THE ROLE OF DATA MINING IN ECONOMIC TRANSFORMATION OF NIGERIA

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Abstract

This study investigated the role of data mining in the economic transformation of Nigeria. This study was guided by the following objectives: to examine the role of data mining in the economic transformation of Nigeria, to identify the approaches to reliable data mining for the purpose of socioeconomic development, and to identify factors that influence the rapid socioeconomic transformation of Nigeria. The population of the study consists of MTN Nigeria employees. The random sampling technique was used to select one hundred (100) participants, comprising MTN staff from various departments. The instrument for data collection was a structured questionnaire. Three (3) research questions were raised, answered, and analysed by using the percentage square statistical tool at the 5% level of significance and chi-square. The study employed the descriptive and explanatory design; secondary means were applied in order to collect data. Primary and secondary data sources were used, and the data was analyzed. The study findings revealed that data mining significantly impacts the performance of economic transformation in Nigeria. Data mining can play a pivotal role in the economic transformation of Nigeria by helping to identify trends, patterns, and opportunities within vast amounts of data. It can assist policymakers in making informed decisions, improve resource allocation, enhance market efficiency, and drive innovation. Additionally, data mining can enable better monitoring and evaluation of economic policies and initiatives, leading to more effective interventions and sustainable development.

Keywords: *Data, Data mining, Pattern recognition,*

Introduction

Rapid economic development and social well-being constitute the transformation imperative of developing countries of the world and indeed remain the normative goal of the international community (Ehi, 2009). This involves the attainment of sufficient levels of economic growth to allow for a progressive improvement in the material standard of living of the populace. However, for Nigeria and most African countries, the economies are in an abysmal state. The

worsening economic conditions have been generating a mix of domestic, social, and political tension. We have had series of development plans in Nigeria. Nigeria is permanently hunted by the spectrum of development. Its fifty-three years of independence actually are rolling by daily in search of development. The myth of growth and development is so entrenched that the country's history passes for the history of development strategies and growth models from colonial times up to date. No term has been in constant flux as development. This seems the only country where virtually all notions and models of development have been experimented (Aremu, 2003).

Data mining is the process of sorting through large data sets to identify patterns and relationships that can help solve business problems through data analysis. Data mining techniques and tools enable enterprises to predict future trends and make more informed business decisions. Telecommunication networks are extremely complex configurations of equipment, comprised of thousands of interconnected components. Each network element is capable of generating error and status messages, which leads to a tremendous amount of network data. This data must be stored and analysed in order to support network management functions, such as fault isolation. This data will minimally include a time stamp, a string that uniquely identifies the hardware or software component generating the theme, and a code that explains why the message is being generated. For example, such a message might indicate that "controller 7 experienced a loss of power for 30 seconds starting at 10:03 pm on Monday, May 12."

Statement of the Problem

There has been no previous research on the role of data mining in the economic transformation of Nigeria, but data mining that already exists about the issues hindering development and attempts to address them is one of the most important aspects of planning a program or evaluation that can bring about the needed socioeconomic transformation in Nigeria. By putting together what's known about the issue and the history of the successes and failures of various approaches to it, the nation can build a program structure that includes new innovations and elements that have worked for others in similar situations. However, the researcher is examining the role of data mining in the economic transformation of Nigeria.

Hypothesis

The following hypothesis was tested in this study.

1. Increased utilisation of data mining techniques in Nigeria's economic sectors will lead to improved decision-making, resource allocation, and overall economic growth.
2. Implementing comprehensive data governance frameworks and investing in data infrastructure will enhance the reliability and effectiveness of data mining for socio-economic development in Nigeria.
3. Socio-economic factors such as urbanisation, technological advancement, and changes in governance structures are significant drivers of rapid social transformation in Nigeria.

METHODOLOGY

Population of the Study: The population for this study is employees of MTN Nigeria. The population figure for the study was 100 respondents, comprising MTN staff from various departments such as operations, finance, administration, etc.

Sample: Sampling for the study on the research study comprises of one hundred respondents that were randomly chosen across from the selected departments.

Research Instrument: The research instrument used in carrying out this study was a closed-ended questionnaire with two sections. Section A comprises the personal data of the respondents, which involves name, department, age, and sex. Section B deals with the questions on the research topic respondents in order to ensure a high degree of trust, which the respondents were asked to tick ().

Administration of the Instrument: The questionnaire was administered personally by the researcher while allowed to fill out and return the questionnaire immediately.

Method of Data Analysis: The data gathered from respondents were analysed using the chi-square statistical method formula and defined as its component.

$$\text{Chi – square } (X^2) = \frac{\sum(O - E)}{E}$$

Where O = Observed value sample

E = Expected value sample

∑ = Summation

Test of Hypotheses

Hypothesis I

The hypotheses formulated for this study were tested using chi-square analysis. The formula is:

Increased utilization of data mining techniques in Nigeria's economic sectors will lead to improved decision-making, resource allocation, and overall economic growth?

Level of significance: 0.05

Decision rule: reject the null hypothesis H_0 if the p value is less than the level of significance. Accept the null hypothesis if otherwise.

Table 1 Test Statistics

	Increased utilization of data mining techniques in Nigeria's economic sectors will lead to improved decision-making, resource allocation, and overall economic growth?
Chi-Square	105.520[a]
Df	3
Asymp. Sig.	**.000**

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

Conclusions based on decision rule: Since the p-value= 0.000 is less than the level of significance (0.05), we reject the null hypothesis and conclude that increased utilization of data mining techniques in Nigeria's economic sectors will lead to improved decision-making, resource allocation, and overall economic growth.

Hypothesis II

Implementing comprehensive data governance frameworks and investing in data infrastructure will enhance the reliability and effectiveness of data mining for socio-economic development in Nigeria?

Level of significance: 0.05

Decision rule: reject the null hypothesis H_i if the p value is less than the level of significance. Accept the null hypothesis if otherwise.

Table 2 Test Statistics

	Implementing comprehensive data governance frameworks and investing in data infrastructure will enhance the reliability and effectiveness of data mining for socio-economic development in Nigeria
Chi-Square	70.347[a]
Df	2
Asymp. Sig.	**.000**

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

Conclusions based on decision rule:
Since the p-value= 0.000 is less than the level of significance (0.05), we reject the null hypothesis and conclude that to implementing comprehensive data governance frameworks and investing in data infrastructure will enhance the reliability and effectiveness of data mining for socio-economic development in Nigeria.

Hypothesis III

Implementing comprehensive data governance frameworks and investing in data infrastructure will enhance the reliability and effectiveness of data mining for socio-economic development in Nigeria?

Level of significance: 0.05

Decision rule: reject the null hypothesis H_0 if the p value is less than the level of significance. Accept the null hypothesis if otherwise.

Conclusions based on decision rule:
Since the p-value = 0.000 is less than the level of significance (0.05), we reject the null hypothesis and conclude that implementing comprehensive data governance frameworks and investing in data infrastructure will enhance the reliability and effectiveness of data mining for socio-economic development in Nigeria.

Summary

This study investigated the role of data mining in the economic transformation of Nigeria. This study was guided by the following objectives; to examine the role of data mining in the economic transformation of Nigeria, to identify the approaches to reliable data mining for the purpose of socio-economic development, and to identify factors that influence rapid socio-economic transformation of Nigeria.

The population of the study consists of MTN Nigeria employees. The random sampling technique was used to select one hundred (100) participants, comprising MTN staff from various departments. The instrument used for data collection was a structured questionnaire. Three (3) research questions were raised, answered, and analysed by using a percentage-square statistical tool at 5% level of significance and chi-square. The study employed the descriptive and explanatory design; secondary means were applied in order to collect data. Primary and secondary data sources were used, and the data was analyzed. The study findings revealed that data mining significantly impacts the performance of economic transformation in Nigeria. Data mining can

Table 3 Test Statistics

	Implementing comprehensive data governance frameworks and investing in data infrastructure will enhance the reliability and effectiveness of data mining for socio-economic development in Nigeria
Chi-Square	85.347[a]
Df	3
Asymp. Sig.	**.000**

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

play a pivotal role in the economic transformation of Nigeria by helping to identify trends, patterns, and opportunities within vast amounts of data. It can assist policymakers in making informed decisions, improve resource allocation, enhance market efficiency, and drive innovation. Additionally, data mining can enable better monitoring and evaluation of economic policies and initiatives, leading to more effective interventions and sustainable development.

DISCUSSION OF FINDINGS

From the responses of the respondents, we found out that:

1. Data mining can be used as a tool for the rapid socio-economic transformation of Nigeria.
2. Data mining has a significant effect on the performance of organisations.
3. Data mining helps to solve future problems using previous experiences.
4. Data mining has increased overtime.
5. Lack of technology has a significant effect on the level of data mining and transformation.

CONCLUSION

Based on the findings of this work, and the result of data analysis, we therefore conclude that data mining can assist socio-economic transformation in Nigeria.

RECOMMENDATION

It will be a great benefit if the underlisted recommendations are given serious consideration.

1. There should be a good working mechanism in all organisations for effective storage of information for future purposes.
2. The federal government of Nigeria should encourage media and other individuals on the importance of relevant information.
3. There should also be a strong network process for receiving information across and outside the country.

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