THE IMPACT OF BUSINESS INTELLIGENCE ON ORGANISATIONAL VALUE CREATION – A CASE STUDY OF NESTLE NIGERIA PLC

Dissertation submitted in part fulfilment of the requirements for the degree of Master of Business Administration at Dublin Business School

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Declaration: I, Rahmat Y. Hamza, declare that this research is my original work and that it has never been presented to any institution or university for the award of Degree or Diploma. In addition, I have referenced correctly all literature and sources used in this work and this work is fully compliant with the Dublin Business School’s academic honesty policy.

Signed: rahmat hamza

Date: 7th of January 2019
Acknowledgment

I am grateful to God Almighty for the successful completion of my dissertation. I would like to appreciate my supervisor Lynn Monaghan, for her guidance and support throughout my dissertation process. I would like to thank my siblings and family. I would also like to thank my boss, my friends and classmates for their help and motivation during my program of study. I would like to appreciate the participants who took time out of their busy schedules to help partake in this research work.

God bless you all.
Abstract

In reality, rapid development of business intelligence has affected virtually all aspects of life and businesses in trying to create value. Business internal environment is characterized by uncertainties, dynamic and constant changes etc., and these are factors that affect organizational value creation. Nestle Nigeria Plc is one of the leading firms in manufacturing of consumer goods in Nigeria. However, the hope of the shareholders receiving a higher dividend in the recent years became dim following the weak performance of about 94 per cent fall in the profit after tax in their annual profit for 2016. Could this be as a result of lack of effective business intelligence process?

The purpose of this study is to investigate impact of business intelligence on the organizational value creation of Nestle Nigeria Plc. There is the need to identify the impacts in terms of benefits that can be derived from the effective implementation of BI, the barriers encountered by the different departments in the organization and the ways in which BI technology can be improved. This research work is the first to examine the existing impact of BI in Nestle Nigeria Plc.

The study created hypotheses on business intelligence constructs (process, product, technology and team) and the findings from the study is to provide insight for new or existing consumers goods manufacturing firms on the benefits and contributions of business intelligence in creating organizational value. Based on this, the study explores how the ineffective business intelligence process may adversely affect organizational value creation. It seeks to make recommendations on the need for organizations to have sound and adequate BI processes in place so as to boost production process and improve quality of goods produced. If this can be done, it will go a long way to smooth operations and reduce productions cost and increase organizational value creation.
Table of Contents
1.0 Introduction.................................................................1
1.1 Background to the Study..............................................1
1.2 Problem and Issues to be investigated...........................5
1.3 The Need for this Research..........................................5
1.3.1 Issues with Nestle Plc in Nigeria...............................5
1.3.2 The Dearth of Studies on Business Intelligence and Organizational Value Creation..................................................5
1.4 Research Aims..............................................................6
1.5 Research Objectives....................................................6
1.6 Research questions......................................................6
1.7 Relevance of the research Hypotheses............................7
1.8 Delineations.................................................................7
1.9 Structure of this Research............................................7
1.10 Definition of Terms.....................................................8
2.0 Literature Review........................................................9
2.1 Introduction...............................................................9
2.2 Concept of Business Intelligence.................................9
2.3 Business Intelligence Components.............................13
2.4 Theoretical Framework...............................................16
2.4.1 Resource Based View Theory...................................16
2.4.2 Diffusion of Innovation Theory.................................16
2.4.3 Social Exchange Theory..........................................17
2.5 The Researcher Conceptual Framework........................17
2.5.1 Business Intelligence Process...................................19
2.5.2 Business Intelligence Product..................................20
2.5.3 Business Intelligence Technology............................21
2.5.4 Business Intelligence Team.....................................23
2.6 Brief History of Nestle Nigeria Plc.................................24
2.7 Organizational Value Creation.......................................24
2.7.1 Successful BI System Implementations that Lead to Value Creation.................................................................25
2.8 The Role of BI in Organizational Value Creation...............26
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.8.1 Potential Benefits of Business Intelligence System</td>
<td>27</td>
</tr>
<tr>
<td>2.8.2 Business Intelligence Value Chain</td>
<td>28</td>
</tr>
<tr>
<td>2.9 Impact of Business Intelligence</td>
<td>29</td>
</tr>
<tr>
<td>2.10 Business Intelligence in Manufacturing Industry</td>
<td>29</td>
</tr>
<tr>
<td>2.11 Business Intelligence and its Benefits to Manufacturing Organizations</td>
<td>31</td>
</tr>
<tr>
<td>2.12 Summary</td>
<td>32</td>
</tr>
<tr>
<td>3.0 Research Methodology</td>
<td>33</td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>33</td>
</tr>
<tr>
<td>3.2 Research Design</td>
<td>34</td>
</tr>
<tr>
<td>3.2.1 Research Philosophy</td>
<td>34</td>
</tr>
<tr>
<td>3.2.2 Research Approach</td>
<td>35</td>
</tr>
<tr>
<td>3.2.3 Research Strategy</td>
<td>36</td>
</tr>
<tr>
<td>3.2.4 Research Choice</td>
<td>37</td>
</tr>
<tr>
<td>3.2.5 Time Horizon</td>
<td>38</td>
</tr>
<tr>
<td>3.2.6 Population, Sampling and Participants</td>
<td>38</td>
</tr>
<tr>
<td>3.3 Data Collection and Sources</td>
<td>39</td>
</tr>
<tr>
<td>3.3.1 Administration of Questionnaires</td>
<td>39</td>
</tr>
<tr>
<td>3.4 Data Analysis</td>
<td>40</td>
</tr>
<tr>
<td>3.5 Research Ethics</td>
<td>40</td>
</tr>
<tr>
<td>3.6 Limitations</td>
<td>41</td>
</tr>
<tr>
<td>4.0 Data Analysis and Findings</td>
<td>42</td>
</tr>
<tr>
<td>4.1 Overview</td>
<td>42</td>
</tr>
<tr>
<td>4.11 Summary</td>
<td>50</td>
</tr>
<tr>
<td>5.0 Discussion of Results</td>
<td>51</td>
</tr>
<tr>
<td>5.1 Overview</td>
<td>51</td>
</tr>
<tr>
<td>5.2 Research Objective 1: To examine the impact of BI process on organizational value creation in Nestle Nigeria Plc</td>
<td>51</td>
</tr>
<tr>
<td>5.3 Research Objective 2: To investigate the Impact of BI Technology on organizational value creation in Nestle Nigeria Plc</td>
<td>52</td>
</tr>
<tr>
<td>5.4 Research Objective 3: To assess the impact of BI products on organisational value creation in Nestle Nigeria Plc</td>
<td>53</td>
</tr>
<tr>
<td>5.5 Research Objective 4: To investigate the impact of BI team on organisational value creation in Nestle Nigeria Plc</td>
<td>54</td>
</tr>
</tbody>
</table>
5.6 Limitations of This Study...............................................................55
5.7 Organisational Outcomes............................................................56
5.8 Contribution and Policy Implication of the Findings......................57
6.0 Conclusions and Recommendations..............................................59
6.1 Introduction......................................................................................59
6.2 Conclusions.......................................................................................59
6.3 Recommendations............................................................................60
Reflection on Dissertation.................................................................61
Reflection on MBA Course.................................................................62
Bibliography.......................................................................................63
Tables and Figures

**Table 1.** Business Intelligence Definition.................................................................11
**Table 4.6.** Business Intelligence and Organizational Value Creation.........................44
**Table 4.7.** Summary of Research Questions on Business Intelligence Process.............45
**Table 4.8.** Summary of the Research Questions on Business Intelligence Technology.................................47
**Table 4.9.** Summary of Research Questions on Business Intelligence Products............48
**Table 4.10.** Summary if Research Questions on Business Intelligence Team.................49

**Figure 1.** Business intelligence Forecast......................................................................1
**Figure 2.** Business Intelligence Estimate......................................................................2
**Figure 3.** Global Business Intelligence Market..........................................................4
**Figure 4.** Business Intelligence Definition..................................................................10
**Figure 5.** Business Intelligence Process.....................................................................14
**Figure 6.** Business Intelligence Framework..............................................................15
**Figure 7.** Conceptualization of the Variables..............................................................18
**Figure 8.** Inter-relationship among Business Intelligence Systems............................27
**Figure 8.** Business Value Chain..................................................................................28
**Figure 10.** Research Onion.........................................................................................34
**Figure 11.** The Deductive Approach Steps..................................................................36
**Figure 4.2.** Age of Respondents..................................................................................42
**Figure 4.3.** Department of Respondents.....................................................................43
**Figure 4.4.** Years of Service.........................................................................................43
**Figure 4.5.** Level of Education.....................................................................................44

Appendix A. Original Version of Questionnaire............................................................73
Appendix B. Demographic of Respondents....................................................................75
Appendix C. Organizational Value Creation..................................................................77
Appendix D. Business Intelligence Process....................................................................79
Appendix E. Business Intelligence Technology............................................................80
Appendix F. Business Intelligence Product....................................................................82
Appendix G. Business Intelligence Team......................................................................84
Appendix H. Information Sheet for Participants.............................................................86
Appendix I. Meetings with Supervisor..........................................................................87
Appendix J. Gantt Chart.................................................................................................88
CHAPTER ONE
INTRODUCTION

1.1 Background to the Study
In today’s world that is highly competitive, it has become critical for organisations to transform transaction data collected into valuable information using information technology (IT). The enormous amount of data generated daily in organisations is due to the increase number of business transactions (Vuksic et al., 2017). By the year 2020 the digital universe will be above 44 trillion gigabytes. How can all of this data help make your organization more competitive? (Bayer et al., 2017). According to the advancement in technology, the volume of data contained in electronic environment is rapidly growing.

Figure 1: Business Intelligence Forecast

Source: Advance Market Research
In this 21st century the rapid development of science and technology has affected different aspects of life and life itself. The present day business environment is characterized by rapid changes, instability, uncertainties and turbulence which are mostly caused by both internal and external factors affecting business performance (Trieu, 2017).

Information is very important for the successful running of any organisation in every sectors of an economy be it science, education, healthcare, administration of the state and other business areas. The quest for information has always been present, but what defines the present time is the big amount of data available everywhere and the need to have all the answers within a short period of time. Hence, business organisations are required to seek for tools and mechanisms which will facilitate management, enhance performance and help create value for business success (Sanja Pavkov et al.2016).
According to Professor Millar Devens (1865) the term ‘Business Intelligence’ has been in existence even before the invention of computers and he describes it as the initiative for data collection, reaction to information and the ability to make decisions based on the results obtained (Agiu et al., 2014).

Technology is changing the world globally particularly in the manufacturing industry. With the advent of mobile devices and apps all over the internet, the present day organisations are faced with increasing competition, revolving customer demands, the need for control and risk management in a market that is highly demanding (Ouda, 2016). The use of technology has prevailed in BI tools and these tools has helped businesses have leverage on their customers data for insights into their needs which can lead to better operational practices and better business decisions (Kaur, 2016).

**Figure 2: BI Estimate**

![Forecast of BI’s Estimate on Global Manufacturing](image)

**Source: Business Insider**

BI has helped enhance manufacturing operations in the areas of production, identifying patterns, sales, stock order levels etc. Manufacturing organisations like Nestle Foods Nigeria Plc has benefitted tremendously from BI, from its sourcing of raw materials to global initiatives to customer service improvement and excellence. Business Intelligence solutions have been present in the manufacturing industry, but its full potential is yet to be utilised (Yogeve et al., 2015). BI which can be said to a set of tools, techniques and technology combined and performs different functions which can otherwise be performed by human beings. Processing of information has become more convenient and decision making faster and accurate through real-
time business intelligence. The impact of BI has been observed to be of positive results to organisations. BI is expected to surpass human intellect in the nearest future (Afolabi et al., 2017). From electronic systems, online customer relations, sensor applications, social media tools, mobile applications, cloud storage, data from the virtual environment in smart phones and the number of structural and non-structural is continually increasing (Deloitte AG, 2018).

In this 21st century the rapid development of science and technology has affected different aspects of life and life itself. The present day business environment is characterized by rapid changes, instability, uncertainties and turbulence which are mostly caused by both internal and external factors affecting business performance (Trieu, 2017). Information is very important for the successful running of any organisation in every sectors of an economy be it science, education, healthcare, administration of the state and other business areas. The quest for information has always been present, but what defines the present time is the big amount of data available everywhere and the need to have all the answers within a short period of time. Hence, business organisations are required to seek for tools and mechanisms which will facilitate management, enhance performance and help create value for business success (Sanja Pavkov et al., 2016).

BI systems are presently an integral part of running any business in this present world due to the increasing constant needs of organisations in analysing, interpreting and processing data (Tunowski, 2015). It is used at the top management level as an input for strategic and tactical decisions and also at the lower level management to it individuals in their day-to-day operations. (Villamarín García and Díaz Pinzón, 2017).
BI has helped Nestle Plc play an important role in the manufacturing Industry by supporting its decision making strategies and performance enhancement. With reference to (Arefin et al., 2015). BI systems store, retrieve and analyse information about an organisations operation which enables them to improve their tactical and strategic decisions and help them gain advantage over their competitors. BI has become paramount in both business and academic world in the past decades. Different researchers found that benefits derived by businesses from BI systems is used for effective decision making through its wide range of business applications. (Darma, 2016).

Business Intelligence systems help different organisations to have a more inclusive knowledge of the factors affecting their business activities such as sales, production, transaction volumes, customer retention, return on investment, internal operations and also help them in value creation which could vary according to the nature of their business. (Ramanigopal et al., 2012). Business intelligence is distinct from competitive intelligence, which is a separate management concept. As reflected by the attitudes of IT executives, BI seems to be the most promising amongst technologies in recent years in terms of value creation. (Preko and Kester, 2015). Though there have been modifications in value perceptions and patterns of investment, the value creation process unique to business intelligence systems have been minutely addressed by empirical studies conducted, while several efforts have been made to determine on how BI generates value for organisations. In conclusion, it is safe to say that BI has so
much to offer in the value creation process induced by the foremost IT domain. (Fink et al., 2017).

1.2. Problem and Issues to be investigated
The primary aim of business intelligence is to create value for an organization. The problem of this study will be centralized on the conceptual, theoretical and practical gap.

1.3. The Need for this Research
There are a number of reasons that make this study an indispensable area to investigate. These factors are discussed in turn.

1.3.1. Issues with Nestle Plc in Nigeria
The Nigerian Nestle Plc is one of the leading food and beverages firms in Nigeria. After an impressive first quarter in 2016. The hopes of shareholders of Nestle Nigeria Plc receiving a higher dividend at the end of 2016 became dim following the weak performance of the company for the half year ended June 30, 2016. The company posted a 94 per cent fall in profit after tax for half-year 2016 on foreign exchange losses and rising costs of inputs due to the devaluation of the naira.

Furthermore, the company reported a faster increase in operating expense +17.3% relative to sales with both selling & distribution expense +11.3% and admin expenses +49.2% rising double-digit during the period. The sharp increase in admin expenses was due to an upward review in staff salaries, reflecting the strong union to which its staff belong to. Consequently, operating expense to sales ratio rose 21%. This, combined with weakness in gross margin, led to a 309bps contraction in operating margin to 21.4%. The foregoing combined with margin contraction on both gross and operating level underpinned the 23% drop in before-tax earnings. The big question now is, what happens next and are the driver’s of 2017 earnings sustainable to deliver another sturdy earnings in 2018? Could this be as a result of or lack of sound business intelligence? In this note, we update our views on Nestle as well as revise our forecasts on the company.

1.3.2. The dearth of Studies on Business Intelligence and Organization Value Creation
Despite the increasing influence of BI on value creation, there is still a gap of literature on the subject matter. A review of the literature shows several studies on BI and organisation value creation within various contexts. Evidence shows divergent results most especially in developing countries such as Nigeria. To the best of the researcher’s knowledge, no study has been conducted on the impact of business intelligence on value creation most especially
focus on Nestle Nigeria Plc which hopes to stimulate further research interest on issues that relate to BI and value creation.

1.4. Research Aims
The broad aim of this study is to examine the impact of BI on organizational value creation. This study intends to explore how organisations can create value from BI systems adoption, its processes and how its implementation can positively impact on Nestle Nigeria Plc on how they can reduce costs, increase revenue and also gain competitive edge in the different sectors of the economy. It also proposes to contribute to the existing current academic knowledge on business intelligence.

1.5. Research Objectives
The objectives of this study seek to:

i. Examine the impact of business intelligence process on value creation in Nestle Nigeria Plc

ii. Investigate the impact of business intelligence products on value creation in Nestle Nigeria Plc

iii. Assess impact of business intelligence technology on value creation in Nestle Nigeria Plc

iv. Investigate the impact of business intelligence team on value creation in Nestle Nigeria Plc

1.6. Research Questions
The main research question for this study:

What is the impact of business intelligence on value creation in organisations using Nestle Nigeria Plc as a case study?

Sub-Research Questions includes:

i. How does BI systems influence value creation in an organisation like Nestle Nigeria Plc?

ii. How is BI utilized in business processes and helps to enhance performance management?

Relevance of Research Questions
The relevance of the first research question is to scrutinize the impact of business intelligence in organisational value creation, while the sub-research questions tends to examine how the implementation of business intelligence systems influence organisational processes. What are the benefits to be derived from utilizing BI applications in order to manage organisational operations and enhance performance? These questions will help the organisation gain knowledge into how business applications are directly involved in its overall structure from lower level management to top level management.
In the long run, these questions look at the need to implement and apply BI systems in organisations and the implication of its non-implementation will be explored so as to serve as a guide for organisations in their operational and strategic processes.

1.7. Research Hypotheses

In order to address the specific questions raised above, the following hypotheses are formulated in an alternate form;

H₁: BI process has significant impact on value creation in Nestle Nigeria Plc
H₂: BI technology has significant impact on value creation in Nestle Nigeria Plc
H₃: BI product has significant impact on value creation in Nestle Nigeria Plc
H₄: BI team has significant impact on value creation in Nestle Nigeria Plc

1.8. Delineations

This research’s intention is not to discuss in detail the technicalities of business intelligence systems but more about investigating and understanding the role business intelligence systems play in creating organisational values. This study’s intention is to explore how business intelligence systems can help organisations optimise operational performance. The technical overviews which will be sparsely discussed are mainly for the audience so as to understand the paper better.

1.9. Structure of this Research

This work will be structured into six main chapters.

Chapter One gives a brief introduction to the subject matter. The background, aims and objectives of the study, main and sub research questions, rationale of the research and delineations of the study

Chapter two gives a detailed overview of relevant literatures of past and present authors, business intelligence system components and features. How businesses are refining and utilizing information for their competitive advantage, and what role does BI play in modern day business environments. It walks the readers through BI impacts in organisations on how it can help create value.

Chapter Three will discuss the methodology. The procedures used to obtain the data, the reason for using this method, reliability and validity and limitations of the study. It will also capture justification for the case study.

Chapter Four presents the evaluation of findings and empirical work conducted as part of the study.
Chapter Five will review the research work, analysis of the practical findings and interpretation within the context of existing literature.

Chapter six is the final part of the work and draws conclusion and recommendations from the case study of the research and its literature review by comparing the findings from the two.

1.10. Definition of Terms

BI : Business Intelligence
RBV : Resource Based View
OVC : Organisational Value
CHAPTER TWO
LITERATURE REVIEW

2.1. Introduction
A procedural review of past literatures is a vital attempt for any academic research work (Heang and Mohan, 2017). Literature review should not be seen as just a collection of summaries of papers or bibliography of multiple research texts, it should be a thorough review highlighting the subject matter which here is the impact of BI on organisational value. While various authors agree that BI directly or indirectly adds value to organizations, it has not been explored, described or visibly identified in great details. This chapter will focus on the themes and perceptions of the research topic and also review the literature presently available for a better understanding of the subject area. It is to evaluate how BI helps organisations in all sectors to acquire new forms and methods of production that is effective, efficient and able to adapt to dynamic changes in business. (Reza et al., 2016) opined that the objectives of BI in corporate organizations cut across all aspects of business from customers, to competitors, to environment and economic processes which all depends on business decisions.

2.2. Concept of Business Intelligence
Scholars are of the opinion that there is no universally acceptable definition of business intelligence. But literature gives different categories to its definition;

❖ One-dimensional definition in which business intelligence is defined as a set of technologies where data are processed to more useful information that forms the basis of business decision making
❖ As a process, or
Multidimensional definitions, in which business intelligence is viewed as a process of technological collections (Oracle, 2015).

BI as a continuous process.

Data ➔ Information ➔ Knowledge ➔ Value

There is a continuous discussion in the belief that information technology has a positive impact on organisational value in the information systems literature which has received significant consideration from academics and practitioners. (Owusu, 2017).
Companies regularly take advantage of BI of its competitors to improve their corporate productivity in an efficient manner. It is a content free expression which means different things to different people. It is an umbrella of terms, all encompassing.

**Figure 4: Definition of BI**

**Business Intelligence: a definition**

*Business Intelligence (BI) is the continual process in which organizations collect, integrate and analyse data in a structured way in order to apply the resulting information and knowledge to decision making processes with the intention of improving the performance of the organization* (Norman Manley, 2014)

(Bayer et al., 2017) states that the principles of intelligence when applied to business is referred to as BI. It includes the integration of data, quality of data, warehousing of data, master data management, content and contextual analytics and more which are sometimes merged into the information management section (Larson and Chang, 2016).

Companies regularly take advantage of BI to improve their corporate productivity in an efficient manner. The effect of real-time business information is very important for any organisation’s performance. Therefore, BI systems of an organisation tries to detect all the shortcomings through the analysis of available real time data in delivering business insights and indicators which is very important for the organisations existence (Dakic and Markovski, 2017).

Historical development literature of business intelligence concentrated on previous adjacent literatures like knowledge management, business process reengineering and total quality management that began with a focus on technology view and later moved towards the process view in response to the perceived weaknesses of the technology view. Scholars who view business intelligence as multidimensional defines it as a term which encompasses a wide array of processes and software to collect, analyze, and disseminate data, all in the interest of better decision-making (Sanja Pavkov et al., 2016).
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<th><strong>Business Intelligence Definitions</strong></th>
<th><strong>Authors</strong></th>
<th><strong>Definition Focus</strong></th>
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| “The ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal.”
Defines BI as a broad category of technologies, applications, and processes for gathering, storing, accessing, and analyzing data to help its users make better decisions.
BI is defined as a term which encompasses a wide array of processes and software to collect, analyze, and disseminate data, all in the interest of better decision-making.
BI accounts for the process of gathering, storing and analyzing data.
BI is defined as a design to support and facilitate the functional operations of organizations or companies such as processing offline analysis, data mining, business analysis, network implementation and knowledge management.
BI is theorized to be the collection and application of data by transferring and recovering the information into knowledge which causes the organizations in the business world to act intelligently.
BI can be defined as the combination of databases, tools, architectures, applications, methodologies, and analytical tools.
BI is a set of methods, processes, designs and technologies that transforms raw data into meaningful and useful information which enables... | Hans Peter Luhn, IBM, 1958 | Organisational |
| | (Darma, 2016) | Organisational |
| | (Wieder and Ossimitz, 2015) | Organisational |
| | (Bayer et al., 2017) | Technological |
| | (Rachida F. Parks and Ravi Thambusam, 2017) | Technological |
| | (Ezgi Dinçerden, 2016) | Technological / Organisational |
| | (Sharda et al., 2017) | Technological |
| | (Heang and Mohan, 2017) | Technological / Organisational |
This subchapter reviewed some empirical studies on the business intelligence and value creation. This significance of literature reviewed is to evaluate previous scholars work with the aim of identifying areas of convergence and divergence and come up with valid research gap that this present study would fill.

The conclusion drawn by (Ramakrishnan et al. 2012), in the study it investigated the nexus between business intelligence and value creation. Primary source of data was used in the study, it made use of survey research design. The finding from the study showed that BI facilitate organizations to store, retrieve, and analyse large amounts of information, which in turn leads to a situation where the information can be translated into real value for the organization. The value can be in the form of learning from past success or failures, identifying opportunities, improving profitability, satisfying customers or simply enabling employees to be more productive. However, the findings of these studies may not be applicable in Nigeria due to the difference in economic and political situation of the different countries and Nigeria. Hence, the need for fresh study in Nigeria.

In the same view, the study conducted by (Hou 2016) on impact of BI on organizational value creation made use of primary source of data and multiple regression was used to analyse the data. The study concluded that BI variables have positive influence on organization performance. Furthermore, (Aziz and Sarsam 2013) investigated impact of business intelligence on the organization value. The study found that business intelligence has positive influence on the organization value of the selected Uppsala university. However, the finding
of the study may not be applicable to Nigeria content. (Yoon et al. 2014) provide an individual-level perspective where they highlight several determining factors divided in four categories: technology, motivation, social influence, and situational constraints. From an organizational level perspective, (Hasan et al., 2016) mention three major categories: organisational, technological and social that determine the BI readiness of value creation.

The first scientific definition of business intelligence is a managerial philosophy and an organizational tool that helps organizations in managing and purifying business information and data, with target of efficient decision making in business environments (Soumendra Mohanty, 2014). It uses advanced and quick tools of analysis, which is expected to help corporate organizations like Nestle Nigeria Plc make timely and urgent decisions so as to achieve organizational objectives. Business intelligence provides opportunities for corporate organizations to control and track key processes that serves as the basis of effective decision making by the management.

2.3. Business Intelligence Components

Businesses today have access to more information than they had in the past, organizations collect, produce and store large amounts of data through customer feedbacks, surveys, transactions and social statistics. BI helps put this data to use and help business become more profitable and improve performance and create value (Bister, 2015)

1) Data Sources

Integration of data stored in variation of internal and external sources of an organisation is important. Data collection is in two parts internal and external. This talks about raw data and the use software applications to create meaningful data sources that different units can use to impact positively in a business (Yasser AL-HADAD and Razvan Daniel ZOTA, 2016). This BI component involves variety of stored data. It can be used to create data tools such as charts, graphs, tables, spreadsheets that allows large storage and that can be used for diverse business purposes.

- **Internal Data Sources**

  The internal source of data is the information collected from the different units in an organisation. Data sources relating to customers, suppliers, employees etc.

- **External Data Sources**
Organisations use external sources to extract their needs for data, examples of external data source will include the internet, business partners, competitor products. Organisations that use external sources of data are very confident of the sources of the data and its validity.

The components of BI interact with each other to facilitate the vital functions of business intelligence system applications (Richards, Yeoh and Chong, 2017). The operational system level: the organisation’s operational system uses its online transaction processing (OLTP) to support its daily business activities. Data acquisition level; at this third level, process is divided into three stages: extract, transform and load (ETL)

Figure 5: BI Process

![Business Intelligence Process](Image)

Source: (Bister, 2015)

2) Advanced Analytics

This is data mining, forecasting or predictive analytics, it is used as a predictive technique to provide certain measures on facts (Yoo and Roh, 2018)

3) Decision Making

In the midst of decision support systems, decision making needs special attention so as to be able to understand the importance of information and processing such information into knowledge. Knowledge management in relation to collection and distribution of knowledge while acquiring knowledge refers to the techniques of collecting data and analysing the data into information. Decision makers tend to combine diverse knowledge which could be tacit and explicit and internal or external data that are available in different formats (Sabrina Šuman et al., 2014).

4) Data Warehouse and Data Mart
It involves storing huge volumes of data in ways that will benefit different departments of an organisation. This component lets business leaders scrutinize data subsets and examine interrelated components that can help business drive. Comparing sales data of previous years can help innovate a new product or modify seasonal offerings. (Mesaros et al., 2016) Data warehousing can also be used to look at the statistical processes of a business including how they are interrelated. For example, comparing shipping times in different locations and facilities to look at which processes or unit work efficiently (Rajnoha et al., 2016).

5) OLAP (Online Analytical Processing)
This supports data analysis in accordance with needs. Business owners can use data to make amendments to overall business processes with the help of a software product. It provides multifaceted, concise insights of business data that can be used for reporting, analysing and planning of business optimisation (Rachida F. Parks and Ravi Thambusam, 2017).

Figure 6: BI Framework

Source: International Institute of Business Analysis (IIBA 2018)

7) Enterprise Resource Planning (ERP)
It is an integrated system that provides management of commercial functions within the Bank, such as promotion and advertisement, finance, human resources, retail and marketing, human resources, accounting. The advantage of ERP is for better functionality, adaptation and flexibility (Mesaros et al., 2016).

8) CPM (Corporate Performance Management)
These set of tools allows business leaders view the statistics of certain products and services. The data could also be used for future forecast of new products entering into a market and its probable success (Calof, Richards and Santilli, 2017).
9) Real Time Business Intelligence
In this digital era, this component of BI can be used to respond to online trends. The Bank’s technology service is online real time, it gives its customers the advantage of monitoring their account balances and transactions online real-time. It also affords the marketing managers and other officials of Nestle Nigeria Plc like their key distributors (KD) and high net worth individuals (HNI) can use it to track the time and location of customers as they interact via a website and special promotional offers can be online in real time while the customers on the website take advantage of such offers (Reza Sepahvand et al., 2016).

2.4. Theoretical Framework
BI systems provide the framework for effective operational management. Developing value framework is to improve perceptibility into business processes and resources across the different units of an organisation in order to drive business value (Zulkefli et al., 2015).
A renowned Harvard professor, Michael Porter proposes that operational effectiveness is not permanent in driving business value since activities can be matched while strategic positioning seeks to recognise methods that help achieve justifiable competitive edge. Therefore, how does a company differentiate itself and innovate its processes. BI systems provide a framework to operational efficiency management (Williams and Williams, 2013). There are different theories that will try to explain interrelationship between BI and value creation in organizations.

2.4.1. Resource Based View Theory
(Barney 1991) and (Grant 1996) affirm that with resource-based theory, companies can consider themselves as a large group of resources, which are the main driver of firm performance (Shanks and Sharma, 2011). Therefore, the best interests must look at its means when a competitive one is evaluated. An organisation has to be conscious of the availability of resources and strategically revolve them based on their VRIN (valuable, rare, inimitability and non-substitutable) to be used to the premium. Organisations whose performance are based on RBV theory have improved organisational resources. These organisational resources could be intangible or tangible and they include organisational, technical and human capabilities (Calof et al., 2017).

2.4.2. Diffusion of Innovations Theory
The spread of diffusion innovation is a theory that seeks to explain how, why, and to what extent new ideas and technologies spread across cultures (Richard et al., 2015).
It is the dissemination of process innovation communicated through certain channels among participants in an organisation or social system. This process comprises of actions and decisions that enables an organisation to evaluate new ideas and decide whether those new ideas will be put into practice (Muntean, 2012). The four main elements of dissemination are innovation, communication channels, time and the social system. Diffusion is a special form of communication in which the news deals with a new idea. This novelty of the idea in the news content of communication gives distribution its special character.

In essence it relates with uncertainty inherent in a new alternative to an existing one. This theory is related to this study as it represents the novelty process of implementation and consequences of innovation in terms of achieving organisational objectives.

2.4.3. Social Exchange Theory

This theory proposes that it involves a series of interactions that generate obligations which has been used to explain the relationship between human practice and performance. According to (Piening et al. 2013) organizations adopt a range of human resource practices, such as idea contributions, suitable job designs, constructive performance appraisals and programs development to support employees. These practices when adopted in an organisation, makes employees feel supported and trusted and in return, develop commitment which often leads to job satisfaction.

The theory is appropriate for this study because service encounters can be viewed as social exchanges with the interaction between business strategy and employees providing a strong reason for a continuing relationship.

2.5. The Research Conceptual Framework (Model)

The researcher plans to review the above model in Nestle Nigeria Plc. In this model, the BI products, BI process, BI technology and BI teams were assessed according to organisational value creation. The model conceptualised the independent variables as it influences the dependent variable.
Figure 7: Conceptualization of the Variables

Source: Researcher’s Illustration (2018)

The theoretical framework is a synthesis of the main component of the various theories that would be introduced and presented in the literature review. The conceptual structure is a type of structure that shows the intermediate theory that has the potential to collect all aspects of result variables and prediction variables (Usha Priya, 2013). As mentioned earlier, the existing theory has not completely extended to the various BI tactics and value creation of existing organisations. Subsequently, this theoretical structure reveals a combination of BI strategies derived from different scholars that adapt to the topic under consideration. Previous studies have clearly indicated that several factors influence the creation of value in an organisation with different case studies. In consideration of this fact, different models and structures of these factors have been studied. An overview of this study is presented in the conceptual framework provided in the figure above model which was adapted from the work of (Williams and Williams, 2013) with few changes in order to match the objective of this research work. Variables of product, process, technology and team of fundamental BI that they have been studied.

The above model consists of four (4) different explanatory variables that are taken over and developed through different photographs of literature. As mentioned earlier, BI is an important determining factor for creating organizational value. Therefore, as far as BI is concerned, the literature states that the main benefit that companies can derive from pursuing a solid BI is the benefit of greater employee satisfaction that increases the value of the organization (Edgar and Greare 2005).

The model assumes that different business intelligence products have a positive effect on the creation of value in an organization. Moreover, the level of business intelligence technology of
the organization assumes that it has a positive relationship with the creation of value. Finally, the process used by the organization for business intelligence will have a direct effect on the value it creates. This theoretical framework with the abovementioned variables will be examined empirically to close the identified research gap.

2.5.1 Business intelligence Process

The recent literature review has shown that not enough attention has been paid to the business intelligence process. For example, Sollo and Kautz (2010) examined the relationship between the business intelligence process and organizational performance. The study used the survey design and concludes that the BI process has a positive relationship with the organization's performance. In the same opinion, Arnott and Pervan (2008) investigated the impact of BI in the organization's decision-making and it found that an efficient BI process improves organizational decision-making. In addition, it also shows that the BI process had a positive impact on the production process of organisations.

Of all the articles reviewed, Davenport (2010) sought to explicitly describe how BI is related to organizational decisions, it describes three approaches to how organizations relate information to decision making. The most common approach is to combine information processing with organizational value creation. According to this approach, information is provided to support various decisions.

In addition (Shariat and Hightower 2007) describe BI as a set of processes, technologies, and products: processes for collecting and analysing business information; the technologies used in these processes; and the product as "information (knowledge) gained through these processes." (Pirttimakis 2007) studied the relationship between BI and business performance and found that the BI process has positive impact on organizational performance. (O'Cass and Sok 2013)

(Wu and Choi 2004) tested the reciprocal role of BI in improving competition and business performance through trust and network connectivity. The results showed that the mutual relationship of management values was significantly correlated with BI process. Management values are significantly correlated with business intelligence capabilities. According to (Guenzi and Troilo 2006) the ability of organizations to add value to their organizational capacity can be determined by an effective BI process. The result of the study concluded that a value-oriented organization is able to take the lead in the market and has a
strong impact on superior performance. The basic intelligence process itself has survived the tools (computer and knowledge database software) and it concludes that BI process is an integral part of an organization’s growth and development. (Pirttimaki 2007) The goal of BI is typically more about business-oriented issues and analysis and its subtle difference of BI processes (Thomas, 2001).

(Fleisher and Bensoussan 2003) similar organizations found negative relationship between BI process and organizational value creation. (Pagels-Fick 1999) classifies the BI processes in general and decision-oriented. (Gilad and Gilad 1985) and (Vitt et al. 2002) similarly divides the BI process into systematic or ad hoc. Generic or systematic BI process is a continuous effort to gather knowledge on the prevailing competitive circumstances of an organization (Pirttimaki, 2007). Evidences from literature shows that there is divergence in the connection between BI process and organizational value creation. This divergence may be attributed to methodological, theoretical or conceptual issues.

2.5.2. Business Intelligence Product

There are series of studies that have examined relationship between BI products and organizational value creation. Some of these studies were review as follows; (Ponniah 2001) investigated the relationship between BI product and organizational value creation. The study concluded that data and product quality are the key elements in the organizational success of BI. Furthermore, (Cooper et.al., 2000) found positive relationship between BI products and organization performance. The study conducted an empirical study and developed a framework to understand the typical growth path of business intelligence products initiative for a customer-focused strategy and improve the financial performance of any organization. (Popovic et al. 2012) conducted an empirical study analyzing enterprise BI-related factors that influence organizational value creation and it discovered that there is a positive relationship between BI product and organizational value. Also, (Ramakrishnan et al., 2012) in their study found positive and significant relationship between BI product and business performance. (İşik et al., 2013) provided an empirical study analyzing the drivers of business success of BI. The study found that BI products are the key determinants of the business growth and development and recommends that effective BI products would increase customer’s base and overall performance of the organization. (Vukšić, Bach and Popović 2013) have developed
multiple case studies to analyze the impact of business performance management and BI in different sectors.

(Rubin & Rubin 2013) conducted a study to analyze the relationship between investment in BI and the volatility of stock returns, based on publicly available data. The study found positive relationship between business intelligence and stock market return of the organization. (Popovič, Turk & Jaklič 2010) have developed a conceptual framework to combine the performance and value of companies with the maturity of BI, the quality and the use of information in business processes. (Maghrabi et al.,2011) have developed a model to explain the contribution of BI which distinguishes between exploratory and exploitative usage. (Hou i Chien 2010) explains that market product has become the dominant capital of global organizations and a key factor in managing competitiveness. Frank et al. (2012) examines the effects of BI product orientation in a given organizational context, i.e. the research shows that BI product orientation has a positive effect on success with new products and services and participation of regular customers, but not with sales growth. In addition, (Olson and Slater 2002) claim that performance measurement is reflected in the success of new products as the percentage of sales resulting from the sale of new products or new customers, market development and distribution or market development, growth in market share, innovation characteristics and learning perspectives. Another study by (Lefaix-Durand et al. 2005) explains the model of the relationship between an organisation’s products and value creation. The value creation process model can be created through the cooperative process in the internal business. The inter-firm relationship is a new trend in the current business environment, trends such as market orientation, time competition, supply chain management, strategic business association. However, the review literature shows that there is no study conducted so far in Nigeria context using business intelligence process as one of the constructs of BI in relation to organizational value creation. Furthermore, virtually all the review studies were conducted outside Nigeria, and this called for study on business intelligence using BI product as one of the independent variables.

2.5.3.Business intelligence Technology

BI as a set of technologies, is a set of tools and methods that support the compilation, analysis and transformation of data in information (Watson and Wixom 2010). The authors accept this perspective as it focuses on design which allows the development and implementation of technologies that helps convert data into information or knowledge for decision making. (Pemmaraju 2007) conclude that BI is more than a combination of technologies, while BI
processes acts rarely as a product, although they are still in technology in the BI centre (Clark et al 2007). Due to these purposes different BI technologies integrate a variety of resources such as tools, packages, platforms, systems and applications (Petrini and Pozzebon 2009). The power of technology has advanced a lot in knowledge and literature in general. The integration of BI tools with other information systems is still a problem, and there must be a change in the focus of the problem. (Yermish et al. 2010). In Nigeria, Oyku et al. (2012) examined the relationship between the creation of an organizational value and the technology of business intelligence. In the study, business intelligence technologies are called data standards and the organization could be integrated into the value. The study recommends that in order to improve the agility of the business, the company must develop the technological capabilities that can provide accurate, consistent and timely information to users and this brings it to the conclusion that business intelligence technology has a positive impact on the value of the organization. (Tallon et al. 2000) concluded that the perception of readers researching the IT business value is effective and this is a good indicator for objective measurements of the realized value. In a study by (Fink et al. 2017) the authors investigated the role of BI technology, the strategic capabilities of BI and the operational functionality of BI on corporate values. The study opines that BI technology has significant effect on organizational value creation, it also investigated the role of BI team and infrastructure on strategic and operational company values. The authors found that BI's technology and strategic capabilities should be considered separately in organizations, it also revealed the important role of BI mediation infrastructure in the relationship between the BI technology and BI capabilities. According to (Herschel & Yermish 2009), the knowledge management technologies are often defined in terms of the ability to help develop and organize textual content and data in order to improve research and acquire meaning and relevance for helping questions, answering, realizing new opportunities and solving current problems.

In the study by (Haimila 2001), the author demonstrated that knowledge is managed with the help of many business intelligence techniques. BI uses certain technologies (Singh and Singh, 2013) to integrate the inclusion of the historical and actual data that converts data into information, generates knowledge and exploits the decision-making process so as to improve the power of the business community.

However, BI technology has been proven as an important variable for BI in the finance literature, but less attention was drawn on the subject matter in Nigeria. Given this backdrop,
there is need for fresh study in Nigeria by examine impact of BI technology in organizational value creation.

2.5.4. Business Intelligence Teams

Business intelligence team is recognized as a critical component for IT based competition advantage (Bharadwaj, 2000; Fink and Neumann, 2007) concluded that personal, technical, business knowledge and guidance skills are used to solve IT team problems. The study identified some factors such as technical knowledge, including application development, integration of multiple systems, maintenance of existing systems, management capabilities and the ability to identify the right projects and motivate development teams for organizational goals attainment (Melville et al., 2004).

BI experts must have the ability to express complex ideas in simple terms and interpersonal skills to deal with managers and decision-makers (Davenport, 2006). The human resources of BI include technical and management skills related to the implementation and use of BI. The management skills relate mainly to the ability of the BI team to align BI with the strategy and processes of the organization. Evidences from previous literature shows that there is a link between BI team and organizational value creation.

Business Intelligence (BI) supports organisations in its decision-making and management processes through transformation of data to important information. It is important to create a supporting structure in any organisation to ensure a successful implementation of BI systems. When the users regularly request for additions and changes to BI systems it is a good indication of a productive BI initiative.

The Big Cheese: It is important to define this role as it travels up the BI team structure. The responsibility lies with those at the helm of affairs, it is vital to have a brilliant manager accountable for key issues and defining team member roles properly will help set standards in any organisation.(Calof, Richards and Santilli, 2017)

The Right Hand Person: It is important to have a project manager that is capable and talented responsible for coordinating the team activities so as to be able to move forward and keep the organisation activities smooth. They also need to possess a range of soft skills so as to get every member of the team busy and resourceful. (Sabrina Šuman, et al, 2014)

The Thinkers: These are the team members that are very involved with data analysis. The need to be conversant with statistical analysis and confident with spreadsheets so as to be
able deduce insights that are essentially relevant to the different departments in the organisation. (Wieder and Ossimitz, 2015).

**The Supporters:** These team members are as important as the rest of the team, the are responsible for the activities that enables the BI unit to function properly. The possess a wide range of skills needed for each members roles and are also able to work with large amount of data. (Sabrina Šuman, et al, 2014)

**2.6. Brief History of Nestle Nigeria Plc**

Nestle Plc is a multinational company. Nestle Nigeria Plc is associated with the Nestle Company worldwide; started trading operations in Nigeria in 1961 and have today grown into a leading food manufacturing and marketing company. It is a publicly quoted company listed since 1978 on the Nigeria Stock Exchange, 43% of its equity is owned by Nigerian shareholders, while Nestle S. A. of Switzerland owns 57%. The Company’s Head Office and Registered Office is located at Ilupeju, Lagos State.

There is a Board of Directors responsible for formulating policies for the attainment of the objectives and aims of the company.

The Nestle Nigeria Plc being a Food and Beverage industry and its objective is to satisfy the requirements of consumers with high quality food products, mainly by processing agricultural raw materials into products, adapted to the taste and food habits of consumers.

**2.7. Organisational Value Creation**

What is your organisation’s mission statement? Is creating value to customers the primary objective of the mission statement? Value creation is the main objective of any business enterprise. The most successful organisations understand that the essence of their business existence is to create value for employees, customers and investors alike. The interest of these stakeholders in any organisation is interwoven. It invariably means that all the three stakeholders are mutually exclusive, no organisation can sustain value creation for one group while it ignores the others. Organisational value creation can be sustained if its focus revolves around all its stakeholders from its customers to its employees and investors in an economy (Shanks and Sharma, 2011)

Creating customer value helps sell products and services that customers find dependably valuable, while value creation for shareholders is in the form of stock price increment and employee value creation is when every individual is given an opportunity of being involved
in the operational and decision making process and also getting full rewards for work done (Soumendra Mohanty, 2014)

When we look at value creation from a financial viewpoint, it is when a company’s return on capital exceeds its cost of capital, a broader definition recognises value creation as a better management goal other than financial performance (Oracle, 2015)

If value creation is put first and in the right way, the managers will know the organisations directions towards growth and will deploy better products than its competitors. Innovation is the only way to outpace competitors. The need for innovation involves business intelligence processes (EYBERS, 2015)

2.7.1. Successful BI System Implementations That Lead to Value Creation

The functionality of BI systems and processes needs to integrate remote databases, data warehouses and data marts so as to attain strategic plans and objectives in order to deliver competitive results. Data warehouses are often used to create a sole integrated position of organisations, they are also used to capture the required data that is used for strategic plans, objectives and measurement of companies results (Olszak, 2016). BI can serve as a solid competitive advantage when used in data warehousing applications. For implementation of BI to be successful, critical business processes and procedures must be automated.

Organisations should analyse their data, processes, workflows and strategies in order to get great potential benefits from BI. The concepts of using BI applications which includes data mining which helps manufacturers to understand the key success factors that can be used to create new products (Trieu, 2017)

Critical Success Factors for BI implementation includes

- Ability to create real time business intelligence links between demand and channel management, planning and operations (Dundas, 2015)
- Real time accurate data capture of customer data and operations
Integration of customers demand data into the bank’s marketing and operations planning process (Laitos, 2017)

Interpretation of data from various databases to ultimately enhance performance and create value (Villamarín García and Díaz Pinzón, 2017)

The reliance on BI systems and processes for value creation results in bringing together secluded databases, data marts and data warehouses so that an organisation’s strategic plans and initiatives can be attained. The area of data warehouse is the integration of legacy and inter process systems, it is used to create unified operational systems and are also used to capture necessary data needed for strategic planning, programs and for measuring performance. (Erin Olayinka et al., 2017) It can also serve as a strong competitive advantage.

With the use of BI applications and its concepts which include data mining, manufacturing organisations have a better understanding to the key success factors in products innovation. In conjunction with this, BI adoption for new product development and process introduction in Nestle Nigeria Plc relies on distribution channels. Implementing BI success factor is the capacity to create real time analytics link in all its production operations-demand and supply management, production planning and channel management.

2.8. The Role of BI in Organisational Value Creation

The part that BI plays in organisations cannot be over emphasised, its importance can be better imagine by understanding that BI will continue to retain its relevance in any business activity. BI will continue to retain its top rating in businesses that have applied and implemented its systems. Integrating information from different sources.

The importance of BI can be imagined by understanding the questions that why does BI continue retaining its top rating position and why have businesses not completed the implementation of BI-led application? (Bijker and Hart, 2013). Incorporation of information from disparate sources, message extraction from given information for and the decision making creates the value of BI application (Guarda et al., 2013).
The above discussion represents that BI plays in significant role of a corporate performance management (Richards et al., 2011) by conducting information management and the decision making organizations need for conducting the changing environment

- A measurement program that creates a pyramid of performance indicators and benchmark to inform managers on progress made towards achieving organizational goals and objectives (Larson and Chang, 2016).
- An analytical quantitative process which is built for organisations to arrive at optimal decisions and discover business knowledge (Duan, et al., 2018).
- BI helps in enterprise reporting which builds infrastructure for strategic management and business reporting (excluding operational reporting).
- BI creates a collaborative platform that brings different areas (internal and external) to work together.
- It is a knowledge management program that makes an organization data driven through its practices and strategies (Vuksic et al., 2017).

2.8.1. Potential Benefits of BI Systems

- Improving and fast tracking decision making
- Enhancing internal business processes
- Increasing operational efficiency (Arefin et al, 2015)
❖ New revenue drive incentives
❖ Gain competitive edge over competitors (Sprongl, 2013)
❖ Identify new market trends
❖ Spot and address business problems (Tunowski, 2015)
❖ Clearer and improved connection between return on investment and decision making.
❖ Easy adjustments to initiatives and analytical efforts to business environment changes.
❖ Disclosure of opportunities which helps improve efficiency in an organisations life cycle (Deloitte, 2013).
❖ It helps generate value early enough for analytical implementation that facilitates delivery of incremental value in an appropriate manner.(Altexsoft, 2016)
❖ Alignment of strategic priorities with developed phased strategies.
❖ Cheaper and faster implementation of enterprise wide approach with focus on business functions (Deloitte Digital, 2018)
❖ Generates benefits that helps build momentum positively and can be used to fund future projects. (Deloitte, 2013)

2.8.2. Business Intelligence Value Chain

Business Intelligence is an “umbrella” for managing different business approaches that are based on well-informed decisions which leads to enhanced performance and profitability within organizations (Yoo and Roh, 2018)

**Figure 9: Business Value Chain**

![Business Value Chain](source)

Source: (Shanks and Sharma, 2011)

Michael E. Porter of Harvard Business School was the first to introduce the concept of value chain. A value chain is a systematic approach that examines the development of competitive advantage, it consists of various activities that helps to create and build value. All the
different stages and relationships of this approach will lead to value addition of the decision support system. With the introduction of value chain, tasks that involves business analytics, enterprise reporting and performance management are probable (Yoo and Roh, 2018). BI Value Chain can be termed as “DATA to PROFIT” approach. Business data is transformed into relevant and useful information, the knowledge is obtained from the information and is used to support an organisation’s decision making processes which is used to achieve business profit. The success of BI and its initiatives are possible with the support of tools, technologies and systems that are capable for value chain sustenance. (Boris Evelson and Martha Bennett, 2015)

2.9. Impact of Business Intelligence

Accuracy is decision making, increment in an organisation’s profit, better customer service is the visible impact of BI systems. But it is not always an immediate change in all these areas. More accuracy in decision making, an immediate rise in the profit of the entire business, greater customer satisfaction these are the most visible impact of a successful implementation (Duan, et al., 2018)

But it must be mention that it may take quite a few long before a firm can observe a huge change in numbers in all these areas. This completely varies from organization to organization. The managements in all the level of an organization will start to get a broader picture of their business processes that is for sure. As a result, accountability will increase from day one and in some cases a decrease in overall expenditure of a company can also be expected. Business and decision making processes will take less time and the overall pace of the company will increase as a result of the implementation (Dukić, Bara and Dukić, 2016).

Impact of BI technologies covers an extensive range of applications and practices. Most organizations establish knowledge management systems so as to integrate internal information with external information acquired from different sources. Relevant and timely information is recognized in business as being crucial not only to achieve organizational goals but survive in this present rapidly fluctuating business environment (Larson and Chang, 2016). Competitive advantage has moved from the people with expertise on how to implement new technologies to those who use technology to improve their business process, share, manage and increase their level of business knowledge (Rezaei Kelidbari and Rayat, 2017).

2.10. Business Intelligence in Manufacturing Industry

Globally, one of the most promising sectors for data-driven solutions and data-oriented new business models is the manufacturing industry. The industry globally is complex as well as
complicated with reference to production, operations and management. For manufacturing companies to maximise profit, there is the need to streamline their processes, waste reduction elimination, inventory levels optimisation and develop time management strategies. The industry is faced with various challenges in terms of customers, suppliers, product innovation, cost minimisation and profit margin reduction. Business Intelligence has the answers to drive profitability in the manufacturing industry’s challenges.(Hã, 2013)

Organisations in the manufacturing industry are implementing BI solutions so as to improve organisational efficiency and track (key performance indicators) KPI’s successfully. BI solutions can help organisations analyse that is generated in huge volumes. Bi solutions help the firms reduce operational costs, identify various patterns, improve product quality and much more. Organisations generate, gather and store large volumes of data. BI tools such as Necto helps manufacturing firms increase value from data findings through actionable perceptions.(Yusof et al., 2013)

Existing systems may not be able to give the required information about the value proposition of a process or an activity. Some missing information can limit the elasticity of a manufacturing firm due to some capacities that are not valid to enough to estimate a process related changes, but in manufacturing industries there is the ability of BI systems to help in handling technological changes in multiple proportions.

There are different kinds of knowledge that can be obtained with regards to customer requirements, decisions and organisational performance in the global trends of the manufacturing industry. In present days BI in manufacturing industry is used to solve organisational matters in relation to business activities with its main focus decision making that will help maintain an organisations competitive advantage. The production section of the manufacturing company plays a vital role as it is involved in the operational activities of an organisation, BI is generally useful in that area of the organisation. (Ouda, 2016)

The data world in manufacturing landscape is increasingly changing due to the amount of data creation that is happening each second of each day, there is an increasing demand for data analysis of unlike variables as indicated in past researches and the manufacturing industries seeks to how they can convert both structured and unstructured data into relevant information for better, smarter and faster decision making process at the different levels and units of their organisation. As there is an increase in global enterprise distribution organisations and companies alike are relying on technological leadership, innovation and cost control measures so s to remain relevant and competitive in the industry.(Yusof et al., 2013)
BI can be related to provide the following solutions to manufacturing industries globally by

- Provide analytical capabilities that can help discover trends, correct anomalies and evaluate core business processes
- Ensure quality controls
- Rationalise supply chains
- Monitoring and swift response to customer preference
- Support mobile field and factory floor deployments on any device
- Provide well managed self-service to all stakeholders
- Boost productivity of sales

Centralised BI software for manufacturing organisations allows for a more effective use of stock taking, real time improvement of quality and price of products which is usually in line with actual demand of those products, better management of logistics network, fast and clear distribution channels and improvement in online real time operational activities. BI solutions can provide details that are specific to each unit and or departments inclusive of individual products so as to create an avenue for each manager, supplier, customer or client to be able to see the information relevant to the individual or groups. There is collaboration amongst various departments and locations for example the logistics unit with the implementation of BI social capabilities.(Thamir and Poulis, 2015)

### 2.11. Business Intelligence and its Benefits to Manufacturing Organisations

BI can as defined can transform raw data from various sources into information, reports, scorecards, dashboards, key performance indicators and other metrics. Giving the information in context, to informed decision making such as changes to production forecast. Many organisations are seeing the impacts of BI in their warehouse through the supply chain and afterwards (Tunowski, 2015)

- BI helps in production optimisation schedules with regards to supplier, customer, production schedules and costs limitations.
- BI improves organisational performance through better product and production demand forecasts (Arefin et al., 2015).
- BI helps in understanding warehouse performance of the various metrics.
- It helps to provide faster customer service and support.
Organisations get insights into corporate quality management parameters and compliance (Wieder and Ossimitz, 2015).

It helps to measure compliance and trace machine levels using sensors that provides instant visibility in performance of its operations.

With the combination of daily financial and production metrics, manufacturing industries can scale their operations profitably (Duan et al., 2018).

BI can help organisations improve their efficiency. With globalisation and innovative competition, weak economies of scale, manufactures are forced to run leaner and at the same time produce great number of product types, if possible customise such products as well as maintain increasing competitive standards organisations improve their efficiency (Dukić et al., 2016).

2.12. Summary

BI systems in modern day business are excellent as it has the capacity for the smooth and incessant flow of information without compromising security. The system ensures that strategic decisions are taken with the available data provided and at the right times. It reduces the costs of distribution spent on information as well as the time spent on handling such information. The modern day global competition is an addition to the complex component to the markets with the increase in trade competition and consolidation, new opportunities in growth and sales channels, and the necessities needed for efficient supply chain and costs optimisation. For organisations to compete in this environment, they must create a significant combination of technology and leverage on BI results management for delivery of quality in performance and creation of value for both the organisation and its stakeholders.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

Research Methodology is a systematic way of solving research problems, it is used to describe the research methods used and its reason in a contextual research. (Bister, 2015) The purpose of this chapter is to outline how the primary research study will be conducted, it will go into details of research philosophy, approach, method, purpose and afterwards description of the research strategy. With a follow-up of the research justification and description of data collection and analysis.

Saunders ‘Research Onion’ is a great way of describing the appropriate research method (Sahay, 2016) just like peeling an onion, going from the outer layer to the inner layer of the research onion, or can an onion be peeled from the centre? The outer layer talks about the philosophy, approach, strategy while the inner layer which is the core describes data collection and analysis.

This chapter will aim to help provide answers to the main research and sub-research questions with the use of the its methodology. The methodology of this study is based on both primary and secondary research in the areas of BI and value creation from a progressive standpoint, specifically looking at its impact in contributing to business processes.

This research’s understanding is associated with decisions with regards to outer layers of the onion which provides the context within which data collection, data processing and analysis will be selected. The core element of the research onion is considered in line with the design which is the outer and middle layers of the research onion. Ordinarily the first layer of an onion after its peeling is disposed. But in research methodology, the onion’s outer layers consist of its roots while the centre layers build the research block. Let’s start the peeling of the research onion layers from the outer layer in order to elaborate its importance. Each outer layer of the research onion gives a more comprehensive phase of the process of research and contains the different ways in which each layer of research can be conducted.
3.2: Research Design

Research designs are used to answer a question or address a problem, which begins with working out the needed data, method, tools or techniques to be used. Research design is used to simply turn research questions into a project (Schwaferts, 2014). To achieve our research objectives, we followed a quantitative-empirical research design. Research Design generally can be defined as how the researcher plans to answer the research questions. Saunders presented the research process as an onion that has many layers that requires to be peeled in order to get to the onion core which represents data collection and analysis.

3.2.1. Research Philosophy

The research philosophy to be adopted is determined by the way a researcher views the world of assumptions. It refers to a system of principles and norms about knowledge development (L. Karen Soiferman, 2010). The research onion reported that research philosophy has three main views on research philosophy known as epistemology, ontology and axiology. The philosophies influence how the researcher thinks through the research process which means that the research questions are driven by each of the research philosophy which can vary in suitability in order to provide answers to particular questions.
**Epistemology** can be termed “how we know” and it is the philosophy that relates to knowledge recognition and development. Epistemology when explained (Tennis, 2008) could be either objective or subjective; with objective it recognises the outside world known as hypothetical impartial and while subjective it makes suggestion about the outside world which is characterised with clarifications from reflection. The two phases of epistemology can be called positivism and interpretivism (Mark Saunders and Paul Tosey, 2012).

The phase of epistemology for this study will focus on **positivism** not **interpretivism**. **Positivism** has to do with new knowledge derived from the positive interpretation of results from experiments and or experiences. This research is concerned with observation and prediction of outcomes and the results is usually accepted by the target audience provided they are visible and repetitive (Schwaferts, 2014). It is based on survey through which hypothesis is tested by administering online questionnaires to the staff of Nestle Nigeria Plc - our target audience. It relates to deductive research approach, the researcher using the positivism philosophy tests hypothesis based on observations from events or previous comparable situations in contrast to **interpretivism** philosophy which is based on the researcher’s work that tries to analyse people’s perspectives from other people’s actions and also theirs.

Another philosophy this study will adopt is **pragmatism** which allows a researcher to see situations from more than one point of view, the researcher views the subject matter from either or both points with regards to the outcomes to create a practical approach which may help lead into finding solutions to problems. Pragmatism agrees that objectivism and constructivism are valid approaches to research (Adil Mohamed Zahran Al Kindy et al 2016).

### 3.2.2. Research Approach

The research approach is the next layer of the research onion which maybe inductive or deductive. According to (Mark Saunders and Paul Tosey, 2012) the deductive approach is concerned with the use of literature to identify theories and propositions by applying a strategy specifically designed with the purpose of testing it with the use of hypotheses. This study exploits the literature to test the theory of the impact of business intelligence on organisational value creation, accordingly the focus is to test hypothesis. With the **deductive** approach, the researcher will be able to establish its objectives and questions using theory, relate them to the frame work and allow for data collection with survey strategy with the aim
to tests and explain the underlying relationships between variables, in order to provide the appropriate answers to the research questions and objectives.

**Figure 11: The Deductive Approach Steps**

Source: (Adil Mohamed Zahran Al Kindy et al., 2016)

The *deductive* research approach is from theory → hypothesis → data to add to a theory on contradict an existing one. The researcher works from top → down (L. Karen Soiferman, 2010). It uses the outcome of data collected to test a theory or hypothesis (Schwaferts, 2014).

Deductive is the best suitable approach with regards to BI’s impact in the activities of Nestle Nigeria Plc and how it has been able to help the organisation create value and gain competitive edge. In contrast is the *inductive approach*, here the researcher moves from research questions to analysis and then a theory. It works from down → top by using the participants responses to build and develop a theory that connect the research themes (L. Karen Soiferman, 2010). The choice to utilize the *deductive* approach is based on the objectivity in assessing different opinions distinct from *inductive* which is based on subjectivity in evaluating views in order to support outcomes of research.

### 3.2.3. Research Strategy

The next layer of the research onion is the research strategy which according to (Adil Mohamed et al., 2016) is linked to the chosen research philosophy, approach and choice of collecting and analysing data with the aim to provide answers to our research questions in order to satisfy our research objectives. The necessary choice of strategy in designing the quantitative method which is centred on answering the questions and hypotheses through the use of experiments and surveys.

**Survey** is the provision of a quantitative descriptive of views or opinions of a population in order to test for similarities or dissimilarities among the variables of the population. Survey design provides research answers to three types of questions descriptive (what), relative (how), predictive (why) (Mark Saunders and Paul Tosey, 2012) while **experimental** strategy is a classical form of research that is related to the natural sciences and focuses more on social science with particular reference to psychology. The purpose of an experiment is to study whether an independent variable brings about changes in a dependent variable (Sahay, 2016).
The strategy for this research is the **survey** strategy which is steered to a single relative setting associated with the deductive approach and it is usually used for exploratory and descriptive research. From a sizeable population, standardised data is collected with the aid of administering questionnaires to a sample of the population for easy comparison. Survey strategy is convincing by people in general as it is easy to understand and explain as it helps to indicate the views or perceptions of certain percentage of the population that thinks alike. (Saunders et al, 2007)

The focus on **survey** is because we want to gain an in depth understanding of the contextual impact of BI in helping to create organisational value which is the definition of the research problem.

### 3.2.4. Research Choice

The next layer of the research onion is the definition of the choice of research method to be used. It is more like the decision stage in choosing whether to use qualitative or quantitative method or both, and if using both the research needs to decide if both methods will be equally used or one method will be more dominant than the other.

The choice suitable for this study is **quantitative** which aims to quantify, and measure based on numerical data. In this type of research, the researcher asks specific and narrow questions. Quantifiable data is collected from participants which are analysed using statistics and conducts the inquiry in an objective and unbiased manner (Goertzen, 2017). Its goals include description, explanation and prediction. This method gives rise to greater objectivity, more reliable data and replicable effects which differs from the **qualitative** method where the researcher relies on the participant’s views, asks general and broad questions. Data collected consists largely of words from participants which are described and analysed into words for themes and conducts the inquiry in a biased and subjective manner (Mohan and Chinnadurai, 2012).

The choice selected is based on its suitability of the research’s aim which is to determine the impact of value created by BI in organisations specifically relating it to Nestle Nigeria Plc. On this account our research is to be able to derive perspectives and opinion from the organisation’s employees who have a general overview of the BI systems within the organisation and will seek to address the relationship between the variables of BI and
organisational value creation. These variables are considered as instruments in a quantitative research in forming the analysis (Dakic and Markovski, 2017).

3.2.5. Time Horizon

The final layer of the research onion is time horizon, before reaching the core of the research, the researcher highlights the time limit over which the researcher wishes to undertake the research (Mark Saunders and Paul Tosey, 2012). **Cross Sectional** time horizon is used to describe the study of a particular phenomenon(a) at a particular time (Sahay, 2016). In this study BI illustrates the observable phenomenon in a particular organisation (Nestle Nigeria Plc) through a specific time horizon and it’s the most suitable considering the time frame within which this study will be undertaken as opposed to the **longitudinal** time horizon which according to (Walliman, 2011) equally answers the research question but describes that data is required to be collected for a longer period of time, it makes use of particular strategies such as grounded theory, action research and archival research.

3.2.6. Population, Sampling and Participants

1) Research Population

According to (Sahay, 2016) a population is the set of individuals or elements that the researcher intends to investigate through the use of his subset commonly known as a sample. In this study, the population for this research is the staff of Nestle Nigeria Plc Abuja regional office. According to information gathered from the human resources department of the organisation, its staff strength is about 207 and this will form the population for this study.

2) Research Sampling

One of the important steps in this investigation is to determine the size of the appropriate sample. A sample, on the other hand, includes members or subjects of the population that have been selected to represent the entire population (Nyalungu, 2011). There are two broad types of sampling techniques namely probability and non-probability sampling. **Probability** sampling means that there is an equal chance for an individual or element of being selected from the population. This means that it is probable to achieve research objectives and answer research questions required to statistically estimate the features from the sample of the population while for **non-probability sampling**, the probability that an individual or element will be selected from the population is unknown and answers to
research questions are improbable so also are the research objectives which are required to statistically estimate the features from the sample of the population (Saunders et al., 2007). For the purpose of this study a probability selection sampling strategy was used in order for us to capture the suitable data through the use of survey and the filling of questionnaires. The sample size does not have to be a representation of the information technology department as our findings are generalised to the entire population.

3) Research Participants

The selection of our participants, we have contacted the management of Nestle Nigeria Plc Abuja regional office. By collecting data from the different departments of the organisation hoping to get a better overview about the subject of research. Our choice of Nestle Nigeria Plc did not have some specific delimitations as the organisation has multinational global recognition operating independently in the country in which it is present, uses BI systems and tools as part of their business operations. The purpose of targeting different individuals from various departments is because we need to get the best suitable participants who can give good information needed. Additionally, as mentioned in the literature review, the researcher believes that the people who are familiar with the aspects of BI and its impacts could or would be able to provide answers to our research questions and evaluate the value created from BI.

3.3. Data Collection and Sources

Data collection is in different ways and researchers are most times faced with the huge task of making sure that data collected is useful, relevant and of value with respect to the subject of focus. It is tough to make only the needed data for either quantitative or qualitative research available; the important thing is to collect a body of data in which a researcher can derive adequate answers to the research questions (Walliman, 2011).

The data collection for this research study entails, survey, questionnaires, and the organisations documents. The primary source of data collection is the use of online survey questionnaire while the secondary data collection was through the company’s annual report, previous publications, journals, text books and also the internet.

3.3.1. Administration of Questionnaire

The questionnaire will be distributed to its respondents through the use of online Google Forms. A questionnaire is a series of questions designed to seek for answers for the purpose of extracting information from its participants (Mesaros et al., 2016). The link to the
questionnaire was distributed using emails, WhatsApp and LinkedIn groups. The questionnaire was constructed based on sections A and B. Section A will be used to collect data on demographic distribution of respondents. Section B provided statements on variables of this study presented on a five-point Likert scale, ranging from 1-5 with 1 representing strongly disagree (SD) to 5 representing strongly agree (SA). The rationale for the choice of this structure is that the respondents will find them more convenient to respond to; hence we could secure a high response rate. The use of Likert scale has been often necessary because it is an interval scale that enables a researcher to analyse questionnaire responses and give room to respondents to choose among multiple options. The data collected will be analysed with the use of descriptive statistics.

3.4. Data Analysis
The research objective was to assess the relationship between BI and organizational value. This study is using the quantitative method of online questionnaires for its data collection, the data generated will be analysed through descriptive analysis in the form of graphs, pie and bar charts from the responses collated from the its participants. According to (L. Karen Soiferman, 2010) the primary purpose of the general deductive method is to allow research findings to be developed from generated themes within the raw data. Data collected will undergo some preliminary analysis. The data will be tested for missing values. Missing values will be replaced using mean substitution (Hair et al., 2014). Outliers will be detected and screened using Mahala Nobis distance (Tabachnick & Fidell, 2013). The data collected will be analysed using excel and will undergo testing and validity of hypotheses.

3.5 Research Ethics
Probable ethical issues are raised in the course of conducting this research, this aspects includes confidentiality and anonymity as regards working with the organisation’s identity and its participants and reporting the literature (Goertzen, 2017). Questionnaires in research work expresses ethical concerns, research on private individuals about their jobs and or organizations and placing such in public should be practically considered in its entirety. This issue will be treated with each person reviewing and signing an informed consent and confidentiality form preceding their participation in the study. Each participant names were kept confidential. The researcher also tried to be objective and unbiased while reporting the literature and also the use of simple language in order to obtain clear outcomes and results. A letter of consent will be signed where necessary as regards to
the company’s policy in relations to giving out information about the company, and where some information is considered too sensitive for public consumption, they are required to bring this to the attention of the researcher and advise on how they would want such information to be known to the outside world.

3.6 Limitations

Limitation can be referred to as those occurrences that may arise in the course of a research work and are out of the researchers control. (Aleksandar Djordjevic and Tijana Cvetic, 2016). One of the major pitfalls of this study is the distribution of online questionnaires in place of the self-administered questionnaires which could impact on the research outcomes. The questionnaires were filled by different participants who could have misinterpreted some of the questions which also involved them to give their responses within a limited time under pressure. Another limitations of the study lies in the relatively small sample size of staff covered in the organisation which can be attributed to the limited time and even resources.
CHAPTER FOUR
DATA ANALYSIS AND FINDINGS

4.1. Overview

The primary objective of this chapter is to present and illustrate findings from our research without making conclusions and this includes frequency distribution and simple percentage. For the data analysis presentation, the research questions were organised into five sub-groups and each group contained five research questions. The questions were structured into sections A&B.

Section A is the demographic section comprised of questions relating to age, department/unit, number of years in service and level of education. Section B comprised of questions relating to BI products, process, technology, teams using the five Likert scale ranging from strongly disagree (SD) to strongly agree (SA). The questionnaire was categorized based on variables and then utilised into Google forms.

A total of 139 responses were gotten online from the questionnaires administered to the staff of Nestle Nigeria Plc. After a check on the responses six (6) questionnaires were found missing and this was discarded from the survey. The analysis on the 133 respondents are as follows:

Figure 4.2 - Age of Respondents

Figures 4.2 above shows the count of 132 employees that represents 24.2% are 30 years and below, 54 employees with 40.9% represents majority of the age bracket of the respondents which is between the age of 31-40 years, while 35 employees are within ages 41-50 years and they represent 26.5% and the least is 11 representing 8.3% who are employees above 50 years of age.
This representation shows that the organisation is made of employees that are in their active and productive years and this is essential for the growth and performance of the organisation.

**Figure 4.3. Department of Respondents**

The result in figure 4.3 shows department distribution of the respondents. The result shows that 12 (9%) of the respondents are in IT and management, 17(12.8%) are in sales and marketing, Admin & logistics and Finance, 8(6%) are in human resource, 4(3%) are in Planning/Production, 9(6.8%) are in Research and Development, 10(7.5%) are in Engineering, 24 (18%) are in Operations while 5(3.8%) represents other units.

**Figure 4.4 Years of Service**

The result in figure 4.6 reveals that 49 (36.8%) are less than 5 years, 49 (36.8%) have 6 - 10 years of experience, 30(22.6%) have 11-15 years of experience, 6 (4.5%) have 16 to 20 years of experience, while 2 (1.5%) are 20 years and above in Nestle Nigeria Plc.
Figure 4.5 Level of Education

Figure 4.5 shows that 52 (39.1%) of the respondents are B.sc degree holders, 44 (33.1) are Master degree holders, 14 (10.5%) are Higher Diploma holders, 5 (3.8%) are Phd holders, while 19 (14.3%) are holders of other qualification. The shows that majority of the study respondents are well educated and this may have positive impact on the information provided for this study.

This section accounted for summary of research questions on organizational value creation. However, the details of frequency distribution are presented in Appendix C.

Table 4.6. BI and Organizational Value Creation

<table>
<thead>
<tr>
<th>S/N</th>
<th>Organization Value Creation (Dependent Variables)</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>There is significant relationship between BI and organizational value creation</td>
<td>26</td>
<td>19.5</td>
<td>71</td>
<td>53.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36</td>
<td>27.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>BI has increased employee productivity in my organization</td>
<td>26</td>
<td>19.5</td>
<td>66</td>
<td>49.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41</td>
<td>30.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The Internal process are efficient in terms of time and cost</td>
<td>1</td>
<td>0.8</td>
<td>32</td>
<td>24.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70</td>
<td>52.6</td>
<td>30</td>
<td>22.5</td>
</tr>
</tbody>
</table>
Table 4.7 Summary of Research Questions on BI Process

<table>
<thead>
<tr>
<th>S/N</th>
<th>Statement on BI Process</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BI system is modified to fit into my organization business environment</td>
<td>1</td>
<td>0.8</td>
<td>28</td>
<td>73</td>
<td>30</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2018

The result in table 4.6 shows that 26 (19.5%) of the respondents are neutral, 71 (53.4%) are agree, while 36 (27.1%) strongly agree that there is significant relationship between BI and organizational value creation. This shows that BI has significant impact on the value creation of Nestle Plc in Nigeria.

The result also shows that 26 (19.5%) are neutral, 66 (49.6%) agree, 41 (30.8%) strongly agree. Majority of the respondents agreed with this statement. This shows that BI have positive influence on the employee productivity in Nestle plc in Nigeria. Furthermore, the result shows that 1 (0.8%) strongly disagree, 32 (24.1%) are neutral, 70 (52.6%) agree, while 30 (22.6%) strongly agree that internal processes in their organization are efficient in terms of time and cost. In the same view, the shows that 31 (23.3%) of the respondents are neutral, 68 (51.1%) agree, 34 (25.6%) strongly agree that BI has helped their organization in all facet of its operations. Finally, the result reveals 23 (17.3%) of the respondents are neutral, 73 (54.9%) agree, while 37 (27.8%) strongly agree that BI as a whole help in value creation. We can infer from this data analysis that BI has positive significance in the organization.

This is a presentation of the summary of research questions on the independent variable (BI process). However, the details of research question are presented in Appendix D.
<table>
<thead>
<tr>
<th></th>
<th>BI process has improved performance in your organization</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>0.8</td>
<td>1</td>
<td>0.8</td>
<td>24</td>
<td>18</td>
<td>74</td>
<td>55.6</td>
<td>33</td>
</tr>
<tr>
<td>3</td>
<td>My organization invests considerable resources to improving production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>0.8</td>
<td>28</td>
<td>18</td>
<td>70</td>
<td>52.6</td>
<td>38</td>
<td>28.6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>The BI system implemented gives relevant precise/information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>0.8</td>
<td>19</td>
<td>14.3</td>
<td>73</td>
<td>54.9</td>
<td>40</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>My organization give unique product that give competitive edge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>15</td>
<td>64</td>
<td>48.1</td>
<td>49</td>
<td>36.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey, 2018

The result in table 4.7 shows that 1(0.8%) of the respondents disagree, 1(0.8%) strongly disagree, 28(21.1%) are neutral, 73(54.9%) agree, while 30(22.6%) strongly agree that BI system is modified to fit into their business environment. The result reveals that 1(0.8%) of the respondents disagree, 1(0.8%) strongly disagree, 24(18%) are neutral, 74(55.5%) agree, while 33(24.8%) strongly agree. Majority of the respondents (staff) agree on the question and this shows that BI process has improved the performance of Nestle Plc in Nigeria.

The table shows that 1(0.8%) of the respondents strongly disagree, 24(18%) are neutral, 70(52.6%) are agree, while 38(28.6%) strongly agree. The finding reveals that Nestle Plc invested considerable amount in its production process since majority of the respondents agreed on the question. Furthermore, the result shows that 1(0.8%) of the respondents strongly disagree, 19(14.3%) are neutral, 73(54.9%) agree, while 40(30.1%) strongly agree. This is an indication that Nestle Plc BI system gives relevant information to the staff since majority of the respondents agree and strongly agree to the question. Finally, the result shows that 20(15%) of the staff are neutral, 64(48.1%) agree, while 49(38.8%) strongly agree, it means that Nestle Plc provides unique product/services that give them competitive advantage.

The section presents summary of research questions on BI technology. The details of the result are presented in Appendix E.
Table 4.8. Summary of Research Questions on BI Technology

<table>
<thead>
<tr>
<th>S/ N</th>
<th>Statement on BI Technology</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>S</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There is adequacy of BI technology in my workplace</td>
<td></td>
<td>28</td>
<td>21.1</td>
<td>69</td>
<td>51.9</td>
</tr>
<tr>
<td>2</td>
<td>BI technology aids production of my organization</td>
<td></td>
<td>33</td>
<td>24.8</td>
<td>68</td>
<td>51.1</td>
</tr>
<tr>
<td>3</td>
<td>We find it very easy to work with BI in my organization</td>
<td></td>
<td>3</td>
<td>2.3</td>
<td>27</td>
<td>20.3</td>
</tr>
<tr>
<td>4</td>
<td>BI technology has boost supply of my organization product</td>
<td></td>
<td>25</td>
<td>18.8</td>
<td>69</td>
<td>51.9</td>
</tr>
<tr>
<td>5</td>
<td>BI expands services for existing clients</td>
<td></td>
<td>27</td>
<td>20.3</td>
<td>73</td>
<td>54.9</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2018

The result in the table 4.8 shows that 28(21.1%) of the staff are neutral, 69(51.9%) agree, while 36(27.1%) strongly agree. This finding connotes that there is adequate BI in Nestle Plc as majority of the staff agree to the question. The result also shows that 33(24.8%) of the staff are neutral, 68(51.1%) agree, while 32(24.1%) strongly agree that BI technology aids production in Nestle Nigeria Plc. Further findings reveal that 3(2.3%) of the staff strongly disagree, 27(20.3%) are neutral, 64(48.1%) agree, while 39(29.3%) strongly agree and it shows that working with BI is very easy in Nestle Nigeria Plc. In addition, the table shows that 25(18.8%) responded neutrally, 69(51.9%) agree, while 39(29.3%) strongly agree. Majority of the respondents agree on the question. Hence, technology has helped Nestle Plc to boost its production capacity in Nigeria.
Finally, the result shows that 27(20.3%) are neutral, 73(54.9%) are agree, while 33(24.8%) strongly agree. We can, therefore, deduce from this finding that BI has helped Nestle Plc to expand services for its existing clients in Nigeria.

This section present summary of research questions on BI products and details of the result are presented in Appendix F.

Table 4.9. Summary of research questions on BI products

<table>
<thead>
<tr>
<th>S/N</th>
<th>Statement on BI Products</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
<td>F</td>
</tr>
<tr>
<td>1</td>
<td>The people have access to virtually all primary BI products</td>
<td>5</td>
<td>3.8</td>
<td>21</td>
<td>15.8</td>
<td>74</td>
</tr>
<tr>
<td>2</td>
<td>My organization has strong and adequate BI products</td>
<td>3</td>
<td>2.3</td>
<td>29</td>
<td>21.8</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>My organization frequently refines the provision of existing products/services</td>
<td>1</td>
<td>0.8</td>
<td>28</td>
<td>21.1</td>
<td>72</td>
</tr>
<tr>
<td>4</td>
<td>My organisation regularly implements small adaptations to existing products/services</td>
<td>1</td>
<td>0.8</td>
<td>28</td>
<td>21.1</td>
<td>62</td>
</tr>
<tr>
<td>5</td>
<td>My organization constantly develop new products/services</td>
<td>3</td>
<td>2.3</td>
<td>23</td>
<td>7.3</td>
<td>70</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2018

The results in table 4.9 reveals that 5(3.8%) of the respondents strongly disagree, 21(15.8%) are neutral, 74(55.6%) agree, while 33(24.8%) strongly disagree. Since the majority of the respondents agree to the question, it signifies that the staff have access to basic BI products in Nestle Nigeria Plc. The table also shows 3(2.3%) of the staff strongly disagree, 29(21.8%) are neutral, 70(52.6%) agree, while 31(23.3%) strongly agree. This finding implies that there are strong and adequate BI products available in Nestle Nigeria Plc.
Furthermore, the result shows that 1(0.8%) of the respondents strongly disagree, 28(21.1%) are neutral, 72(54.1%) agree, while 32(24.1%) strongly agree which is an indication that the organisation refines its existing products. Also, the result shows that 1(0.8%) of the staff strongly disagree, 28(21.1%) are neutral, 62(46.6%) agree, while 42(31.6%) strongly agree. From the employee’s responses, it shows that majority of them consent to the question that the organization usually implements small adaptation to their existing products.

Finally, the result shows that 3(2.3%) of the staff are strongly disagree, 23(17.3%) are neutral, 70(52.6%) agree, while 37(27.8%) strongly agree that Nestle Nigeria Plc is constantly developing new products/services.

This section present summary of research questions on business intelligence team and details of the result are presented in Appendix G.

Table 4.10 Summary of Research Questions on BI Team

<table>
<thead>
<tr>
<th>Statement on BI Team</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
<td>F</td>
</tr>
<tr>
<td>1 The BI team maintains the system in a satisfactory way</td>
<td>29</td>
<td>21.8</td>
<td>62</td>
<td>46.4</td>
<td>42</td>
</tr>
<tr>
<td>2 The BI team understanding is in line with my organization requirements</td>
<td>1</td>
<td>0.8</td>
<td>25</td>
<td>18.8</td>
<td>74</td>
</tr>
<tr>
<td>3 Interpersonal capabilities of the BI team are compatible with my organization</td>
<td>1</td>
<td>0.8</td>
<td>2</td>
<td>1.5</td>
<td>35</td>
</tr>
<tr>
<td>4 BI team managers agree on the nature and role of the BI system in place</td>
<td>1</td>
<td>0.8</td>
<td>27</td>
<td>20.3</td>
<td>74</td>
</tr>
<tr>
<td>5 The BI team has the ability to lead the</td>
<td>27</td>
<td>20.3</td>
<td>76</td>
<td>57.1</td>
<td>30</td>
</tr>
</tbody>
</table>
The result in table 4.6 shows that 29(21.8%) of the staff are neutral, 62(46.6%) agree, while 42(31.6%) strongly agree that the team maintains the system in a satisfactory way. Also, the result shows that 1(0.8%) of the respondents strongly disagree, 25(18.8%) are neutral, 74(55.6%) agree, while 33(24.8%) strongly agree that the team has business understanding compatible with business requirements. Furthermore, the result shows that 1(0.8%) of the respondents disagree, 2(1.5%) strongly disagree, 35(26.3%) are neutral, 67(50.4%) agree, while 28(21.1%) strongly agree. It shows that majority of the employees agree that BI team capabilities are in consonance with the requirements of Nestle Nigeria Plc. Additionally, the result shows that 1(0.8%) of the respondents strongly disagree, 27(20.3%) are neutral, 74(55.6%) agree, while 31(23.3%) strongly agree that the team manager and executives agree on the nature and role of the systems in place. Finally, the result shows that 27(20.3%) of the respondents are neutral, 76(57.1%) agree, while 30(22.6%) strongly agree that the team has the ability to redesign and develop new systems for the organization.

4.11.Summary

The aim of this chapter was to present and interpret the vital findings from the quantitative data collected from the primary source by the researcher during the course of the study. The different statements were used to ask questions on BI in relation to value creation in the organisation. The next chapter will aim to discuss and reflect on the analysis and how it helped to achieve the research objectives, test the hypotheses and provide answers to our research questions.
CHAPTER FIVE

DISCUSSION OF RESULTS

5.1. Overview

This analysis leads to a number of findings derived during the course of this research which have applied the impact of BI in creating organizational value. The purpose of this chapter is to summarise and discuss these findings consistent with previous studies which is in support of the practicality that organizational value creation is influenced by BI systems relating it to the research objectives and questions. The resultant relationship between the dependent and independent variables which shows a positive one. In our theoretical model, our findings shows that BI systems such as BI products, BI process, BI technology and BI teams have positive impact on organisational value creation.

5.2. Research Objective 1: To examine the impact of BI process on Organisational value creation in Nestle Nigeria Plc

The success of utilizing organizational value creation highly depends on their integration with organizational decision processes (Brohman et al., 2000; Davenport, 2010; Kanungo, 2009; Shanks et al., 2010). Achieving such integration requires an understanding of how these technologies affect decision processes. Therefore, missing understanding of these effects can constrain successful utilization (Watson et al., 2002). Recent literature reviews have found that BI process in relation to organizational value creation have not received enough attention. For instance, Shollo and Kautz (2010) examine conceptions of BI and conclude that only few studies address decision-making process.

This is evidenced from the results shown in the Appendix D. The finding signifies that a unit percent increase in BI process will bring about 29.4% increase in organizational value creation in Nestle Nigeria Plc. BI process systems differ in terms of the industry, the organisational size, or the organisational structure. In order to achieve successful changes in BI process initiatives the focus should be on how the organisational structures align with its BI process factors so as to meet its demands and supply activities.

Supply Chain: Nestle Nigeria Plc has been able to capitalize on its relationships with its suppliers through its supply chain in the context of speed analysis by creating economies of scale in their operations which is due to the impact of its BI system’s applications and
implementation. Nestle Foods Nigeria Plc has been able to manage the relationships within their supply chain (procurement, pricing and procurement executives) and their partners.

BI process meets success when there are changes to the initiatives by concentrating in diagnosing the various process levels and its deficiencies. It shows that an effective and efficient BI process will bring about positive outcome in the organization as the process automates the different tasks and courses in the organisation’s database and this makes time more available for knowledge advancement.

**Integrated Production Process**: Organisations have successfully been able to integrate their production processes with the use of information and communication technology which allows for easy communication across the different departments involved in the production of consumers goods, aligning the supply figure alongside the demands for its goods in order to deliver rapid and enhanced quality customer service.

This further confirms our earlier descriptive statistics showing that majority of the respondents from our survey agree to the research questions, an indication from the statistics shows that on the average about 70% agree that BI process contributes to value creation.

**5.3. Research Objective 2: To investigate the Impact of BI Technology on Organizational Value Creation in Nestle Nigeria Plc.**

Business technology has been conversant with numerous BI concepts since the new millennium. However, among these are business innovation, research and development, new economy, new way of thinking, information flow etc. Pietersen (2002) is of the opinion that running an organization is now harder than before because of complexity and changes in BI technology. Businesses are required to use information provided by BI technology more effectively than before and this not visible without systematic information management. Literature review and conceptual analysis are needed to understand the basic of BI technology and its influence on the value creation in organisations.

The findings in Appendix E implies that a percentage rise in BI technology will bring about 35.2% increase in organization value creation and vice versa. While the universal role of BI technology is perceived to increase supply chain, operational processes and customer service performance in present days, with its most influence in facilitating the creation of value in organisations. The results indicate that BI technology when aligned with an organisation’s strategy will lead to value creation. The numerous utilisation of BI systems also helps to
reflect that the technology touches every departmental business processes contributing significantly to the bottom line.

**Global Brands** : With the aid of information technology, online process provides the opportunity to customise products that can deliver high margins though they are costlier to produce, with the use of advanced analytics, the organisation monitors its production schedule and identifies profitable customer wanted products with a great production efficiency.

The descriptive statistics shows that majority of the respondents (staff) agree to the five research questions on BI technology and it impact on organizational value creation, with an average of about 65%. This finding implies that availability of modern BI technology is in conformity with previous empirical study by (Hou 2016) who found positive and significant relationship between BI technology and organizational performance. The conclusion that organisations with effective and thorough BI technology will perform better than the organisations with low or no BI technology. From an organizational-level perspective this finding support work of (Hasan et al. 2016) which resolved that three major categories: organizational, technology, and social helps determine the BI readiness in value creation.

5.4. **Research Objective 3: To assess the impact of BI products on Organisational Value Creation in Nestle Nigeria Plc.**

BI products as one of the research study independent variable show positive outcome. BI is seen as both a process and a product. The process is composed of methods that organizations use to develop useful Information, or intelligence, that can help organizations survive and prosper in the global economy (Vuksic et al., 2017). The product is information that will allow organizations to predict the behaviour of its "competitors, suppliers, customers, technologies, acquisitions, markets, products and services, and the general business environment "with a title of certainty (Belgin and Tuncay,2010). Organizations spend considerable resources in improving their BI products (Watson, Wixom, Hoffer, Anderson-Lehman & Reynolds, 2006). BI literature pointed out direction of future research on the link between BI products and organizational value creation.

**Research and Development** : BI has made a significant impact in the area of research and development which helps it in its expertise of product innovation for nutritional benefits and better living. Through its continuous invention of its new and modernisation of its existing
products, Nestle Foods Plc is creating value to millions of households and enhancing its organisational performance.

This finding obtained in Appendix F signifies that for every successful unit increase in BI products, it brings about 11.3% increase in organizational value creation in Nestle Nigeria Plc. The study has found the simultaneous impact of BI products on organisational value creation and upgrades in the BI products such as OLAP, data mining etc in collaboration with the process and acts interdependently that influence effectiveness through the BI systems. It is also in line with the outcome of the descriptive statistics which reveals that majority of respondents agree to all the five questions on BI products in relation to creating value. The finding coincides with the outcome of (Gangadharan and Swami, 2004, Dodson et al., 2008, Guarda et al., 2013) that found positive but significant relationship between BI products and performance.

**Improved Customer Service** : Partners, suppliers, customers can now electronically from the comfort of their homes make complaints and give feedbacks with regards to products purchased or delay in delivery of goods etc.

The study further confirms that BI products have the answers to drive profitability in the manufacturing industry’s challenges. The expected returns of Nestle Nigeria Plc from the use and implementation of BI systems depends on the organisation’s aims and values. The significant benefits derived from using BI products are usually measured with the increasing overall performance and gaining of competitive edge. It was subsequently examined and its impact on how it contributes to the overall corporate performance in relation to value creation.

5.5. **Research Objective 4: To investigate the impact of BI team on Organisational Value Creation in Nestle Nigeria Plc**

The BI progress team is responsible for managing the strategy of BI programs in response to each version. The work team can be internally integrated with subcontractors or staff composed of dependents and advisers. Regardless of the personnel model, it is essential that the projects coordinate and collaborate with the team of the BI program. According to (Erin Olayinka et al., 2017) a team of experts have followed an in-depth analysis of the system of origin and implemented techniques for the acquisition and preparation of specific data for the operating system. It also requires detailed aggregate analysis of the data and implementation
of the distribution, analysis, and decision support systems, etc, to meet the needs of the project's business pilot.

BI team as one of the research study independent variables show positive but significant impact on value creation in Nestle Nigeria Plc. The findings implies that BI teams understand the process and operations in line with the aims of the organization. Since BI team’s understanding is well tailored towards organizational objectives, and this in turn can lead to value creation. The majority (55.6%) of the respondents agree that BI team understanding is in conformity with the organisation’s requirements.

**Real Time System Update:** Nestle Nigeria Plc relies on its corporate BI systems in real time. It uses this to update its demands, supplies, prices, quality management, customer service quality. It also uses the system to define its promotional and selling strategies. With strategic implementation of data warehouse, the organisation creates value by managing pricing, quality management and optimising the performance of all the different units.

Furthermore, an effective team work of BI workforce would bring about a positive change in Nestle Nigeria Plc, it supports the descriptive statistics results earlier shown with reference to **Appendix G** which shows that about 67% of the respondents to all the five research questions agree that BI team has impact on creating value for the organization. This was also buttressed with the outcome of (Afolabi et al., 2017) that BI team influences the performance of organisations and it can be noted that in years to come BI team is expected to surpass human intellect.

**5.6. Organisational Outcomes**

The results of this present study (**Appendices D, E, F & G**) show that BI systems are very likely to have a positive impact on organisational value because of the close match between BI and its constructs (process, product, technology, team). The impact of these contextual resources is to ensure that suitable business environment align with organisational values, and its resources and also enhance the performance of the organisation in the short and long run (**Question 5 of Appendix C**) Sometimes organisations and BI systems tend to display some inefficiencies in its operational performance at the different stages of processing and different departments, the problem may arise from the internal environment and this is very crucial for BI system implementation.

This study tends to shed more light on the implementation of a suitable BI systems environment which consists of process, product, technology and team as a perfect match for
organisational value creation. Though the universal role of BI system emphasises the increase in operational process, supply chain and customer service in the present business world, as seen in from the survey (Question 2 of Appendix D) the supreme impact of BI is to enhance performance by way of strategic decision making. The results discussed in this chapter indicates that creating organisational value is very significant in implementation of BI systems effectiveness when compared with the BI constructs. Alignment of organisational value with BI system constructs brings about organisational success as seen in Question 1 of Appendix C.

The frequent utilization and adequacy of BI is also reflected in the strategic reliability of an organisation that affects each level pf business process from the manufactures to the suppliers to the satisfaction of the final consumers (Question 5 of Appendix E). BI systems success rate can vary depending on the size and type of firm and also the industry in which such organisation belongs to. Failure in BI system implementation establishes that such problem is not only inherent in an organisations operational process but could also be at the core business level. For Nestle Nigeria Plc to achieve success, their change initiatives should concentrate more on how an organisation it can align its BI constructs with its organisational activities and demands as can be deduced in (Questions 3 & 4 of Appendix E). The alignment of these components will lead to success when the initiatives changed are focused on and its given consideration in analysing the different operational process levels and units in relation to its organisational deficiency levels.

This study has found that the impact of BI constructs (process, product, technology and system) have synchronised effect with organisational value and the can act as inter-dependent variables that influences an organisation’s strategic culture as seen in Question 1 of Appendix D. The findings from this study provides new understanding addressing the impact of BI constructs on organisational value creation somewhat different from just one or two of BI constructs.

5.7. Limitations to This Study

As it is with most or all researches, the outcomes of this study should be interpreted in line with its limitations. This study investigated the impact of BI on organizational value creation in Nestle Nigeria Plc. Based on this, the findings for this study may not be generalised. First of its limitation is the sample size of the study is drawn from a small population, though it ensured the validity of the variables examined, it might have been affected if a larger population was chosen. The second is that the respondents, though they are from different
departments of the organisation the staff and managers might have either overstated or understated their responses on the current situation in the organisation and this is limitation, is one that cannot be overlooked.

The third limitation is the cross sectional time horizon, save for the information gathered at different time settings, we cannot confirm the connexion. More studies reproducing our hypotheses and its model with longitudinal data could unfold underlying relationship among the variables. The study is also limited to four independent variables (business intelligence product, process, technology and team) and there are still some other variables that the study failed to consider. Although there is no present of additional or omitted variables in the study model, there is need for further studies to consider variables such as business intelligence capabilities, business performance, and business intelligence implementation amongst others.

5.8. Contribution and Policy Implication of the Findings

This study aimed to examine impact of business intelligence on organizational value creation in Nestle Nigeria Plc. The focus is on the current issues facing value creation in Nestle Nigeria Plc, with primary aims of providing solutions to the problem. However, the study established the positive impact of business intelligence in relation to the creation of value with reference to Questions 1-5 of Appendix C. The implication of this is find out how the availability of business intelligence will help organisations achieve its goals since it has positive influence on value creation. Additionally, the findings will contribute to existing body of knowledge and the vacuum that has been left unresolved by the previous researchers on the subject matter. The study also shows the managerial and theoretical implications of business intelligence on organizational value creation in Nestle Nigeria Plc. The policy implication of this study is perceived that the organizational policy of Nestle Nigeria Plc has contributed immensely towards achieving organizational value creation. However, Nestle Nigeria Plc and government need to formulate policy the will create enabling business environment for charming business intelligence implementation.

Managerial Implication: BI is regarded as one of the fundamental drivers of manufacturing firm’s success for both now and the future. The finding of this study will serve a guide for managers to prepare and tailor their organization’s strategy toward achieving value creation. Furthermore, for BI managers concerned in the literature, it has been documented that BI system can affect organizational value creation (Oyku et al., 2012). Managers roles in present studies have provided empirical evidence on how this could occur. This study establish that the change can only occur when effective and efficiency business intelligence constructs such as process, product, technology and team are in place. Specifically, with reference to Appendix
E and G there is improvement in BI technology and BI team as it has been pointed out by the staff, as major contribution to organizational value creation.

**Theoretical Implication:** the study found empirical evidence for theoretical relationship between BI and organizational value creation through the use of BI variables such as BI process, product, technology and team as posited in the research framework. The adapted theories show the interaction between business organizational resources and value creation. This finding has established significant importance of the selected BI variables which prior scholars have not considered in their study. The finding support resource based view theory, posited that all organizational resource (human, technology, capital etc) are important in achieving organizational goals and objectives (Pemmaraju 2007). Also, according to **Question 3 of Appendix G** the adoption of social exchange theory will make positive interactions between BI team and the organization. The implication of this is that when adopted in an organization employee will integrate, support and develop commitment that will bring about organizational value creation.

**Policy Implication:** The policy implication of this study, is that the organisational policy of Nestle Nigeria Plc has contributed absolutely toward achieving value creation. However, Nestle Nigeria Plc and government need to formulate policy that will create enabling business environment for charming BI implementations. Thus, it provides a guide for Nestle Nigeria Plc and other manufacturing firms in order to be encouraged, equipped and achieves the required skills that will assist in making them more capable, skilful and improve their business values in the issues of formulation and implementation of policies. Also, this study as shown from the response from the survey (**Question 4 of Appendix G**) indicates that BI managers can grow their team by focusing more on training and development because it will improve individuals and team contribution to organizational value creation.
CHAPTER SIX
CONCLUSIONS AND RECOMMENDATIONS

6.1. Introduction

In this chapter, the researcher tries to draw conclusions generally by summarising the findings and critically analyse the findings with the issues and concepts discussed in the literature review chapter of this study. The research is descriptive and at the same time interpretive, so the findings and conclusions are highly dependent on the feedback from individuals.

6.2. Conclusion

In a developing market such as Nigeria, evidenced from the empirical studies review showed that there have been scanty researches on BI process and organisational value. Based on the findings, we can conclude that BI process plays a crucial and important role in creating value in an organisation like Nestle Nigeria Plc. However, the ineffective BI process may adversely affect organisational value creation.

Although series of research have been carried out both in developed and developing countries, but there has been no consensus in the relationship between BI and organisational value creation. This study adds more insight on the subject matter. The study has tried to establish the proper relationship between BI and organisational value creation. However, the finding of this study gathers how the advancement of BI contributed meaningfully to value creation and performance and how its availability and or accessibility in Nestle Nigeria Plc will ease the production process and improve organisational value creation.

The prime objective of this study is to identify the impact of BI on organisational value creation. Though it is concluded that having an effective BI brings about enhanced organisational performance, it is vital to clarify the influence of BI process, product, technology and team. The results from this study reveals that BI constructs are positively related to organisational value. Additionally, organisational value creation facilitates the relationship between BI systems. The study contributes to the present understanding of the relationship between BI and organisational value creation by incorporating BI process, product, technology and team as antecedents such that suitable and effective operations act as substance to produce better BI benefits to an organisation like Nestle Nigeria Plc.
Empirical research has established divergent relationship between BI products and organisational value creation. Some studies conclude substantial relationship while some found no relationship between variables. However, the finding from this study proves there is significant relationship between BI variables and organisational value creation. To this effect, we can conclude that BI system has contributed immensely to an organisation like Nestle Plc in the Nigerian market.

BI team in any organisation, especially in the manufacturing sector can lead to competitive advantage. This is one of the rationale as to why some organisations spend more on training and developing their workforce. For instance, a well trained BI team will aid an organisation’s performance in various departments or units. Therefore, in can be concluded that BI teams and organisational value is/are an integral part of Nestle Nigeria Plc just as the other variables are.

6.3. Recommendations

In order to address the impact of BI theories and/or hypotheses on organizational value creation. The following recommendations were reached from the findings of this study;

First, it is vital to recognize that the use of BI process on the impact of organizational performance through value creation. Therefore, there is need for organisations regardless of its sector in an economy to have a sound and adequate BI process in place so as to aid production and boost performance as this can go a long way to ease it operational processes, reduce production costs, minimize production errors and increase organizational value creation.

Secondly, since BI is considered to be a collection of different technologies as defined in chapter two, Nestle Nigeria Plc can select variety of approaches available to be included in their organisation’s structural procedures. There is need for training (on and off the job) of staff on how to use modern BI technologies in order to reduce time spent on production process and increase organizational value through production output.

Thirdly, BI products relates extensively with organizational value. There is need for both management and BI managers to work on quality products in order to meet up with expected standard, if this can be done, it will help promote good organizational image and global brands
which will eventually lead to increase in turnover and result to positive impact on the value created in Nestle Nigeria Plc.

The findings also shows that BI teams, with particular reference to the degree to which the team has an exploratory orientation will have an effect on the transformation of BI assets into organizational value creation. This line of inquiry which draws knowledge established in other areas of information systems research and organizational theory has the potential to significantly advance our understanding of the organizational contributions of BI systems.

Conclusively, the length of operations in Nestle Nigeria Plc can pave way for other organisations to benefit from the proper application of BI constructs. With the improvement of BI systems in its implementation and innovation in terms of technologies organisations can ensure optimal maximisation of BI usages. As time evolves, customisation of BI constructs may be provided, and this can impact on organisational value and make Nestle Nigeria Plc gain competitive advantage over its peers in the industry.

REFLECTION

Reflection on Dissertation

Reflecting on the process of writing my dissertation, I realised that the experience was enjoyable and at the same time quite challenging. My choice of topic was a great difficulty as it took me a long time to put the research topic together. Though I have always knew I would write on anything concerning Business Analysis as I have a background in accounting and I have worked in the financial industry and I have seen how data is transformed into information useful to process transactions between individuals, banks and other financial institutions. Though In the first and second semesters we were thought Research methods I and II respectively and also personal and professional development (PPD) and this provided a better understanding of what I was doing presently and what I wanted in the near future.

There were difficult times, but I had to motivate myself to continue with the work. The work is in six chapters. The most difficult part as I said earlier was coming up with a relevant research topic, I tried different ideas on how to match make my topic together, it took me about six months to finally settle for this. Another difficult part of my dissertation process asides choosing a research topic was time management. I had to juggle between my work and writing a good piece. I approached my research work with a quantitative choice of
methodology by effectively assessing and validating the data collected so as to answer the research questions and achieve the research objectives.

Another complexity putting my questionnaire together and getting the staff of the organisation to fill it as it was not self-administered but was distributed online via Google forms due to the distance between the location where the dissertation is taking place and the case study being researched on, the researcher was here in Europe while the case study is in Africa. But I think in all, it was a beautiful experience as it afforded me an opportunity to broaden my horizon concerning business analysis.

**Reflection on MBA Programme**

I have an over ten (10) years post college working experience back in my home country, but I had to quit my job to enrol as an MBA student at Dublin Business School. After thinking it through that I need something to challenge me to move forward and an MBA was the best choice and DBS provided me with that opportunity as it offered a one year programme which commenced in January 2018.

My MBA is in finance and learning experience has been interesting so far and also challenging because adjusting to academic life after more than a decade as a student. Reflecting on my MBA programme, I have learnt a lot and wished I had come for this course earlier as I have advanced academically and intellectually, it has also helped me in the area of building my self-confidence as I used to be someone who could not make presentations or face a crowd.

Having an additional MBA certification in Finance from a reputable school like DBS is an added advantage as I know it will open doors for me as I progress into the labour market. My expectations from this program was not farfetched as it afforded me the opportunity to make new friends and learn new courses although the pressure of having to fit in the academic timetable to your own schedule especially the early morning lectures, meeting assignment deadlines, engaging in group assignments and also participating in team bonding activities.

Conclusively, I appreciate this course because it is a good exposure for me into the corporate world and has prepared me for the future into the Irish market, as I feel I can make better presentations and engage more in team building activities.
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Appendices

Appendix A : Original Version of Questionnaire

Section A : Personal Data of Respondents

1) Name

2) Age
30 Years and Below ( ) 31-40 ( ) 41-50 ( ) 51 and Above ( )

3) Gender
   Male ( ) Female ( )

4) Education
   B.Sc. ( ) Masters ( ) Higher Diploma ( ) PhD ( ) Others ( )

5) Marital Status
   Single ( ) Married ( ) Widowed ( ) Divorced ( ) Others ( )

6) What Department/Office
   IT ( ) Engineering ( ) Operations ( ) Sales and Marketing ( ) HR ( ) Administrative/Logistics ( )
   Management/Executive ( ) Finance ( ) Planning/Production ( ) Research and Development ( )
   Others ( )

7) Years of Service in Nestle Nigeria Plc
   5 years and Below ( ) 6-10 Years ( ) 11-15 Years ( ) 16-20 Years ( ) 20 Years and Above ( )

8) Job Title
   Lower Level Management ( ) Middle Level Management ( ) Top Level Management ( ) Others ( )

Section B

BUSINESS INTELLIGENCE AND VALUE CREATION

<table>
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<tr>
<th>S/N</th>
<th>Organizational Value Creation (Dependent Variables)</th>
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<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>1</td>
<td>There is significant relationship between BI and organisational value creation</td>
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<tr>
<td>2</td>
<td>BI has increased employee productivity in my organization</td>
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<tr>
<td>3</td>
<td>The internal processes in my organization are efficient in terms of time and cost</td>
<td></td>
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<tr>
<td>4</td>
<td>BI has helped your organisation in all facet of its operations</td>
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<tr>
<td>5</td>
<td>BI in your Organisation helps in value creation</td>
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Statement on Business Intelligence Process

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<tbody>
<tr>
<td>1</td>
<td>BI systems in your organisation has been modified to fit into its business environment</td>
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<tr>
<td>2</td>
<td>BI process has improved performance in your organization</td>
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</table>
3. Your organization invests considerable resources in improving production/service processes

4. The Business Intelligence system implemented in your organisation gives relevant information

5. Your organization provides unique products/services that gives it competitive edge

### Statement on Business Intelligence Technology

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<tbody>
<tr>
<td>1</td>
<td>There is adequacy of BI technology in my workplace</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>2</td>
<td>We find it very easy to work with BI in my organization</td>
<td></td>
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<tr>
<td>3</td>
<td>BI technology aids production in my organisation</td>
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<tr>
<td>4</td>
<td>Business intelligence technology has boost supply of my organization’s products</td>
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<tr>
<td>5</td>
<td>Business intelligence expands services for existing clients</td>
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### Statement on Business Intelligence Products

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<tbody>
<tr>
<td>1</td>
<td>The people have access to primary business intelligence products in my organization</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>My organization has strong and adequate business intelligence products</td>
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<td>3</td>
<td>My organization frequently refines the provision of existing products/services</td>
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<td>4</td>
<td>My organization regularly implements small adaptations to existing products/services</td>
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<td>5</td>
<td>My organization is constantly developing new products/services</td>
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### Statement on Business Intelligence Team

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<tbody>
<tr>
<td>1</td>
<td>The BI team maintains the system in a satisfactory way</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>2</td>
<td>The BI team has business understanding compatible with business requirements</td>
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<td>3</td>
<td>The team’s capabilities are compatible with organizational characteristics</td>
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<td>4</td>
<td>Team managers and executives agree on the nature and role of the BI system in place</td>
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<td>5</td>
<td>The team has the ability to redesign and develop new systems</td>
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### Statement on Business Intelligence and its Impact

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<tbody>
<tr>
<td>1</td>
<td>Value creation is present in your organisation from the implementation of BI systems</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>2</td>
<td>The level of creativity in Nestle Nigeria Plc is relative to BI Systems Implementation</td>
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<td>3</td>
<td>Business Intelligence has had impact on staff training and development in your organisation</td>
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<td>29</td>
<td>The current implementation of BI has brought about organisational value creation in Nestle Nigeria Plc</td>
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<td>30</td>
<td>How has Business Intelligence influenced value creation in your organisation</td>
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Where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree
Appendix B - Respondents Demographic

2. Age?
132 responses

- 30 Years and Below: 32 (24.2%)
- 31-40 Years: 54 (40.9%)
- 41-50 Years: 35 (26.5%)
- 51 Years and Above: 11 (8.3%)

3. Gender
133 responses

- Male: 67 (50.4%)
- Female: 66 (49.6%)

4. Education
133 responses

- B.Sc: 52 (39.1%)
- Masters: 44 (33.1%)
- Higher Diploma: 14 (10.5%)
- PhD: 5 (3.8%)
- Others: 19 (14.3%)
5. Marital Status
133 responses

- Single: 49 (36.8%)
- Married: 63 (47.4%)
- Widowed: 5 (3.8%)
- Divorced: 4 (3%)
- Others: 12 (9%)

6. What Department/Office
133 responses

- Information Technology: 12 (9%)
- Engineering: 10 (7.5%)
- Operations: 24 (18%)
- Sales and Marketing: 17 (12.8%)
- Human Resources: 8 (6%)
- Administrative/Logistics: 17 (12.8%)
- Management/Executive: 12 (9%)
- Finance: 17 (12.8%)
- Planning/Production: 4 (3%)
- Research & Development: 9 (8.8%)
- Others: 5 (3.8%)

7. Years of Service in Nestle Nigeria Plc
133 responses

- 5 Years and Below: 49 (36.8%)
- 6-10 Years: 30 (22.6%)
- 11-15 Years: 6 (4.5%)
- 16-20 Years: 2 (1.5%)
- 20 Years and Above: Count: 49
Appendix C: Organisational Value Creation (Dependent Variables)

1. There is significant relationship between Business Intelligence and organisational value creation

2. Business Intelligence has increased employee productivity in my organisation
3. The internal processes in my organisation are efficient in terms of time and cost
133 responses

4. Business Intelligence has helped your organisation in all facet of its operations
133 responses

5. Business intelligence system in your Organisation helps in value creation
133 responses
Appendix D – Statement of Business Intelligence Process

1. Business Intelligence system is modified to fit into your organisation's business environment
   133 responses

2. Business Intelligence process has improved performance in your organisation
   133 responses

3. Your organisation invests considerable resources in improving production/service processes
   133 responses
4. The Business Intelligence system implemented in your organisation gives relevant information

133 responses

5. Your organisation provides unique products/services that gives it competitive edge

133 responses

Appendix E – Statement of Business Intelligence Technology

1. There is adequacy of Business Intelligence in my workplace

133 responses
2. We find it very easy to work with Business Intelligence in my organisation
133 responses

3. Business Intelligence technology aids production of my organisation
133 responses

4. Business Intelligence technology has boost supply of my organisation products
133 responses
5. Business Intelligence expands services for existing clients

Appendix F – Statement of Business Intelligence Products

1. The people have access to primary business intelligence products in my organisation

2. My organisation has strong and adequate business intelligence products
3. My organisation frequently refines the provision of existing products/services
133 responses

4. My organisation regularly implements small adaptations to existing products/services
133 responses

5. My organisation is constantly developing new products/services
133 responses
Appendix G – Statement of Business Intelligence Team

1. The team maintains the system in a satisfactory way

2. The team has business understanding compatible with business requirements

3. The team's capabilities are compatible with organisational characteristics
4. Team managers and executives agree on the nature and role of the system in place

133 responses

5. The team has the ability to redesign and develop new systems

133 responses
Appendix H: INFORMATION SHEET FOR PARTICIPANTS

PROJECT TITLE
Impact of Business Intelligence on Organisational Value Creation: A Case Study of Nestle Nigeria Plc

You are being asked to take part in a research study on Impact of Business Intelligence on Organisational Value Creation.

The objective of this research is to investigate the extent to which Business Intelligence systems impacts on organisational value creation. The research aims to measure the impact of Business Intelligence in Nestle Nigeria Plc and how it can be improved.

My name is Rahmat Yetunde Hamza, an MBA postgraduate student of Dublin Business School carrying out this research which is supervised by Lynn Monaghan. This project has been approved by the Research Ethics Committee of Dublin Business School.

TIME COMMITMENT
The questionnaire is estimated to take five (5) minutes which could be taken at a stretch or broken down in two sessions depending on which are suitable to you.

PARTICIPANTS’ RIGHTS
You may decide to stop being a part of the research study at any time without explanation. You have the right to ask that any data you have supplied to that point be withdrawn or destroyed.

You have the right to omit or refuse to answer or respond to any question that is asked of you.

You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study’s outcome. A full debriefing will be given after the study).

If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins.

CONFIDENTIALITY/ANONYMITY
All the answers will be treated with the strictest confidentiality and are anonymous. This data will be used only for the purpose of meeting the master’s degree requirements. All the data collected will be safely uploaded to the online drive of the researcher and will not be disclosed to any third person.

FOR FURTHER INFORMATION
I or my Supervisor; will be glad to answer your questions about this study. Please pass any queries to me to 10375300@mydbs.ie and I will answer them or pass them to my supervisor.

By continuing with this survey signing below, you are agreeing that:
(1) you have read and understood the Participant Information Sheet,
(2) questions about your participation in this study have been answered satisfactorily, (3) you are aware of the potential risks (if any), and (4) you are taking part in this research study voluntarily (without coercion)

Participant’s Identification

Rahmat Yetunde Hamza
30/11/2018
Appendix I

Meetings with Supervisor

The meetings with the supervisor was conducted face to face, via phone and emails. These meetings helped shape the theme of my work in its planning and preparation. The following were discussed during our meetings

1) Due completion of Gantt chart towards the successful completion of the dissertation.

2) Finalised the choice of organisation for case study

3) Research aim, objectives and questions were discussed and finalised

4) Construction and finalisation of survey questionnaires

5) Understanding the requirement for participants in the organisation relating to confidentiality and anonymity.

6) Finalised the work with regards to all that is needed to be done and also the other documents meant for submission along with the dissertation.

The outcome of the meetings with my supervisor by way of suggestions, feedback and words of encouragement helped the researcher to finalise the structure of the study, choice of methodology, provision of answers to research questions in accordance with the research aims and objectives through to the completion of the dissertation.
Appendix J: Gantt Chart