opinion of consumers, and company personnel were sought. Majority of the people interviewed are of the belief that if proper innovation is carried out on a product, it will perform better by satisfying the ever-changing needs of the consumers and it will also help to maximize the profit of the producers.

5.2 CONCLUSION

In this research paper, the impact of product innovation on consumer's goods was examined. The background has revealed that most product die prematurely due to lack of proper planning before the product is launched. In some cases, the product is not properly defined, that is, the needs of consumers are not properly met through the product hence, they don't enjoy repeat purchase.

It appears that philosophy of marketing concept is yet to be taken seriously, most companies reckon with this concept in practice. In the practical sense, the needs and wants of the consumers are satisfied through the company's product(s). For a product to meet these objectives of satisfactions, it must undergo product innovation at regular intervals because of the dynamic nature of consumer's needs and wants that changes over time.

The idea behind product innovation does not end in the satisfaction of changing taste of the consumers, it also helps in reducing the cost of producing the goods, and thus, selling

it to the consumer at reduced prices. This aspect of product innovation helps company to have an edge over competing products in terms of cost.

It is true that most consumers are skeptical about “new” products because of their limited purchasing power and the dubious attitude of some producer who market poorly produced products, however, a product that is properly produced will enjoy consumers’ patronage.

One point must be noted and that is a good product may fail if the producer fails to create awareness for the product. It is therefore imperative for producers to make adequate promotion for new products.

Finally, it is worthy to note that product innovation is not limited to once in a product’s lifetime. A product can be innovated as many times as possible. This aspect of product innovation is mostly done on consumers’ goods. This is so because the cost in carrying out product innovation on consumers good is not that high as the amount that will be spent in carrying out innovation on industrial goods.

5.3 RECOMMENDATIONS

Having undertaken a thorough study of the impact of product innovation on consumer’s goods, it is deemed necessary to give some useful suggestion and recommendation, which would help in improving the quality of consumer goods, hence, improving the standard of living of the consumer.

Philips consumer electronics and other companies that produce consumer goods will find these recommendations very useful. The recommendations are as follows:

- Companies should engage in extensive research, to find out the actual needs of the consumers going into production. This will go a long way in preventing the production of products which are not actually needed because of its failure to satisfy the needs and wants of the consumers;
- In addition, companies should carry our research on the changing taste of the consumers periodically so as to adjust the already existing product, to meet the dynamic taste of consumers because failure to do so will make the product obsolete;
- Since product innovation helps in reducing cost, companies should engage in it regular interval so as to cut down through value analysis strategy which is segment of product innovation;
- Companies should ensure that Research and Development Department as well as other sources where new product ideas could be easily explored are not neglected. Such report includes that from sales persons who are always in touch with the consumers. The salesperson also knows most of the competing products and in addition they know the position of their company's product in terms of competition in the market;
- A monitoring team should be set up to monitor the activities of competing products. By so doing, the company will know the innovations made on competing products thereby adjusting its own product so as to possess such new attributes;

- Finally, in carrying out product innovation, producers should ensure that the “new” product is an improvement on the old one. Consumers should not just be deceived that a product quality has improved while in the actual sense, there is no alteration on the product. If the consumers should find out that, they have been deceived, the product might not enjoy any repeat purchase, and this might affect the firm’s image and brand.

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Male

Female

1: What brand of Coffee Maker do you use?*

Espresso Coffee Maker

Philips Senseo

Magimix LA Cafetiere

Philips Cafe Duo

Others

If your answer to Question 1 is not Philips Senseo, please proceed to Question 10 to complete the survey

2: How long have you been using the product?

Less than one year

Between 1-3 years

More than 3 years

3: How often do you use the product?

Regularly

Occasionally

Seldom

In the absence of better brands

4: Do you prefer Philips Senseo brand to other brands of coffee machine?

Yes

No

5: Why do you prefer the Philips Senseo brand?

The price is reasonable

The Performance is satisfactory

- The quality is high
- The packaging is attractive
- I am attracted by the marketing style
- All of the above

Other reasons

6: What features of the Product do you like?

- It is fast and easy to use
- It is stylish
- it is easy to clean
- Brew satisfactory coffee drink

7: Are you satisfied with the Philips Senseo brand?

- very satisfied
- satisfied
- neither satisfied nor dissatisfied
- dissatisfied
- very dissatisfied

8: Would you recommend the product to someone else?

- Yes
- No
- Not sure

9: Based on your experience with the Philips Senseo, would you acquire another product from Philips?

- definitely
- probably
- might or might not
- probably not
- definitely not

If your product choice is Philips Senseo, please proceed to question 11 to complete the survey

10: Why do you prefer other brands besides the Philips Senseo?

- The price is too high
- The performance is unsatisfactory
- The quality is low
- I am not aware of its existence

Other reasons

11: Do you have any advice for the company in regards to improvement on the Senseo product?

Thank you very much for participating in this study! Please submit your answer here

[created by web questionnaire.](#)

3) Student's t Distribution Table

SIGNIFICANCE LEVEL FOR ONE-DIRECTION TEST						
df	.10	.05	.025	.01	.005	.000
1	3.078	6.314	12.706	31.821	63.657	636.619
2	1.886	2.920	4.303	6.965	9.925	31.598
3	1.638	2.353	3.182	4.541	5.841	12.941
4	1.533	2.132	2.776	3.747	4.604	8.610

5	1.476	2.015	2.571	3.365	4.032	6.859
6	1.440	1.943	2.447	3.143	3.707	5.959
7	1.415	1.895	2.365	2.998	3.499	5.405
8	1.397	1.860	2.306	2.896	3.355	5.041
9	1.383	1.833	2.262	2.821	3.250	4.781
10	1.372	1.812	2.228	2.764	3.169	4.587
11	1.363	1.796	2.201	2.718	3.106	4.437
12	1.356	1.782	2.179	2.681	3.055	4.318
13	1.350	1.771	2.160	2.650	3.012	4.221
14	1.345	1.761	2.145	2.624	2.977	4.140
15	1.341	1.753	2.131	2.602	2.947	4.073
16	1.337	1.746	2.120	2.583	2.921	4.015
17	1.333	1.740	2.110	2.567	2.898	3.965
18	1.330	1.734	2.101	2.552	2.878	3.922
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819
22	1.321	1.717	2.074	2.508	2.819	3.792
23	1.319	1.714	2.069	2.500	2.807	3.767
24	1.318	1.711	2.064	2.492	2.797	3.745
25	1.316	1.708	2.060	2.485	2.787	3.725
26	1.315	1.706	2.056	2.479	2.779	3.707
27	1.314	1.703	2.052	2.473	2.771	3.690
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646
40	1.303	1.684	2.021	2.423	2.704	3.551
60	1.296	1.671	2.000	2.390	2.660	3.460
120	1.289	1.658	1.980	2.358	2.617	3.373
χ	1.282	1.645	1.960	2.326	2.576	3.291