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The papers should be the results of original research, theoretical and empirical approach under the form of research articles, case studies, and essays.

We welcome papers from professors, researchers and Ph.D. students from all over the world in the attempt of serving as a forum of discussion and a diverse knowledge hub for students and teachers.

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COVERAGE

The areas covered by *Annals of Spiru Haret University. Economic Series* include topics related to Economic Sciences, such as: marketing, management, finance, banking, accounting, audit, international economic relations, trade, business, tourism, administrative data processing, politic economy, commercial law, cybernetics, environmental economics, statistics, ethics in economics, insurance, advocacy & lobby, economic philosophy, econometrics etc.

Each issue has a specific topic that is a subtopic of major journal coverage.

FREQUENCY

The frequency of the journal *Annals of Spiru Haret University. Economic Series* is quarterly.

JOURNAL HISTORY

The journal *Annals of Spiru Haret University. Economic Series* was founded in 2000 at the initiative of two professors from Spiru Haret University: professor Ph.D. Gheorghe Zaman – also corresponding member of the Romanian Academy and professor Ph.D. Constantin Mecu – one of the University's founders and vice-rector.

Between 2004-2010, the journal is headed by professor Ph.D. Constantin Mecu, as editor-in-chief, and associate professor Ph.D. Aurelian A. Bondrea, as deputy editor, both of them vice-rectors of the university.

In 2011, associate professor Ph.D. Aurelian A. Bondrea, rector of the university, takes over the presidency as editor-in-chief and leads the journal until present.

The *Annals of Spiru Haret University. Economic Series* was issued annually, once a year, starting 2000, until 2009.

Since 2010, the *Annals* have a new format, with a four-annual issuance exclusively in English, with both redaction and review conditions comparable to the most rigorous international requirements.

In 2007, *Annals of Spiru Haret University. Economic Series* obtained the B+ quotation from The National Council of Research in Higher Education in Romania, becoming a publication of real scientific interest.

Starting 2009, the review is indexed in REPEC, SSRN and Google Scholar and beginning with 2016 our Journal is under a process of rebranding, the new team trying to rethink the journal indexing strategy in international databases, suggesting a greater external visibility.

Along the years, in the journal pages, the members of the teaching personnel – professors, associate professors, lecturers and teaching assistants – active in six economics faculties and distinct specialty departments, as well as in the Central Scientific Research Institute, functioning within Spiru Haret University, present the results of their scientific research. The journal also hosts many studies of professors, researchers or Ph.D. students from other universities and research institutes all over the world.

The subject of the publication firstly reflects the concern for the modernization of teaching economic science in University: marketing, management, finance, banking, accounting, audit, international economic relations, trade, business, tourism, administrative data processing, politic economy, commercial law, cybernetics, environmental economics, statistics, ethics in economics, insurance, advocacy & lobby, economic philosophy, econometrics etc.

In the published materials, there are analyzed theoretical and practical issues of edification and consolidation of the Romanian market economy, as well as the fundamental directions of the technical and scientific progress, the actual state and ways of its promotion in the Romanian economy, the issue of developing the new world economy, the directions of globalization and contemporaneous economic integration and Romania's participation to these processes. Also, there are hosted articles that refer to different aspects of economic phenomena from all over the world.

The editing team and the scientific advisors are Romanian intellectual personalities – members of the Academy, professors, and specialists in different fields of the practical economic and social activities. In scientific committee have been engaged as reviewers different professors and personalities in economic field coming from economics and academic institutions in our country, such as Academy of Economic Studies Bucharest, West University from Timisoara, The National Scientific Research Institute for Labour and Social Protection Bucharest, The Romanian Court of Auditors, The Body of Expert and Licensed Accountants of Romania – CECCAR, Institute of National Economy and The Economic and Legal Sciences Department from Romanian Academy, etc. Among them, we also find members of the academia, professors and researchers from other countries of the world: Australia, Azerbaijan, Bosnia & Herzegovina, Bulgaria, France, Germany, Greece, Iceland, India, Indonesia, Italy, Lithuania, North Ireland, Norway, Poland, Republic of Macedonia, Republic of Serbia, Russia, Slovenia, The Netherlands, Turkey, Ukraine, United Kingdom, etc.

As a response to the public interest, the publication is sent to the libraries in Bucharest and Romania, as well as to other universities and economic faculties abroad.

For the journal's cover we used photos from the following sites:
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TABLE OF CONTENTS

Academia Papers

TABLE DES MATIÈRES

FOREWORD

A global economic recovery is easy to see, according to *OECD Economic Outlook Reports*. Activity in many sectors has declined and partially adapted to pandemic restrictions. The launch of vaccines is booming, and government stimulus, especially in the United States, is likely to give a major boost to economic activity. Nevertheless, the prospects for sustainable growth vary widely between countries and sectors. Faster and more efficient implementation of vaccination worldwide is essential at the moment.

The outlook has improved in the last months of 2021, with signs of a return to trade in goods and industrial production becoming clear by the end of 2020. Overall GDP growth is now estimated at 5.6% this year, experiencing an upward revision of more than 1 percentage point compared to December 2020.

The *OECD's Economic Outlook* for the end of 2020 predicts that world production is expected to reach pre-pandemic levels by mid-2021, but much will depend on the race between vaccines and emerging variants of the virus.

The global launch of vaccines remains uneven, with restrictions remaining in some countries and sectors. The global economic growth outlook would improve (positive scenario of the *OECD Economic Outlook*) if dose production and distribution were to accelerate and be better coordinated worldwide, before new mutations in the virus occur. This would allow faster relaxation of isolation measures and increasing global production. But consumer spending and business confidence would be affected (negative scenario of the *OECD Economic Outlook*) if vaccination programs are not fast enough to reduce infection rates or if new virus variants become more widespread and require changes to current vaccines.

COVID-19 puts the global economy in a very serious situation, according to the *World Economic Forum*. Many countries are heading for a very sudden and unprecedented recession, announced at the *DAVOS Forum* in January 2021, entitled *"THE GREAT RESET"*. This crisis will catalyse some huge changes. Few industries will avoid reforming, restructuring or eliminating. Agility, scalability and automation will be the key words for this new business era, and those with these capabilities will soon be the winners.

Thanks to government incentive packages, liquidity returns to the market. It will keep the economy at modest standards so that it can get out of the recession quickly once the various lockdowns are lifted.

COVID-19 will force a renaissance of many industries, re-evaluating and re-imagining modes of consumption, supply, interaction and productivity.

For example, the transition from cash to digital payments is clearly accelerating. A number of 31 countries have raised contactless payment limits this year to support social distancing measures. In the UK, ATM use has already fallen by between 6% and 14% a year, but has now fallen by more than half.

At work, as people struggle to work and socialize remotely, niche tools such as *Zoom, Slack, Microsoft's Teams* and even the *Houseparty* app suddenly support millions of personal and corporate interactions every minute.

Those companies that have designed their solutions to use the full potential of cloud computing will not close under the pressure of the pandemic. For example, the cloud gives companies easy access to digital payment methods. It has allowed companies to continue working, providing fast and secure access to business applications to their employees working from home. However, the cloud also offers financial flexibility, allowing those who see a slowdown to reduce the technological costs of business lines facing such challenges.

In the meantime, supply chains need to be reconfigured in real time. As the demand for personal protective equipment (PPE), ventilators and certain medication spikes, manufacturers need to reorganize and reinvent themselves. For example, *Royal Mint* has expanded its business to produce medical visors, while *Dyson* and many other manufacturers now also produce ventilators or PPE.

As large retailers struggle to manage the queues of disgruntled customers, smart local restaurants have quickly turned into retailers – redistributing restaurant supply chains to end consumers.

This combination of scalable and agile capabilities is what will define the short- and medium-term success of companies, whether large or small. But in the long run, change will have to be more fundamental. Resilience, combined with agility, must be the new goal of business leaders as we all emerge from this crisis.

To create long-term resilience, companies will need to introduce robotic automation and artificial intelligence (*AI*) into their supply chains. These technologies reduce manual interventions and transfers, reducing the risk of transmission and reducing the dependence of people to work face to face. They can also allow production to expand or shrink in response to a sudden demand.

Indeed, government interventions have unintentionally accelerated this trend. The fiscal incentives of many countries amount to the largest experiment ever conducted on universal basic income (*UBI*). *UBI* is considered by many to be a prerequisite for a successful *AI*-based economy, allowing companies to potentially replace people without affecting their well-being.

It is clear that this crisis will eliminate a lot of outdated practices. We will always want to travel, eat out, have fun and have personal experiences. However, none of these activities will remain unchanged. We will emerge from this period stronger, wiser and more connected to global society. Resilience will be at the forefront of every strategy, but agility will ensure competitiveness and the ability to respond to unexpected events. To achieve this, companies will need to re-evaluate where they need to be strong and where they need to be flexible.

In the current context, the authors found forums for discussions and debates and have written articles for the current issue trying, as far as possible, to look at some solutions for the current problems facing the new world state of economy. Whether or not they succeeded in responding to the challenges, we leave it to you to decide.

The first paper of this issue, written by *Ovidiu Mihai VASUT* and *Ioana Cristina SECHEL*, is entitled ***Analysing the Impact of Establishing a Central Counterparty on the Romanian Capital Market.*** Through this article, the authors' aim is to analyse the impact of setting up a central counterparty (CCP) on the Romanian capital market. At the same time, the current stage of the steps initiated by the authorities in the field for the establishment of the central counterparty will be addressed. The study is based both on theoretical elements from the international bibliography and on a series of reports prepared by various institutions in the field of capital market. The objectives pursued through this article are to highlight both the positive factors that can bring the value of financial activity on the Romanian capital market and to raise awareness of the risks to which the economic ecosystem is exposed by developing a central counterparty and integrating it into the Romanian financial market. At the same time, aspects regarding the role of the central counterparty in the economy as well as the advantages and disadvantages of setting up a CCP in Romania were addressed.

In the second paper, called ***Cost Minimization Is Essential for the Sustainable Development of an Industry: A Mathematical Economic Model Approach***, the authors *Lia ROY, Rashed MOLLA* and *Haradhan Kumar MOHAJAN* are telling us about the method of Lagrange multiplier which is a very useful and powerful technique in multivariable calculus. In this study, interpretation of Lagrange

multiplier is given with satisfactory mathematical calculations and shows that its value is positive. For the sustainable development of an industry, cost minimization policy is crucial. In any industry, the main objective is to minimize production cost for maximizing its profit. By considering Lagrange multiplier technique application, an attempt has been taken here in cost minimization problem subject to production function as an output constraint. To predict future performance of an industry, mathematical calculations are necessary and all the procedures are given in this paper with detail mathematical procedures. In this study, an attempt has been taken to minimize cost by considering three variables capital, labour, and other inputs of an industry by the application of economic models subject to a budget constraint, using Lagrange multiplier technique, as well as using necessary and sufficient conditions for minimum value.

The study ***Corporate Social Responsibility and Firm Financial Performance in Nigeria: Mediating on Ethical Responsibility***, written by *Oladipo Niyi OLANIYAN, Alani Olusegun EFUNTADE* and *Olubunmi Omotayo EFUNTADE* examined the impact of corporate social responsibility on financial performance in Nigeria. The purpose of the study was to mediate the role of ethical social responsibility and its impact on the financial performance of the Nigerian manufacturing company. This study is predicated on the stakeholder theory, managerial theory, utilitarian theory and rational theory. Primary data sources were explored in presenting the facts of the situation. This paper investigates how the relationship between corporate social responsibility and employee performance affects the financial performance of manufacturing firms. The upshots of the analysis, using structural equation modelling on 150 completed questionnaires sent to the manufacturing companies in Nigeria, suggests that ethical social responsibility is significantly associated with the incorporation of corporate social responsibility through employee performance, which in turn has a significant and positive impact on financial performance. The results contribute to previous studies that have found reliable results on the direct association between ethical social responsibility and financial performance by demonstrating that employee performance acts as a mediator in the relationship between ethical social liabilities together and the financial performance of the corporation. Managers can strengthen their stakeholder relations and ultimately improve their financial performance if ethical social responsibility to stakeholders is integrated into business routines.

In the paper called ***Compensation Management and Employees' Job Satisfaction Among Staff of Central Bank of Nigeria, Lagos***, authors, *Isiaka K.*

EGBEWOLE, Lateef Damilare OLUSESI and *Abdulmaleek O. ABDULAZEEZ,* investigated the compensation management and employees' job satisfaction among staff of the Central Bank of Nigeria, Lagos; it further examined the effect of wages and salaries on the bank's staff job satisfaction. These were with a view to providing information on the impact of compensation on their job satisfaction. The research design adopted for this study was a descriptive survey. The study population, 140, was randomly selected using Taro Yamane formula. The questionnaire was used to gather relevant data. The collected data was analyzed using regression analysis. The results showed that value of R square 53.4% of the variation in the dependent variable (wages and salaries) is explained by the independent variable (employees' job satisfaction). The model is highly significant at $F = 156.832$, $p = 0.000$, which shows that it can be used to predict the outcome variable. The value of coefficient ($\beta = 0.140$) is significant and positive, showing that wages and salaries lead to increase in employees' job satisfaction. The results also showed that value of R square – 75.3% of the variation in the dependent variable (direct and indirect) – is explained by the independent variable (employees' job satisfaction). The model is highly significant at $F = 417.091$, $p = 0.000$, which indicates that it can be used to predict the outcome variable. The value of coefficient ($\beta = 0.868$) is significant and positive. The results of this study indicate a link between total compensation management and employees' job satisfaction. The study concluded that awareness of the total compensation package of employees would help management to ensure that they create avenues for the employees to get abreast with the policies and compensation packages.

The objective of the study, ***Board Members' Education Diversity and Sustainability Reporting***, written by *Nusirat Ojuolape GOLD*, *Hope Osayantin AIFUWA, Muhammed Kamaldeen USMAN, Muhammed Lawal SUBAIR, Albert OSAZEVBARU* and *Betsy Moroyin OLOYEDE,* is to investigate the influence of an educationally diverse board on sustainability reporting of listed consumer goods in Nigeria for the period 2014-2019. The authors developed a sustainability disclosure index using the Global Reporting Initiative (GRI) guidelines to score the information content of annual reports relating to sustainability performance. Board members' education level and background were used to proxy education diversity in the boardroom. The authors employed descriptive and inferential statistics to summarize the data and to draw an inference on the population studied. Results from the panel least squares regression revealed that board educational background diversity positively and significantly affects the sustainability reporting of consumer goods
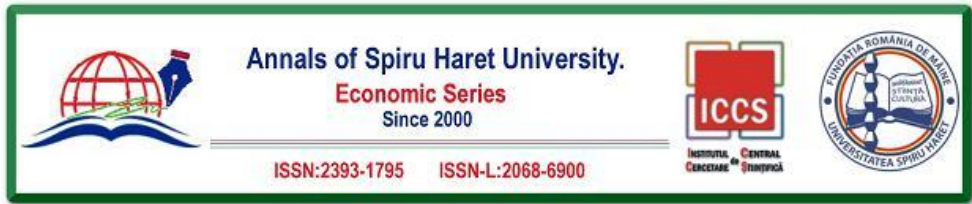
firms in Nigeria. However, the authors found no evidence on the nexus between diversity in the level of education of board members and sustainability reporting. The study concluded that board education diversity influences sustainability reporting in Nigeria. Consumer goods firms should frequently conduct workshops and symposiums on environmental and social reporting issues for their board members and employ directors from a diverse educational background into the board.

Zacchaeus O. OLONADE, Adetoun Ramat BALOGUN, Olawale AKINRINDE and *Oluwatobi O. OMOTOYE*, in their paper called ***Nexus between Emotional Intelligence and Work Outcomes in Osun State University, Osogbo,*** are telling us that the paper outcomes dimensions are job performance and deviant work behaviour. The study investigates the nexus between emotional intelligence and work outcomes among senior staff in Osun State University. The study adopted a correlational design. The objective of the study is to examine the relationship between emotional intelligence and work outcomes (job performance and deviant work behaviour). Primary data were used and data were collected using structured questionnaire having three scales including personal data. 148 responses were obtained through Taro Yamane formula. Senior staff of Osun State University was randomly selected across Okuku and Osogbo campuses that were used for the study. Two hypotheses were tested and revealed that there was a significant and positive relationship between emotional intelligence and job performance at $p<.01$, and also there was a significant and positive relationship between emotional intelligence and deviant work behaviour at $p<.01$. The study recommended that the institution should include some programs in order to enhance emotional intelligence based on their job satisfaction, job performance, and employee work outcome.

The article ***The Climax of Globalisation***, written by Dr. *Vasile GOIAN* summarizes the benefits and shortcomings of globalization. Although so far this socio-economic system has had a generally upward trajectory, it can lead to entropy and the events that began in 2019 in Wuhan reinforce this assumption. Is it natural to wonder what we are heading for in the future. As a possible solution, in this article, the author suggests embracing the uncreated energies, which are diverse and unlimited, and the liturgical singing of the Orthodox Christian Church as an easy and efficient way to connect to these energies.

The authors *Ogah Godfrey OCHE, Olumide OMODUNBI* and *John ISAAC* are proposing us a very interesting paper entitled ***Herdsmen Invasion: A Threat to Food and State Security in Nigeria.*** The connection between state security, herdsmen invasion and food security is dynamic and has become a thorny issue in

the preservation of the corporate existence of Nigerian state. The friction between herdsmen, ethnic groups and socio-economic relationship has generated an obvious animosity, prejudices and violent conflict. Perceived conflict between farmers and herdsmen has in many times worsened the state security scenario that directly hampered food security. This paper examines the incidence of herdsmen invasion and its implication on food and state security in Nigeria putting into consideration the states that are vulnerable to the incessant attack. This investigation was largely anchored on the structural functional theory to further explain the phenomenon of herdsmen and farmers conflict owing to the fact that the society is structured with interrelated parts designed to meet social needs of every individual, thus farmers provide food for the sustenance of state and herdsmen equally served as a potential provider of food supplement (Meat). To complement the effort of farmers, government with its policy acts as a moderator to ensure that violence and friction, which can escalate to pose a threat to the security of the state, is curtailed. The paper suggests ways to ameliorate the incidence of the activities of herdsmen, which threatened food and state security.

The last paper of the present issue is called *Stopping African Migration into Europe: A Possibility or a Hoax* and is written by *Adekola ADEAGBO* and *Olumide OMODUNBI*. In August 2018, the German Chancellor Angela Merkel embarked on a trip to three African countries (Nigeria, Ghana and Senegal) to discuss economic ties and partnership with the main aim to limit, if not stop the over-whelming migration of citizens from Africa. The trip has raised some hopes, as well as question towards what it seeks to achieve and this paper tries to investigate the prospects using historical and theoretical approaches to understand why people migrate and as well the hold of government on its people if at all such partnership will yield positive results. Using Maslow's hierarchy of needs and the social capital theory, this paper concludes that the journey through such partnership is a rough one if not a dead-end unless some structural changes are made in the process of governance in the aforementioned countries.

We hope that our journal issue caught your attention and made you read it. Also, we strongly believe that all the articles are interesting and deserve to be appropriated by those who are interested in understanding the specific issues of the global economy.

If you've liked our articles, please visit our website at **http://anale-economie.spiruharet.ro/**. If you want to write an article in our journal, we are waiting for you to expose your ideas in new studies published by us.
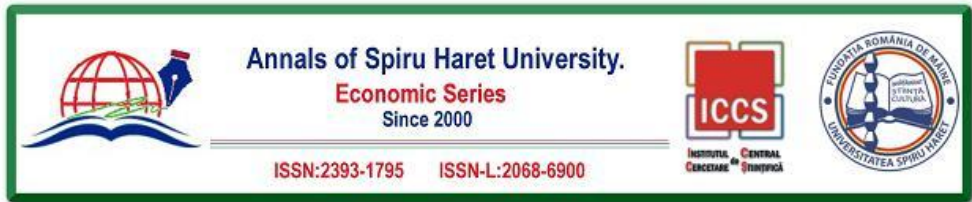
Issue 1/2021

Finally, hoping that you found interesting Issue no. 1/2021, I strongly invite you to address your comments and suggestions at *ashues@spiruharet.ro* and, of course, to submit your own paper via online submission system, using the following link: **http://anale.spiruharet.ro/index.php/economics/login**.

Research is the breath of the future. Let's shape the world together!

Associate Professor Elena GURGU, Ph.D. in Economics
ASHUES Deputy Chief Editor

ACADEMIA PAPERS

ANALYSING THE IMPACT OF ESTABLISHING A CENTRAL COUNTERPARTY ON THE ROMANIAN CAPITAL MARKET

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Abstract

Through this article, we aim to analyze the impact of setting up a central counterparty (CCP) on the Romanian capital market. At the same time, the current stage of the steps initiated by the authorities in the field for the establishment of the central counterparty will be addressed. The study is based both on theoretical elements from the international bibliography and on a series of reports prepared by various institutions in the field of capital market.

The objectives pursued through this article are to highlight both the positive factors that can bring the value of financial activity on the Romanian capital market and to raise awareness of the risks to which the economic ecosystem is exposed by developing a central counterparty and integrating it into the Romanian financial market. At the same time, aspects regarding the role of the central counterparty in the economy as well as the advantages and disadvantages of setting up a CCP in Romania were addressed.

Keywords: *capital market; stock market; central counterparty; economy; financial market.*

Introduction

The capital market plays a key role in a country's economy, both in terms of the possibility of financing the national economy and in terms of attracting investors to develop the economic environment. The central counterparty is an essential element in the operation and organization of the stock exchange, offering, on the one hand, a guarantee to the participants in the capital market from the perspective of completing the assumed transactions and, on the other hand, creating the operating framework of the derivatives market. The current article aims at the impact on the capital market in Romania by setting up a central counterparty to contribute to the development of the domestic stock market and, implicitly, of the national economy. The presence of a central counterparty on the Romanian capital market can have both positive and negative effects on the investment environment but also on the entire national economy.

The importance of a CCP derives, on the one hand, from the need of investors to diversify their portfolio and to be able to trade derivatives, and, on the other hand, from the need of the capital market to provide a higher degree of security to market participants, which generally have a higher appetite for risky transactions. The evolution of the international stock market environment has seen a sharp development in recent years, mainly due to globalization, the needs of investors and traded products being increasingly complex and at an increasingly high level. Considering the international context, as well as the need to develop the capital market in Romania, recently a series of steps have been initiated regarding the establishment of a CCP in Romania. Thus, it is very important to analyze the impact a central counterparty can have both on market participants and the overall national economic environment.

The approach of the proposed topic will aim at analyzing both the functioning of a CCP and the impact, role, risks and benefits involved in setting up a central counterparty in Romania. The approach to the subject will focus on issues reached in specialized works both in Romania and internationally, while highlighting the personal ideas and conclusions of the authors. The research process in the stock market, both at national and international level, is at an advanced stage, being a topical field and with a major impact on the entire national economy. However, the

issue of the impact of setting up a CCP in Romania is in a relatively early stage, largely due to the low level of development of the domestic capital market, compared to other capital markets in Europe, America or Asia. The transition from frontier to emerging market status was one of the key elements in the decision to set up a national CCP.

Literature review

The main role of the CCP is the clearing and settlement of financial transactions on the capital market, being used mainly on derivatives markets. [European Central Bank and Federal Reserve Bank, 2007] Due to the development of the international capital market, CCPs no longer serve only one country/market, but can operate in several markets simultaneously. The most recent topics addressed at international conferences on the role and importance of CCPs include: their efficiency and systemic importance, counterparty risk pooling, risk, operational, legal and liquidity management, costs and benefits of using CCPs, supervisory policies as well as the relationship between the central counterparties and the central banks of the states where they operate. [European Central Bank and Federal Reserve Bank, 2007] Internationally, analyzes of the role of CCPs in the economy place these institutions as being of strategic importance to the capital market and the financial system. Thus, from the perspective of the European Central Bank, central counterparties have a key role to play in the efficient allocation of credit risk and liquidity risk in financial markets. [European Central Bank, 2005] One of the risks to which CCPs are exposed is the inability to meet their clearing obligations in transactions carried out by some investors. If such a situation arises, the effects on the financial ecosystem and implicitly of the respective economy can be devastating, with the risk of financial crises.

At the international level, research in the field has revealed that a large number of CCPs operating in developed markets are directly connected to the economy, financial institutions and capital markets, offering a number of benefits to all market participants. On the other hand, their size and importance have led the financial authorities to consider them "too big to fail". [Wendt, 2015] This approach aims at an analysis of the risks to which central counterparties are exposed both from the perspective of the operation and establishment of guarantees and from the perspective of interdependence with the real economy, the business environment and relations with other central counterparties and financial markets. Another

Issue 1/2021

relevant issue, the subject of scientific research in the field, is the international approach of central counterparties as well as their relations from the perspective of international policies, in order to reduce the risk of failure and the spread of negative effects internationally. [Wendt, 2015] However, the most important work in the field aims to analyze from various perspectives the functioning and organization of CCPs, as well as the effects they have on financial markets. [Pirrong, 2011] Due to the phenomenon of globalization and, implicitly, the expansion of capital markets at the international level, the process of regulating the functioning of central counterparties worldwide is of interest, taking into account the contagion factor, the most relevant example being the propagation of the economic crisis since 2008. From a national perspective, the progress registered in the last years by the Romanian capital market has determined an increased interest for analyzing the impact that a possible central counterparty can have both on the financial market and on the national economy. The need to establish a CCP in Romania derives both from the need to develop a market for derivatives and from the need to connect to international trends, in order to attract foreign investors, in order to develop the Romanian stock market ecosystem. Research in the field is focused both on the elements of impact at the national level, in the case of setting up a CCP and in relation to the already existing and functional CCPs in the Central and Eastern European region, exemplary being the CCPs in Hungary and Poland. [Stanciu, 2019]

Presentation of the General Framework on the Romanian Capital Market

The need to establish a central counterparty on the Romanian capital market derives from the need to develop products offered for trading on the Bucharest Stock Exchange (BVB) as well as from the evolution of trends on international financial markets. Trading derivatives has become a significant part of financial markets ensuring a diversity of marketable securities as well as a high degree of liquidity. In the context in which the Romanian authorities intend to continue the process of developing the capital market and, implicitly, the domestic economic environment, it was found that, in order to attract new investors to the stock market, new marketable products are needed to cover the needs of investors. The decision to set up a central counterparty in Romania was based on its main role: the development of the derivatives market while managing the related credit risk, in order to increase investor confidence and the level of stability of derivatives

transactions. One of the effects of making a CCP operational is related to increasing market liquidity by increasing the number of transactions and the values traded. [Stanciu, 2019] Reducing the risks of participants in the derivatives market is one of the elements with a direct impact on investors and is one of the objectives of the CCP. [Finance Intelligence, 2020]

The Central Counterparty is a legal entity, established in the form of a joint stock company, issuing registered shares, which interposes itself between the counterparties to contracts traded on one or more financial markets, thus becoming a buyer for each seller and a seller for each buyer. [Legea nr. 5/2021] The CCP is an entity that facilitates the conduct of transactions by investors in derivative financial products in various capital markets. In general, CCPs are owned and used by market operators or central banks of the countries in which those transactions take place, through which efforts are made to create a stable and efficient capital market environment. The main functions of the CCP are to clear and settle financial transactions. In the first case, the CCP's role is to act as a buyer for the investor wishing to sell securities (or contracts) and similarly for the seller, the CCP having the role of buyer. In the second case, the role of the CCP is to ensure that both the buyer and the seller fulfil their contractual obligations, consisting in the collection of securities by the seller and the transfer of securities to the buyer. The most relevant example of the importance and role of a CCP in the capital market is in the case of derivative transactions, when the gap between the time of the start of the transaction and the time of its completion is of the order of months. Due to price developments over a longer period, unfavourable losses for one party may result in large losses which cannot be covered at the time of settlement by the party concerned. [Bursa de Valori București, 2020] This is when the central counterparty intervenes by paying the value of the transaction to the seller and closing the position, simultaneously with the recovery of price differences from the buyer. Through this mechanism, transactions in derivatives are not blocked and the contractual conditions are met. From the perspective of how to recover the differences from the buyer, it should be noted that each participant in the derivatives market is obliged to provide an initial guarantee in favour of CCP, while depositing a margin of the contract value at the time of initiating each transaction. The determination of the guarantee to be submitted as well as the value of the margin are calculated by the CCP, depending on the type of investor, the traded products as well as the value and maturity of the contracts. This reduces the

credit risk to which participants are exposed, while concluding transactions in a favourable manner. Thus, it can be stated that, in order to develop a functional derivatives market, it is necessary to set up and operate a central counterparty, which guarantees participants, completes transactions, establishes a sense of certainty in the market and reduces the risks to which investors are exposed.

Risks Related to the Operationalization of a CCP:

With the decision to implement a CCP and to determine how to organize and operate it, as well as the impact that a CCP may have on the investment ecosystem and the economy, it is necessary to analyze the risks to which the CCP is exposed. From this point of view, one of the CCP risk classifications concerns:

➢ Counterparty risk: it is represented by the inability of one of the contracting parties to fulfil its tasks on time. Whether it is the seller's inability to make the securities in question available to the buyer at maturity, or whether the buyer is unable to pay the value of the contract.

➢ Liquidity risk: manifests itself if one of the parties does not have at maturity the financial resources to pay the contractual obligations, which can affect the completion of transactions, or even create blockages in the market.

➢ Operational risk: it is closely related to the operation of the CCP. This risk may occur if the operating mechanisms of the CCP encounter difficulties in operation, resulting in a number of bottlenecks in the operation.

➢ Market risk: the increased volatility of a market in a certain period can generate major fluctuations in securities quotations, interest rates or exchange rates, which can cause in the short term a series of blockages in the clearing activity and settlement of transactions by the CCP.

➢ Settlement bank risk: the process of settlement of transactions by central counterparties is carried out through credit institutions, which in turn may encounter a number of problems in the conduct of business, which may have a major impact on the CCP.

➢ Legal risk: it can materialize in the context of some deficiencies of a legislative nature or in the context of the deficient application of the legal provisions regarding the functioning of the central counterparty.

The lack of a central counterparty on the Romanian capital market can have negative effects on the stock market environment, being identified a series of elements that can influence the stock market development process. Among the

most relevant in this regard are: the lack of a derivatives market, the inability to attract new investors to the market, the low level of values and volumes traded, a low level of liquidity and a low visibility of the Romanian stock market internationally. [Stanciu, 2019]

The central counterparty is a link between various institutions participating in the entire financial system, and can be considered as of systemic importance. In this context, the activity of the CCP is closely correlated with the systemic risk, through the functioning of the applied policies, the central counterparty can be a mitigating factor of the systemic risk, but also a generating one. [Pirrong, 2011]

How a CCP Works and Operates

The complexity of financial transactions and those on the capital market have generated the need to establish operating principles and specific procedures, on the basis of which the CCP should operate. Starting from the idea of the main purpose of a CCP, and that of reducing counterparty risk by ensuring that the participants in the transactions meet the contractual conditions, it is necessary for the CCP to be able to provide its own protection against possible negative elements that may influence its activity.

One of the main measures taken by a CCP is to ensure a number of safeguards in order to limit exposure to various risk categories. The correlation of the different investor trading contracts, based on the type of products, the associated risk and the maturity term, in order to complete the contracts is known in the specialized environment as "novation". [Pirrong, 2011]

The collateral margin requested by the CCP is another safeguard used to limit credit risk exposure. In the event of significant losses of one of the parties to the transaction, in particular in the case of derivatives, the margin deposited by the investor is used to cover the loss, thus reducing the risk that the transaction may not be completed. In this case, the role of the CCP shall be to determine the size of the margin as well as its use if at maturity the affected party does not have the capacity to meet its financial obligations. In order for the margin value to be discounted, the CCP shall permanently recalculate its value by "marking on the market", with the possibility of requesting additional margin, if it is found that the difference between the market value of the contract and that established in the contract is a significant one and exceeds the value originally established. The value of the margin is also determined according to the values traded by the parties, the volatility of the

contracts subject to transactions as well as the level of liquidity of the traded products. [Pirrong, 2011]

One of the safeguards used by the CCP is the insurance process. The CCP may require insurance to cover risks of failure or operations, in general, the role of insurer being held by other equity holders in the financial area, exemplified by the case of central banks. Given all the security measures that a CCP can apply, there are other elements that can be used by the CCP to ensure a high degree of protection against risks. The establishment of a mutual fund, in which all entities using the services of the CCP participate, is one of the best-known methods of insurance against risks. This mutual fund is permanently updated based on the values traded and the number of participants in derivative transactions. The higher the value of the transactions brokered by the CCP, the higher the value of the guarantees submitted by the participants in the fund, similar to the number of investors, who in the case of transactions through the CCP are obliged to set up guarantees, in addition to collateral margins. In this way, the risks are distributed fairly to all market participants, but such an initiative cannot eliminate the existing risks, but rather has the role of reallocating them.

The Benefits of Implementing a Central Counterparty in Romania

In view of the central counterparty's role of acting as a buyer for each seller and as a seller for each buyer, it ensures the completion of ongoing contracts in optimal conditions from both an operational and financial perspective. [Wendt, 2015] A functional CCP can contribute to the stability, efficiency, transparency and security of the entire financial ecosystem. In a market in which a central counterparty operates, market participants are no longer exposed to a multitude of open positions, but have as counterparty a single entity – CCP, regardless of the risk profile. A CCP provides increased liquidity in the capital market in terms of trading volumes and the fact that each buyer or seller benefits from a counterparty, provided that the transactions are completed in a fair manner. For example, the lack of a derivatives market in Romania limits stock market transactions and the level of market liquidity. The establishment of a CCP and the operationalization of the derivatives market will generate both an increase in the value of transactions and one of the volumes traded. Moreover, investors who until now traded derivative products on other markets will have the opportunity to use the derivative market in Romania. This aspect, cumulated with the attraction of foreign investors, can

generate an increase of investments on the domestic capital market, implicitly of the stock market capitalization. Directly, the development of the Romanian capital market also has effects on the development of the domestic business environment and implicitly of the national economy.

From the perspective of risks assimilated to securities transactions, the establishment and operationalization of a CCP can generate a reduction of specific risks by implementing security measures related to the CCP, improving risk management and filtering operations with a high degree of risk. Operational efficiency can make significant progress by reducing the number of contracts between participants (this is implemented through the CCP) and simplifying derivative trading processes. It is important to note that the establishment of a central counterparty generates direct benefits to the entire stock market ecosystem, both in terms of increasing market liquidity and the level of transparency. [Wendt, 2015] From the perspective of the opportunities offered to investors, they will be able to bet on decreasing the price of an asset (short operations), they will be able to implement various hedging strategies or carry out some arbitrage operations.

The Current Stage of the Process of Setting up a CCP in Romania

On November 4, 2019, the joint stock company CCP.RO BUCHAREST S.A. was established, with an initial share capital of 17 million Euros, which will be the basis of the new central counterparty in Romania. [Bursa de Valori București, 2020] The majority shareholder of CCP.RO BUCHAREST S.A. is the Bucharest Stock Exchange, with a holding of 59.52%, together with which they also subscribed to the Electricity and Natural Gas Market Operator "OPCOM" S.A. (OPCOM) with a holding of 19.06%, as well as other shareholders such as: Enel România S.A., Banca Transilvania S.A., Tinmar Energy S.A., Societatea de Investiții Financiare Banat-Crișana S.A., Societatea de Investiții Financiare Transilvania S.A., Societatea de Investiții Financiare Muntenia S.A. and SSIF BRK Financial Group S.A. [Bursa de Valori București, 2020]

The main characteristics of the future CCP should reflect its ability to ensure risk mitigation and transfer mechanisms in the markets served and to have the necessary infrastructure to relaunch and develop the Romanian derivatives market. Regarding the development of the derivatives market through CCP, the representatives of the Bucharest Stock Exchange consider that it should be operationalized gradually, the starting point being the spot market. One of the

Issue 1/2021

specific elements of the new central counterparty in Romania will be represented by its compensation attributions in the energy field as well. Thus, CCP will provide clearing services for forward contracts concluded on the Centralized Market of Bilateral Contracts – Continuous Negotiation Mechanism (PCCB-NC), market managed by OPCOM [OPCOM 2020].

In order for the project of establishment, authorization, implementation and operationalization of the new central counterparty in Romania to be successful, the representatives of CCP.RO BUCHAREST SA will benefit from the support of Cassa di Compensazione e Garanzia (CC&G), which will provide specific technological assistance to clearing services and risk management. [Economica Net, 2021] Given that CC&G is part of the London Stock Exchange (LSE) group, it is important that the entire process of developing and operationalizing the CCP be carried out to international standards, so that it can be accessible to foreign investors already familiar with the benefits of using a central counterparty. However, the process of operationalization and operation of the CCP needs to be supported by all market participants. The functioning framework of the CCP, both from a technical, human and regulatory perspective, should be correlated with functional examples of central counterparties in the European space, thus providing the possibility of offering quality services at a high standard. [Bursa de Valori București, 2020].

Conclusions

The establishment and operationalization of a central counterparty in Romania is necessary both from the perspective of capital market development and from the perspective of developing the portfolio of products available for trading and accessible to investors. The administration of the derivatives market by the new CCP will generate both a high level of traded values and volumes and an increase in the number of investors on the Romanian capital market.

The role of the CCP is essential both for the capital market and for the entire national economy. From a capital market perspective, it can provide stability to investors and effectively manage the risks associated with securities transactions, especially those with derivatives. On the other hand, regulators and institutions with responsibilities in the area of the financial market must also take into account the impact of the activity of the central counterparty on the entire national economic ecosystem, mainly on the systemic risks to which the CCP may be

exposed. It is recommended to implement, update and permanently correlate the activity of the central counterparty with Romaniațs financial and monetary policies, so that there is a permanent correlation between the capital market and the needs of the national economy. At the international level, it was possible to observe both the positive effects of CCP activity on the economic environment, but also the negative impact generated by the financial crises and amplified by the contagion factor, with effects on the entire global financial market. We can conclude that the establishment of a CCP in Romania will have effects not only on the capital market but also on the entire national economic environment.

Given that at the level of the Romanian capital market, the process of operationalization of the central counterparty is still ongoing, we consider it appropriate to continue research in this field, mainly in the context of the impact of the Coronavirus pandemic on the capital market and the entire economic environment. It is important to analyze the reactions of the investment environment in Romania and abroad after the operationalization of CCP.RO BUCHAREST S.A., considering the new status of the capital market in Romania, as well as the current pandemic context.

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Issue 1/2021

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COST MINIMIZATION IS ESSENTIAL FOR THE SUSTAINABLE DEVELOPMENT OF AN INDUSTRY: A MATHEMATICAL ECONOMIC MODEL APPROACH

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Abstract
The method of Lagrange multiplier is a very useful and powerful technique in multivariable calculus. In this study, interpretation of Lagrange multiplier is given with satisfactory mathematical calculations and shows that its value is positive. For the sustainable development of an industry, cost minimization policy is crucial. In any industry, the main objective is to minimize production cost for maximizing its profit. By considering Lagrange multiplier technique application an attempt has been taken here in cost minimization problem subject to production function as an output constraint. To predict future performance of an industry, mathematical calculations are necessary and all

the procedures are given in this paper with detail mathematical procedures. In this study, an attempt has been taken to minimize cost by considering three variables capital, labour, and other inputs of an industry by the application of economic models subject to a budget constraint, using Lagrange multiplier technique, as well as, using necessary and sufficient conditions for minimum value.

Keywords: *Lagrange multiplier; cost minimization; mathematical economical models; sustainability.*

JEL Classification: C02, C61, C62, C65, C67

1. **Introduction**

Mathematical modelling in economics is the application of mathematics to represent theories and analyze problems in economics. Formal economic modelling began in the 19th century with the use of differential calculus to represent and explain economic behaviour of optimization. [Samuelson, 1947; Herstein, 1953] At present, much of economic theory is presented in terms of mathematical economic models. [Carter, 2001] In this economic model, we have used simple mathematical programming, such as geometry, differential and integral calculus, matrix algebra, etc. The language of mathematics helps the economists to make specific, positive claims about controversial subjects that would be impossible without mathematics. [Chiang, 1984; Weintraub, 2008] Optimization problems run through modern economics, many with explicit economic constraints. In the society, consumers maximize their utility subject to their budget constraints and the firms and industries maximize their profits, subject to their production functions, input costs, and market demand. [Dixit, 1990]

The method of Lagrange multipliers is a very useful and powerful technique in multivariable calculus that accelerates the determination of necessary conditions. It is a device for transferring a constrained problem to a higher dimensional unconstrained problem. [Islam *et al.*, 2010a,b; Mohajan, 2017a]

In this study, we have considered cost minimization of a running industry by a Cobb-Douglas production function considering three variables capital, labour, and other inputs. We have also applied necessary and sufficient conditions to make the economic model for the cost minimization problem of an industry for its sustainable

development. We have also provided reasonable interpretation of the Lagrange multiplier in the context of cost minimization problem, besides using it as a device for transforming a constrained problem into a higher dimensional unconstrained problem. First, we have examined an example to show the cost minimization problem. Later we have considered "the implicit function theorem" which is important for solving a system of non-linear equations for the dependent variables and calculating partial derivatives of these variables with respect to the independent variables. [Moolio & Islam, 2008; Baxley & Moorhouse 1984; Mohajan, 2018b]

In this study, the calculations in every step are given more explicitly so that the novice or the economist not sufficiently familiar with advanced mathematical concepts and manipulations can follow the steps relatively easily. We have included five appendices for better understanding of the mathematical and economical concepts very clearly and precisely.

2. **Literature Review**

Mathematical optimization refers to the selection of a best element from some set of available alternatives. An optimization problem includes cost minimization, profit or revenue maximization, and utility maximization of a real function by using input values of the function and computing the corresponding values of the function. Optimization tries to find the best available element of some function and may use a variety of different computational optimization processes. [Schmedders, 2008]

John V. Baxley and John C. Moorhouse have considered implicit functions with assumed characteristic qualitative features and have provided illustration of an example by generating meaningful economic behaviour. According to them, at the beginning, functions are not explicitly given, but these have some assumed characteristic features, which are meaningful for and give insight into economic behaviour. Later, explicit functions are considered to clarify the characteristics. For example, a firm wishes to minimize the cost of producing a given output; one may want to know how changes in the input prices will affect the situation. So, the problem is not "find the minimum", but "assuming the minimum is obtained, and what consequences can be deduced". [Baxley & Moorhouse, 1984] Pahlaj Moolio and Jamal Nazrul Islam have examined the behaviour of a competitive firm by the optimization process if the cost of a particular input increases, the firm needs to consider decreasing level of that particular input; at the same time, there is no effect on the level of other inputs; also that when the demand of product increases,

the firm should consider increasing its level of capital, labour and other inputs. [Moolio & Islam, 2008]

Haradhan Kumar Mohajan has tried to optimize economic models subject to a budget constraint, using Lagrange multipliers technique, as well as using necessary and sufficient conditions for optimal value. He has used mathematical economic models to show the economic optimizations in some details. [Mohajan, 2017a] In their book, Haradhan Kumar Mohajan and his co-authors, have analyzed the optimization techniques and social welfare economics. Their work predicts the economic optimization techniques with sufficient mathematical analysis. They have considered theoretically a variation of the problem by assuming that a government agency has allocated an annual budget and is required to maximize and make available some sort of services to the community. They have tried to give aspects of economics and sociology with mathematical terms. [Mohajan *et al.*, 2013]

In a paper, Haradhan Kumar Mohajan and his co-authors indicate that optimal economic policies increase wealth, change performance of environment policy and enhance sustainable use of natural capital. They have confirmed that present and future production can be maximized if an industry can efficiently minimize its production cost. [Mohajan *et al.*, 2012] In another paper, Haradhan Kumar Mohajan has analyzed that sustainable economic development is an essential issue for the industrial organizations. The main objective of every industry is to follow the cost minimization policy for the sustainability of it. [Mohajan, 2015]

3. **Methodology of the Study**

The word 'research' is comprised of two syllables: *re-* and *search*. Here *re-* means again, and *search* is a verb meaning examining very carefully. Together they form a noun describing a careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles. [Grinnell, 1993] Research means a systematic investigation or activity to gain new knowledge of the already existing facts. Therefore, research is an essential and powerful tool in leading a researcher towards progress. [Pandey & Pandey, 2015] It emphasizes on creativity, which is carried in a systematic way to improve knowledge that consists of human knowledge, culture, and society. Research is needed to enhance our knowledge of what we already know; to extend our knowledge about aspects of the world of which we know either very little or nothing at all, and to enable us to better understand the world we live in. [OECD, 2002; Sekaran, 2000]

'Method' is a word coined of two Greek elements: *meth-* and *odos.* The *meth-* is an element meaning 'after', *odos* means 'way'. A method is, therefore, a following after the way that someone found to be effective in solving a problem, of reaching an objective, in getting a job done. Greek element *ology* means 'the study of'. [Leedy & Ormrod, 2001] Methodology is a system of explicit rules and procedure in which research is based and against which claims of knowledge are evaluated. [Ojo, 2003] Research methodology indicates the logic of development of the process used to generate theory that is procedural framework within which the research is conducted. [Remenyi *et al.*, 1998] Hence, research methodology is the systematic procedure adopted by researchers to solve a research problem that maps out the processes, approaches, techniques, research procedures, and instruments. It may be understood as a science of studying how research is done scientifically. [Kothari, 2008] In this study, we have used secondary data to enrich this paper. The secondary data have been collected from both published and unpublished data sources. The published data are collected from books of famous authors, websites, national and international journals, e-journals, various publications of international organizations, handbooks, theses, magazines, newspapers, various statistical reports, historical documents, information on internet, etc. [Mohajan, 2020]

The works of this paper is mathematical modelling in economics where we have discussed simple mathematical techniques of cost minimization. In this study, we have discussed the cost minimization policy by the method of Lagrange multiplier by considering three variables capital, labour, and other inputs of an industry. We have used necessary and sufficient conditions to make the economic model for the cost minimization problem of an industry for its sustainable development. We have tried our best to show the mathematical calculations in some detail. The reliability and validity are inevitable issue in any research. In this study, we have tried our best to maintain the reliability and validity throughout of the research. [Mohajan, 2017b, 2018a]

4. **Objective of the Study**

The main objective of this study is to apply the cost minimization techniques to a running industry for the welfare both of the industry and the society. Therefore, that sustainable development policy is essential for this industry. The other particular objectives are as follows:

• To provide a mathematical procedure to show the findings more accurately.

Issue 1/2021

- To discuss mathematical analysis of the model with interpretation of Lagrange multiplier.
- To give detail mathematical calculations with necessary and sufficient conditions for optimization.

5. Some Preliminary Concepts

Before going to the main study, we are interested to discuss some basic ideas related to the paper. Thus, those who are new in this field will capture the full concept efficiently.

5.1. *Sustainable Development*

A development is sustainable if the economic progress is widespread, productions in industries are tremendous, extreme poverty is eliminated, social trust is encouraged through policies that strengthen the community, and the environment is protected from human-induced degradation. [Welfare for the Future, 2002] According to the direct UK Government's website [Government Website UK, 2021] *Sustainable development means a better quality of life now and for generations to come. It means not using up resources faster than the planet can replenish, or re-stock influences decision making with organizations, and therefore can go towards forming principles and business 'values'.* In the eye of the ecologist [Kates *et al.*, 2005]. *Sustainable development is about maintaining a good quality of life for humanity by developing societal structures that recognize that humans are just one species living within and dependent on the environment. The focus is on preparing for a better future by recognizing humanity's dependence on nature.* Again, we can define sustainable development as follows [Arrow *et al.*, 2010; Dasgupta, 2010]: *Sustainable development is an economic program along which average well-being of present and future generations, taken together, do not decline over time.*

An economic development is sustainable if [Dasgupta & Mäler, 2001]:

$$\frac{dU}{dt} \geq 0 \tag{1}$$

where *U* is utility function. The inequality (1) offers greater flexibility in ethical reasoning. It permits initial sacrifices in the current standard of living, but requires

that no future generation should have to experience a decline in their standard of living. If we consider the utility be a function of consumption, *C* and labour, *L;* then we can write (1) as:

$$\frac{dU}{dt} = U_C \frac{dC}{dt} + U_L \frac{dL}{dt} \geq 0 \qquad (2)$$

An industry cannot be sustainable if it cannot apply efficient modern mathematical models and proper use of it resources. Every industry tries to minimize its all costs to increase profit for survival in the market, and for the welfare of the workers and the society. [Mohajan *et al.*, 2012]

5.2. *Sustainable Economy*
Sustainable economy is a socially and environmentally sustainable economic system operating with the purpose of facilitating a good life with dignity for all while respecting nature as an integral part of life. [Schildberg, 2014] In a sustainable and caring society, the economy should be perceived as an instrument for assuring the development of human capabilities and the expansion of real freedoms. [Dias, 2013] A sustainable industry can be developed by using cost minimizing techniques for the maximization of its profit by the proper use of its capital, manpower, and other resources. If an industry does not follow the sustainable economic policy, in near future it will collapse. In the study, we have only stressed on cost minimization strategy of the industry and have encouraged it to follow sustainable techniques for the welfare both of the industry and the society.

5.3. *Optimization Techniques*
Every industry's first aim is to optimize its costs (minimum), products and profits (maximum) in an efficient and satisfied way. Let us consider a function $f(\mathbf{x})$ of one variable $\mathbf{x}$, where $\mathbf{x} = (x_1, x_2, ..., x_n)$. For a function $f(x)$ to be optimum (maximum or minimum) $\frac{df}{dx} = f'(x) = 0$. If $\frac{d^2 f}{dx^2} < 0$ at $x = x_0$, the function is maximum at a point $x = x_0$, and if $\frac{d^2 f}{dx^2} > 0$ at $x = x_0$, the function is minimum

at a point $x = x_0$. If $f(x, y)$ be a function of two variables x and y, then for optimum, $\dfrac{\partial f}{\partial x}(i.e. f_x) = 0 = \dfrac{\partial f}{\partial y}(i.e., f_y)$, and $f_{xx}f_{yy} - f_{xy}^2 > 0$. If $f_{xx} > 0 \left(\text{and } f_{yy} > 0\right)$, then the function has a minimum point, if $f_{xx} < 0 \left(\text{and } f_{yy} < 0\right)$, then the function has a maximum point. For $f_{xx}f_{yy} - f_{xy}^2 < 0$, there is neither a maximum nor a minimum, but a saddle point. In all cases, the tangent plane at the extreme (maximum or minimum) or a saddle point to the surface $z = f(x, y)$ is parallel to the z-plane. [Mohajan, 2018b]

5.4. *Constant Returns to Scale*

Constant returns to scale (CRS) was explained by Erik Lindahl (1933). The word scale refers to the long-run situation where all inputs are changed in the same proportion. If we increase all factors (scale) in a given proportion and the output increases in the same proportion, returns to scale are said to be constant. Hence, CRS is a constant ratio between inputs and outputs. It occurs when increasing the number of inputs leads to an equivalent increase in the output. A plant with a CRS is equally efficient in producing small batches as it is in producing large batches. Let us consider a homogeneous production function $f(K, L)$ of degree 1, where K and L are factors of production capital and labour, respectively. Constant returns to scale indicates $f(aK, aL) = af(K, L)$, where constant $a \geq 0$. CRS exists if an industry increases all resources − labour, capital, and other inputs − by (say) 20%, and output also increases by 20%. For example, an industry employs 5,000 workers in factory to produce 1 million units of a product each year. CRS exists if the scale of operation expands to 10,000 workers in that factory and production increases to exactly 2 million units each year. [Mohajan, 2018b]

5.5. *Increasing Returns to Scale*

Increasing returns to scale (IRS) occurs when a firm increases its inputs, and a more than proportionate increase in production results. Mathematically, we can write, an industry has IRS if $f(aK, aL) > af(K, L)$, where constant $a \geq 0$. For

example, in a year an industry employs 1,000 workers, uses 100 machines, and produces 1 million products. In the next year, it employs 2,000 workers, uses 200 machines (inputs doubled), and produces 2.5 million products (output more than doubled). [Mohajan, 2018b]

5.6. *Decreasing Returns to Scale*

Decreasing returns to scale (DRS) happens when the firm's output rises proportionately less than its inputs rise. Mathematically, we can write, a firm has DRS if $f(aK, aL) < af(K, L)$, where constant $a \geq 0$. For example, in year one, an industry employs 2,000 workers, uses 100 machines, and produces 2 million products. In the next year, it employs 4,000 workers, uses 200 machines (inputs doubled), and produces 1.5 products million (output less than doubled). [Mohajan, 2018b]

5.7. *The Implicit Function Theorem*

Let us suppose $f(x_0, c_0) = 0$ and $\dfrac{\partial f(x_0, c_0)}{\partial x} \neq 0$. Then there exists a continuous implicit solution $x(c)$, where c is some parameter, with derivative, $\dfrac{\partial x(c)}{\partial x} = -\dfrac{f_c(x(c), c)}{f_x(x(c), c)}$ for c close to c_0 [Nicholson & Snyder, 2008; Mohajan *et al.*, 2013].

5.8. *Comparative Static Analysis*

In the society, the behaviour of the buyers and sellers often changes, which causes the shift of demand and supply curves to itself over time. In economics, it is important to analyze how these shifts affect equilibrium. Mathematically, we can write twelve partial derivatives as follows [Mohajan, 2017a]:

$$\begin{bmatrix} X_{P_1} & Y_{P_1} & L_{P_1} & \lambda_{P_1} \\ X_{P_2} & Y_{P_2} & L_{P_2} & \lambda_{P_2} \\ X_w & Y_w & L_w & \lambda_w \end{bmatrix} \tag{3}$$

Here X and Y are two commodities and L indicates total labors, and λ is Lagrange multiplier. Moreover, P_1 and P_1 are the prices of commodities X and Y respectively, and w is wage rate. The twelve partial derivatives in matrix (3) are called the *comparative statics* of the problem [Chiang 1984]. For example, if P be the price of a commodity Y, then $\dfrac{\partial Y}{\partial P} < 0$ indicates that if the price of commodity Y increases, the level of consumption of Y will decrease [Islam *et al.,* 2010a,b; Mohajan, 2018b].

5.9. *Shadow Price*
The shadow price of a commodity is defined as its social opportunity cost, i.e., the net loss (gain) associated with having 1 unit less (more) of it. For example, if $\dfrac{\partial C}{\partial Q} = \lambda$, then if the firm wants to increase (decrease) 1 unit of its production, it would cause total cost to increase (decrease) by approximately λ units. [Mohajan, 2018b]

5.10. *Price Vector and Budget Constraint*
Let P_1 be the cost of per kg of rice, and P_2 be the cost of per kg of wheat in dollar. We call $\mathbf{P} = (P_1, P_2)$ the price vector of possible bundles of rice and wheat. The total cost of the bundle x_1 and x_2 is $P_1 x_1 + P_2 x_2 = \mathbf{P.x}$. For bundle $\mathbf{x}$ with a price vector $\mathbf{P}$ let us consider one has maximum c amount of dollars to spend, then we can write $\mathbf{P.x} \leq c$; ($\mathbf{P.x}$ is the price of the bundle $\mathbf{x}$), which is referred to as budget constraint. [Mohajan, 2017b]

6. **Mathematical Discussion of the Model**
We consider that for the fixed price, an industry is under contract to produce and deliver quantity Q units of a commodity during a specified time, with the use of K quantity of capital, L quantity of labour, and R quantity of other inputs, into its production process. If the industry seeks to maximize its profit while meeting the terms of the contract, it's production policy can be characterized as a constrained cost minimization problem in which the firm chooses the least cost combination of three

factors K, L, and R to produce Q quantity of product. To reach its target the industry must minimize its cost function. [Moolio & Islam, 2008; Mohajan *et al.*, 2013]:

$$C(K, L, R) = rK + wL + \rho R \qquad (4)$$

subject to the constraint of production function:

$$Q = f(K, L, R) \qquad (5)$$

where r is rate of interest or services of capital per unit of capital K; w is the wage rate per unit of labour L; and ρ is the cost per unit of other inputs R; while f is a suitable production function. We assume that second order partial derivatives of the function f with respect to the independent variables (factors) K, L, and R exist. Now we apply Lagrange multiplier λ in (4) and (5) with the Lagrangian function U, in a four-dimensional unconstrained problem as follows [Moolio & Islam, 2008]:

$$U(K, L, R, \lambda) = C(K, L, R) + \lambda(Q - f(K, L, R)) \qquad (6)$$

We assume that the industry minimizes its cost, the optimal quantities K^*, L^*, R^*, λ^* of K, L, R, and λ that necessarily satisfy the first order conditions; which we obtained by partially differentiating of the Lagrangian function (6) with respect to four variables K, L, R, and λ; and setting them equal to zero

$$U_\lambda = Q - f(K, L, R) = 0 \qquad (7a)$$
$$U_K = C_K - \lambda f_K = 0 \qquad (7b)$$
$$U_L = C_L - \lambda f_L = 0 \qquad (7c)$$
$$U_R = C_R - \lambda f_R = 0 \qquad (7d)$$

where $C_K = \dfrac{\partial C}{\partial K}$, etc. are partial derivatives. From (7b-d) we get the Lagrange multiplier as

Issue 1/2021

$$\lambda = \frac{C_K}{f_K} = \frac{C_L}{f_L} = \frac{C_R}{f_R} \tag{8}$$

Considering the infinitesimal changes *dK*, *dL, dR* in *K*, *L*, *R* respectively, and the corresponding changes *dQ* and *dC* we get:

$$dC = C_K dK + C_L dL + C_R dR \tag{9}$$

$$dQ = f_K dK + f_L dL + f_R dR \tag{10}$$

Dividing (9) by (10) and using (8) we get:

$$\frac{dC}{dQ} = \frac{C_K dK + C_L dL + C_R dR}{f_K dK + f_L dL + f_R dR} = \lambda \tag{11}$$

Hence, the Lagrange multiplier can be interpreted as the marginal cost of production. It indicates that total cost will be increased from the production of an additional unit *Q*. [Mohajan *et al.*, 2013]

6.1. *Cobb-Douglass Production Function*
Let us consider the Cobb-Douglass production function *f* is given by [Humphery, 1997]:

$$Q = f(K, L, R) = AK^a L^b R^c \tag{12}$$

where *A* is the efficiency parameter reflecting the level of technology. Here *a*, *b*, and *c* are constants; *a* indicates the output of elasticity of capital measures the percentage change in *Q* for 1% change in *K* while *L* is held constant; *b* indicates the output of elasticity of labour, and *c* indicates the output of elasticity of other inputs in the production process, are exactly parallel to *a*. Now these three constants *a*, *b*, and *c* must satisfy the following three inequalities:

$$0 < a < 1, 0 < b < 1, \text{ and } 0 < c < 1 \tag{13}$$

A strict Cobb-Douglass production function, in which $a+b+c=1$ indicates constant returns to scale, $a+b+c<1$ indicates decreasing returns to scale, and $a+b+c>1$ indicates increasing returns to scale. A Cobb-Douglass production function is optimized subject to a budget constraint. [Mohajan, 2018b] Now using (4), (5), and (12) in (6) we get [Moolio & Islam, 2008]:

$$U\left(X,L,R,\lambda\right)=rK+wL+\rho R+\lambda\left(Q-AK^aL^bR^c\right) \tag{14}$$

Taking the partial differentiations in (14) for minimization, we get:

$$U_\lambda=Q-AK^aL^bR^c=0 \tag{15a}$$

$$U_K=r-a\lambda AK^{a-1}L^bR^c=0 \tag{15b}$$

$$U_L=w-b\lambda AK^aL^{b-1}R^c=0 \tag{15c}$$

$$U_R=\rho-c\lambda AK^aL^bR^{c-1}=0 \tag{15d}$$

From (15) we get:

$$K^aL^bR^c=\frac{Q}{A} \text{ and } \lambda=\frac{rK}{aAK^aL^bR^c}=\frac{wL}{bAK^aL^bR^c}=\frac{\rho R}{cAK^aL^bR^c} \tag{16}$$

$$\Rightarrow \frac{rK}{a}=\frac{wL}{b}=\frac{\rho R}{c} \tag{17}$$

Now we can write minimum cost as [See Appendix-I, equation (AI-8)]:

$$C^*=\frac{ar^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}+br^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}+cr^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}. \tag{18}$$

Equation (18) is the optimal cost in terms of r, w, A, a, b, c, Q, ρ, and $\Phi=a+b+c$. Now putting the known values in right side of (18) we can easily calculate the value of minimum cost $C=C^*$. From (4) and (15b-d) we get,

$$\frac{\partial C}{\partial Q} = C_K \frac{\partial K}{\partial Q} + C_L \frac{\partial L}{\partial Q} + C_R \frac{\partial R}{\partial Q} = r \frac{\partial K}{\partial Q} + w \frac{\partial L}{\partial Q} + \rho \frac{\partial R}{\partial Q}$$

$$= \lambda \left[aAK^{a-1}L^b R^c \frac{\partial K}{\partial Q} + \beta AK^a L^{b-1} R^c \frac{\partial L}{\partial Q} + \lambda AK^a L^b R^{c-1} \frac{\partial R}{\partial Q} \right], \text{ by (15b-d).} \quad (19)$$

Differentiating (15a) with respect to Q we get:

$$1 = aAK^{a-1}L^b R^c \frac{\partial K}{\partial Q} + bAK^a L^{b-1} R^{c-1} \frac{\partial L}{\partial Q} + cAK^a L^b R^{c-1} \frac{\partial R}{\partial Q}. \quad (20)$$

From (19) and (20) we get:

$$\frac{\partial C}{\partial Q} = \lambda \text{ , i.e., } \frac{\partial C^*}{\partial Q} = \lambda^* \quad (21)$$

We have observed that (21) verifies (11). So that, Lagrange multiplier λ^* indicates that if the industry wants to increase (decrease) one unit of its production, it would cause total cost to increase (decrease) by approximately λ^* units, i.e., the Lagrange multiplier is a shadow price. Hence, we have observed that Lagrange multiplier has some sort of reasonable interpretation [Mohajan, 2018b]

6.2. *Sufficient Conditions for Cost Minimization*
To minimize cost we consider the determinant of the positive Hessian matrix:

$$|H| = \begin{vmatrix} 0 & -Q_K & -Q_L & -Q_R \\ -Q_K & U_{KK} & U_{KL} & U_{KR} \\ -Q_L & U_{LK} & U_{LL} & U_{LR} \\ -Q_R & U_{RK} & U_{RL} & U_{RR} \end{vmatrix} \quad (22)$$

We can simplify (22) as [See Appendix-II, equation (AII-4)]:

$$|H| = -\Phi \left(\frac{r^{2\left(\frac{b+c}{\Phi}\right)} w^{2\left(\frac{a+c}{\Phi}\right)} \rho^{2\left(\frac{a+b}{\Phi}\right)} a^{\left(\frac{3a}{\Phi}\right)} b^{\left(\frac{3b}{\Phi}\right)} c^{\left(\frac{3c}{\Phi}\right)} A^{\left(\frac{4}{\Phi}\right)}}{r^{\left(\frac{2a}{\Phi}\right)} w^{\left(\frac{2b}{\Phi}\right)} \rho^{\left(\frac{2c}{\Phi}\right)} a^{\left(\frac{b+c}{\Phi}\right)} b^{\left(\frac{a+c}{\Phi}\right)} c^{\left(\frac{a+b}{\Phi}\right)} Q^2} \right) \tag{23}$$

Since $A, a, b, c, \Phi > 0$ and r, w, ρ are the costs of inputs and hence are positive, while Q is production, which will never be negative. Hence, $|H| < 0$, as required, consequently cost is minimum.

6.3. *Comparative Statics Analysis*

We consider necessary conditions and examine the sufficiency conditions for a solution X^*, Y^*, L^*, λ^* to be a minimum cost. Now we solve the four equations (15a-d) for K, L, R, and λ in terms of r, w, ρ and Q, and compute sixteen partial derivatives (comparative statics). We have assumed that the left side of each equation in (15) is continuously differentiable and that the solution exists, then by the implicit function theorem K, L, R, and λ will each be continuously differentiable function of r, w, ρ and Q, if the following Jacobian matrix [Moolio & Islam, 2008; Mohajan *et al.*, 2013]:

$$J = \begin{bmatrix} 0 & -Q_K & -Q_L & -Q_R \\ -Q_K & U_{KK} & U_{KL} & U_{KR} \\ -Q_L & U_{LK} & U_{LL} & U_{LR} \\ -Q_R & U_{RK} & U_{RL} & U_{RR} \end{bmatrix} \tag{24}$$

is non-singular at the optimum point K^*, L^*, R^*, λ^* and the determinant of Jacobian matrix $|J|$ is negative. In each case given above, the determinant of Jacobian matrix $|J|$ is negative definite and the determinant of Hesian matrix $|H|$ is positive definite, supporting the 'widespread economic folklore' and the 'economist's deep wish'! [Baxley & Moorhouse, 1984]

Let F be the vector-valued function which may be regarded as points in a 8-dimensional Euclidean space as $(\lambda^*, K^*, L^*, R^*, r, w, \rho, Q) \in R^8$. By the implicit functions theorem we get:

$$\mathbf{F} = (F_1, F_2, F_3, F_4), \quad F_i = F_i(\lambda^*, K^*, L^*, R^*, r, w, \rho, Q) = 0; \quad i = 1, 2, 3, 4, \qquad (25)$$

may be solved in the form as:

$$\begin{bmatrix} \lambda^* \\ K^* \\ L^* \\ R^* \end{bmatrix} = \mathbf{G}(r, w, \rho, Q) \qquad (26)$$

where $\mathbf{G} = (G_1, G_2, G_3, G_4)$, being a four vector valued function of r, w, ρ, Q. Moreover, the Jacobian matrix for G, J_G is given by:

$$J_G = \begin{bmatrix} \dfrac{\partial \lambda^*}{\partial r} & \dfrac{\partial \lambda^*}{\partial w} & \dfrac{\partial \lambda^*}{\partial \rho} & \dfrac{\partial \lambda^*}{\partial Q} \\[2mm] \dfrac{\partial K^*}{\partial r} & \dfrac{\partial K^*}{\partial w} & \dfrac{\partial K^*}{\partial \rho} & \dfrac{\partial K^*}{\partial Q} \\[2mm] \dfrac{\partial L^*}{\partial r} & \dfrac{\partial L^*}{\partial w} & \dfrac{\partial L^*}{\partial \rho} & \dfrac{\partial L^*}{\partial Q} \\[2mm] \dfrac{\partial R^*}{\partial r} & \dfrac{\partial R^*}{\partial w} & \dfrac{\partial R^*}{\partial \rho} & \dfrac{\partial R^*}{\partial Q} \end{bmatrix} = -J^{-1} \begin{bmatrix} 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix} \qquad (27)$$

where the ith row in the last matrix on the right is obtained by differentiating the ith left side in (10) with respect to r then w, then ρ, and then Q. Let C_{ij} be the cofactor of the element in the ith row and j^{th} column of J, and then inverting J using the method of cofactor gives:

52

$J^{-1} = \dfrac{1}{|J|} C^T$, where $C = \left(C_{ij}\right)$, the matrix of cofactors of J and T for transpose. Thus, equation (27) can further be expressed in the following form:

$$
\begin{bmatrix}
\dfrac{\partial \lambda^*}{\partial r} & \dfrac{\partial \lambda^*}{\partial w} & \dfrac{\partial \lambda^*}{\partial \rho} & \dfrac{\partial \lambda^*}{\partial Q} \\
\dfrac{\partial K^*}{\partial r} & \dfrac{\partial K^*}{\partial w} & \dfrac{\partial K^*}{\partial \rho} & \dfrac{\partial K^*}{\partial Q} \\
\dfrac{\partial L^*}{\partial r} & \dfrac{\partial L^*}{\partial w} & \dfrac{\partial L^*}{\partial \rho} & \dfrac{\partial L^*}{\partial Q} \\
\dfrac{\partial R^*}{\partial r} & \dfrac{\partial R^*}{\partial w} & \dfrac{\partial R^*}{\partial \rho} & \dfrac{\partial R^*}{\partial Q}
\end{bmatrix}
= -\dfrac{1}{|J|} C^T
\begin{bmatrix}
0 & 0 & 0 & 1 \\
1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 \\
0 & 0 & 1 & 0
\end{bmatrix}
$$

$$
\begin{bmatrix}
\dfrac{\partial \lambda^*}{\partial r} & \dfrac{\partial \lambda^*}{\partial w} & \dfrac{\partial \lambda^*}{\partial \rho} & \dfrac{\partial \lambda^*}{\partial Q} \\
\dfrac{\partial K^*}{\partial r} & \dfrac{\partial K^*}{\partial w} & \dfrac{\partial K^*}{\partial \rho} & \dfrac{\partial K^*}{\partial Q} \\
\dfrac{\partial L^*}{\partial r} & \dfrac{\partial L^*}{\partial w} & \dfrac{\partial L^*}{\partial \rho} & \dfrac{\partial L^*}{\partial Q} \\
\dfrac{\partial R^*}{\partial r} & \dfrac{\partial R^*}{\partial w} & \dfrac{\partial R^*}{\partial \rho} & \dfrac{\partial R^*}{\partial Q}
\end{bmatrix}
= -\dfrac{1}{|J|}
\begin{bmatrix}
C_{11} & C_{21} & C_{31} & C_{41} \\
C_{12} & C_{22} & C_{32} & C_{42} \\
C_{13} & C_{23} & C_{33} & C_{43} \\
C_{14} & C_{24} & C_{34} & C_{44}
\end{bmatrix}
\begin{bmatrix}
0 & 0 & 0 & 1 \\
1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 \\
0 & 0 & 1 & 0
\end{bmatrix}
$$

$$
\begin{bmatrix}
\dfrac{\partial \lambda^*}{\partial r} & \dfrac{\partial \lambda^*}{\partial w} & \dfrac{\partial \lambda^*}{\partial \rho} & \dfrac{\partial \lambda^*}{\partial Q} \\
\dfrac{\partial K^*}{\partial r} & \dfrac{\partial K^*}{\partial w} & \dfrac{\partial K^*}{\partial \rho} & \dfrac{\partial K^*}{\partial Q} \\
\dfrac{\partial L^*}{\partial r} & \dfrac{\partial L^*}{\partial w} & \dfrac{\partial L^*}{\partial \rho} & \dfrac{\partial L^*}{\partial Q} \\
\dfrac{\partial R^*}{\partial r} & \dfrac{\partial R^*}{\partial w} & \dfrac{\partial R^*}{\partial \rho} & \dfrac{\partial R^*}{\partial Q}
\end{bmatrix}
= -\dfrac{1}{|J|}
\begin{bmatrix}
C_{21} & C_{31} & C_{41} & C_{11} \\
C_{22} & C_{32} & C_{42} & C_{12} \\
C_{23} & C_{33} & C_{43} & C_{13} \\
C_{24} & C_{34} & C_{44} & C_{14}
\end{bmatrix}
\tag{28}
$$

Issue 1/2021

We have for minimum cost, $|J| = |H|$, therefore, by substituting the value of $|\overline{H}|$ from equation (AII-3) we can write,

$$|J| = |H| = -\Phi abc\lambda^2 A^4 K^{4a-2} L^{4b-2} R^{4c-2}.$$ (28a)

Now, we study the effects of changes in r, w, ρ and Q, on K, L, and R. We can find the effect on capital K when the output Q of the industry increases [See Appendix-III, equation (AIII-4)]:

$$\frac{\partial K^*}{\partial Q} > 0$$ (29)

which indicates that if the interest rate of the capital K increases, the firm has to consider increasing the level of output Q. Similarly, we can obtain,

$$\frac{\partial L^*}{\partial Q} > 0, \quad \text{and}$$ (30)

$$\frac{\partial R^*}{\partial Q} > 0.$$ (31)

Hence, the demand of the product increases the firm may consider increasing its level of inputs: capital, labor, and other inputs.

We can find the effect on capital K when its interest rate r increases [See Appendix-IV, equation (AIV-4)]:

$$\frac{\partial K^*}{\partial r} < 0$$ (32)

which indicates that if the interest rate of the capital K increases, the firm has to consider decreasing the level of input K.

We can examine the effects on labour L when the interest rate of capital K increases [See Appendix-V, equation (AV-3)],

$$\frac{\partial L^*}{\partial r} > 0 \tag{33}$$

which indicates that when the interest rate of the capital increases the firm can increase the level of labour L. In our common sense both inputs K and L are not related to each other, i.e., $C_{KL} = 0$. Hence, both inputs K and L are neither complement nor supplement, but they are unrelated.

Finally, we comment from our assumption and common sense that when the demand of the product of an industry increases, it must try to increase the production, then the industry has to consider increasing its level of inputs, such as capital, labor and other inputs. But in any situation the industry tries to minimize the cost for the maximization of its profit. As a result, in the long-run the industry will be sustainable.

7. **Conclusion and Recommendation**

In this study, we have used Lagrange multiplier method to obtain cost minimization problem of an industry subject to Cobb-Douglas production function as an output constraint. We have shown that the value of the Lagrange multiplier is positive, and sometimes it indicates shadow price. We have also used necessary and sufficient conditions to obtain minimum value of the industry. In the beginning, we have used sustainable economic policies for the sustainable development of the industry. We have included five appendices to make the paper interesting to the readers. In the study, we have applied implicit function theorem and comparative static analysis. Throughout the paper, we have tried to present mathematical calculations in some details.

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Issue 1/2021

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Appendix I

From (16), we get:

$$K = \frac{Q^{1/a}}{A^{1/a} L^{b/a} R^{c/a}}, \quad L = \frac{Q^{1/b}}{A^{1/b} K^{a/b} R^{c/b}}, \text{ and } \quad R = \frac{Q^{1/c}}{A^{1/c} K^{a/c} L^{b/c}}.$$

(AI-1)

Again from (16), we get:

$$K^{\left(\frac{a+c}{c}\right)} = \frac{a\,\rho\,Q^{1/c}}{c\,rA^{1/c}L^{b/c}} \Rightarrow K = \left[\frac{a\,\rho\,Q^{1/c}}{c\,r\,A^{1/c}L^{b/c}}\right]^{\left(\frac{c}{a+c}\right)}$$

$$\Rightarrow K = \frac{a^{\left(\frac{c}{a+c}\right)}\rho^{\left(\frac{c}{a+c}\right)}Q^{\left(\frac{1}{a+c}\right)}}{c^{\left(\frac{c}{a+c}\right)}r^{\left(\frac{c}{a+c}\right)}A^{\left(\frac{1}{a+c}\right)}L^{\left(\frac{b}{a+c}\right)}}$$

(AI-2)

Similarly from (16) we get:

$$L = \frac{b^{\left(\frac{c}{b+c}\right)}\rho^{\left(\frac{c}{b+c}\right)}Q^{\left(\frac{1}{b+c}\right)}}{c^{\left(\frac{c}{b+c}\right)}w^{\left(\frac{c}{b+c}\right)}A^{\left(\frac{1}{b+c}\right)}K^{\left(\frac{a}{b+c}\right)}}$$

(AI-3)

Now using the values of K and L from equation (AI-2) and (AI-3) respectively in (17), we get:

$$K = \frac{awL}{br} = \frac{awb^{\left(\frac{c}{b+c}\right)}\rho^{\left(\frac{c}{b+c}\right)}Q^{\left(\frac{1}{b+c}\right)}}{brc^{\left(\frac{c}{b+c}\right)}w^{\left(\frac{c}{b+c}\right)}A^{\left(\frac{1}{b+c}\right)}K^{\left(\frac{a}{b+c}\right)}}$$

Issue 1/2021

$$\Rightarrow K^{\left(\frac{a+b+c}{b+c}\right)} = \frac{awb^{\left(\frac{c}{b+c}\right)}\rho^{\left(\frac{c}{b+c}\right)}Q^{\left(\frac{1}{b+c}\right)}}{brc^{\left(\frac{c}{b+c}\right)}w^{\left(\frac{c}{b+c}\right)}A^{\left(\frac{1}{b+c}\right)}} \Rightarrow K = \left[\frac{awb^{\left(\frac{c}{b+c}\right)}\rho^{\left(\frac{c}{b+c}\right)}Q^{\left(\frac{1}{b+c}\right)}}{brc^{\left(\frac{c}{b+c}\right)}w^{\left(\frac{c}{b+c}\right)}A^{\left(\frac{1}{b+c}\right)}}\right]^{\left(\frac{b+c}{a+b+c}\right)}$$

$$K = K^* = \frac{a^{\left(\frac{b+c}{a+b+c}\right)}w^{\left(\frac{b}{a+b+c}\right)}\rho^{\left(\frac{c}{a+b+c}\right)}Q^{\left(\frac{1}{a+b+c}\right)}}{b^{\left(\frac{b}{a+b+c}\right)}c^{\left(\frac{c}{a+b+c}\right)}r^{\left(\frac{b+c}{a+b+c}\right)}A^{\left(\frac{1}{a+b+c}\right)}} = \frac{a^{\left(\frac{b+c}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}r^{\left(\frac{b+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}} \quad \text{(AI-4)}$$

where $\Phi = a + b + c$. Similarly, we get:

$$L = L^* = \frac{b^{\left(\frac{a+c}{\Phi}\right)}r^{\left(\frac{a}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}w^{\left(\frac{a+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}} \text{, and} \quad \text{(AI-5)}$$

$$R = R^* = \frac{c^{\left(\frac{a+b}{\Phi}\right)}r^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}b^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{a+b}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}} \quad \text{(AI-6)}$$

Using (A-4-6) in (16) ,we get the optimal value of Lagrange multiplier λ^* as:

$$\lambda = \frac{rK}{aAK^a L^b R^c} = \frac{r\dfrac{a^{\left(\frac{b+c}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}r^{\left(\frac{b+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}}{aA\left[\dfrac{a^{\left(\frac{b+c}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}r^{\left(\frac{b+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^a\left[\dfrac{b^{\left(\frac{a+c}{\Phi}\right)}r^{\left(\frac{a}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}w^{\left(\frac{a+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^b\left[\dfrac{c^{\left(\frac{a+b}{\Phi}\right)}r^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}b^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{a+b}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^c}$$

$$\lambda = \lambda^* = \frac{r^{\left(\frac{a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1-\Phi}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} b^{\left(\frac{b}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}} \tag{AI-7}$$

Now using the values of K^*, L^*, R^* in (4), we can write:

$$C = r \frac{a^{\left(\frac{b+c}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{b^{\left(\frac{b}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} r^{\left(\frac{b+c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}} + w \frac{b^{\left(\frac{a+c}{\Phi}\right)} r^{\left(\frac{a}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} w^{\left(\frac{a+c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}} + \rho \frac{c^{\left(\frac{a+b}{\Phi}\right)} r^{\left(\frac{a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} b^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{a+b}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}$$

$$C^* = \frac{a r^{\left(\frac{a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)} + b r^{\left(\frac{a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)} + c r^{\left(\frac{a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} b^{\left(\frac{b}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}$$

$$\tag{AI-8}$$

Issue 1/2021

Appendix II

From (22) we get:

$$|H| = \begin{vmatrix} 0 & -Q_K & -Q_L & -Q_R \\ -Q_K & U_{KK} & U_{KL} & U_{KR} \\ -Q_L & U_{LK} & U_{LL} & U_{LR} \\ -Q_R & U_{RK} & U_{RL} & U_{RR} \end{vmatrix}$$

$$= Q_K \begin{vmatrix} -Q_K & U_{KL} & U_{KR} \\ -Q_L & U_{LL} & U_{LR} \\ -Q_R & U_{RL} & U_{RR} \end{vmatrix} - Q_L \begin{vmatrix} -Q_K & U_{KK} & U_{KR} \\ -Q_L & U_{LK} & U_{LR} \\ -Q_R & U_{RK} & U_{RR} \end{vmatrix} + Q_R \begin{vmatrix} -Q_K & U_{KK} & U_{KL} \\ -Q_L & U_{LK} & U_{LL} \\ -Q_R & U_{RK} & U_{RL} \end{vmatrix}$$

$$= Q_K \left\{ -Q_K \begin{vmatrix} U_{LL} & U_{LR} \\ U_{RL} & U_{RR} \end{vmatrix} - U_{KL} \begin{vmatrix} -Q_L & U_{LR} \\ -Q_R & U_{RR} \end{vmatrix} + U_{KR} \begin{vmatrix} -Q_L & U_{LL} \\ -Q_R & U_{RL} \end{vmatrix} \right\}$$

$$- Q_L \left\{ -Q_K \begin{vmatrix} U_{LK} & U_{LR} \\ U_{RK} & U_{RR} \end{vmatrix} - U_{KK} \begin{vmatrix} -Q_L & U_{LR} \\ -Q_R & U_{RR} \end{vmatrix} + U_{KR} \begin{vmatrix} -Q_L & U_{LK} \\ -Q_R & U_{RK} \end{vmatrix} \right\}$$

$$+ Q_R \left\{ -Q_K \begin{vmatrix} U_{LK} & U_{LL} \\ U_{RK} & U_{RL} \end{vmatrix} - U_{KK} \begin{vmatrix} -Q_L & U_{LL} \\ -Q_R & U_{RL} \end{vmatrix} + U_{KL} \begin{vmatrix} -Q_L & U_{LK} \\ -Q_R & U_{RK} \end{vmatrix} \right\}$$

$$= -Q_K Q_K U_{LL} U_{RR} + Q_K Q_K U_{LR} U_{LR} + 2 Q_K Q_L U_{KL} U_{RR} - 2 Q_K Q_R U_{KL} U_{LR} - 2 Q_K Q_L U_{KR} U_{LR} + 2 Q_K Q_R U_{KR} U_{LL}$$
$$- Q_L Q_L U_{KK} U_{RR} + 2 Q_L Q_R U_{KK} U_{LR} + Q_L Q_L U_{KR} U_{KR} - 2 Q_L Q_R U_{KL} U_{KR} - Q_R Q_R U_{KK} U_{LL} + Q_R Q_R U_{KL} U_{KL}.$$

First order derivatives of (12) are:

$$Q_K = aAK^{a-1}L^b R^c, Q_L = bAK^a L^{b-1} R^c, Q_R = cAK^a L^b R^{c-1} \qquad \text{(AII-1)}$$

From (15), we get:

$$U_{KK} = -a(a-1)\lambda AK^{a-2}L^b R^c \,, U_{LL} = -b(b-1)\lambda AK^a L^{b-2}R^c$$
$$U_{RR} = -c(c-1)\lambda AK^a L^b R^{c-2}\,, U_{KL} = U_{LK} = -ab\lambda AK^{a-1}L^{b-1}R^c \qquad \text{(AII-2)}$$
$$U_{KR} = U_{RK} = -ac\lambda AK^{a-1}L^b R^{c-1}\,, U_{LR} = U_{RL} = -bc\lambda AK^a L^{b-1}R^{c-1}$$

Using (AII-1) and (AII-2), we get:

$$
\begin{aligned}
|H| =\ & -a^2bc(b-1)(c-1)\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} + a^2b^2c^2\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} \\
& + 2\,a^2b^2c(c-1)\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} - 2\,a^2b^2c^2\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} \\
& - 2\,a^2b^2c^2\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} + 2a^2bc^2(b-1)\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-1} \\
& - ab^2c(a-1)(c-1)\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} + 2\,ab^2c^2(a-1)\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} \\
& + a^2b^2c^2\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} - 2\,a^2b^2c^2\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} \\
& - abc^2(a-1)(b-1)\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} + a^2b^2c^2\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} \\
=\ & abc\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2}
\begin{Bmatrix}
-a(b-1)(c-1)+abc+2ab(c-1)-2abc-2abc+2ac(b-1) \\
-b(a-1)(c-1)+2bc(a-1)+abc-2abc-c(a-1)(b-1)+abc
\end{Bmatrix} \\
=\ & -(a+b+c)abc\lambda^2 A^4 K^{4a-2}L^{4b-2}R^{4c-2} \qquad \text{(AII-3)}
\end{aligned}
$$

By substituting the critical values K^*, L^*, R^*, λ^* from equations (14a-d) into the above equation, and after a straightforward but tedious calculation, we get:

$$
|H| = -\frac{\Phi abc A^4 \left[\dfrac{r^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1-\Phi}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^2 \left[\dfrac{a^{\left(\frac{b+c}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}r^{\left(\frac{b+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^{4a-2}}{\left[\dfrac{b^{\left(\frac{a+c}{\Phi}\right)}r^{\left(\frac{a}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}w^{\left(\frac{a+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^{2-4b} \left[\dfrac{c^{\left(\frac{a+b}{\Phi}\right)}r^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}b^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{a+b}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^{2-4c}}
$$

$$= -\Phi\left(\frac{r^{2\left(\frac{b+c}{\Phi}\right)} w^{2\left(\frac{a+c}{\Phi}\right)} \rho^{2\left(\frac{a+b}{\Phi}\right)} a^{\left(\frac{3a}{\Phi}\right)} b^{\left(\frac{3b}{\Phi}\right)} c^{\left(\frac{3c}{\Phi}\right)} A^{\left(\frac{4}{\Phi}\right)}}{r^{\left(\frac{2a}{\Phi}\right)} w^{\left(\frac{2b}{\Phi}\right)} \rho^{\left(\frac{2c}{\Phi}\right)} a^{\left(\frac{b+c}{\Phi}\right)} b^{\left(\frac{a+c}{\Phi}\right)} c^{\left(\frac{a+b}{\Phi}\right)} Q^2} \right) \quad \text{(AII-4)}$$

Appendix III

Let us suppose, the industry gets an additional order of its products. So, it wants to increase its production to produce and supply highest quantity of its products to yield maximum profit. Then naturally, we can expect that it will take attempts to increase its inputs (capital, labor, and other inputs). From equation (28) we get,

$$\frac{\partial K}{\partial Q} = -\frac{1}{|J|} \times \text{cofactor of } [C_{12}]$$

From equation (22), we get:

$$= \frac{1}{|J|} \begin{vmatrix} -Q_K & U_{KL} & U_{KR} \\ -Q_L & U_{LL} & U_{LR} \\ -Q_R & U_{RL} & U_{RR} \end{vmatrix}$$

$$= \frac{1}{|J|} \left\{ -Q_K \begin{vmatrix} U_{LL} & U_{LR} \\ U_{RL} & U_{RR} \end{vmatrix} - U_{KL} \begin{vmatrix} -Q_L & U_{LR} \\ -Q_R & U_{RR} \end{vmatrix} + U_{KR} \begin{vmatrix} -Q_L & U_{LL} \\ -Q_R & U_{RL} \end{vmatrix} \right\}$$

$$= \frac{1}{|J|} \left\{ -Q_K (U_{LL}U_{RR} - U_{LR}U_{RL}) - U_{KL}(-Q_L U_{RR} + Q_R U_{LR}) + U_{KR}(-Q_L U_{RL} + Q_R U_{LL}) \right\}$$

$$= \frac{1}{|J|} \left\{ -Q_K U_{LL}U_{RR} + Q_K U_{LR}U_{RL} + Q_L U_{KL}U_{RR} - Q_R U_{KL}U_{LR} - Q_L U_{KR}U_{RL} + Q_R U_{LL}U_{KR} \right\}$$

$$\text{(AIII-1)}$$

By using (AII-1) and (AII-2) in (AIII-1), we can write:

$$\frac{\partial K}{\partial Q} = \frac{1}{|J|} \left\{ \begin{array}{l} -ab(b-1)c(c-1)\lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2} + ab^2\gamma^2 \lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2} \\ +ab^2 c(c-1)\lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2} - ab^2 c^2 \lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2} \\ -ab^2 c^2 \lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2} + ab(b-1)c^2 \lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2} \end{array} \right\}.$$

Issue 1/2021

$$= \frac{1}{|J|} abc\lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2} \{-(b-1)(c-1)+bc+b(c-1)-bc-bc+c(b-1)\}$$

$$= -\frac{1}{|J|} abc\lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2} = \frac{abc\lambda^2 A^3 K^{3a-1} L^{3b-2} R^{3c-2}}{\Phi abc\lambda^2 A^4 K^{4a-2} L^{4b-2} R^{4c-2}} \qquad \text{by (28a),}$$

$$= \frac{1}{\Phi A K^{a-1} L^b R^c} \tag{AIII-2}$$

Now using the values of K, L, and R from (AI-4-6), we get:

$$\frac{\partial K}{\partial Q} = \frac{\left[\dfrac{c^{\left(\frac{a+b}{\Phi}\right)} r^{\left(\frac{a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} b^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{a+b}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right]^{-c}}{\Phi A \left[\dfrac{a^{\left(\frac{b+c}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{b^{\left(\frac{b}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} r^{\left(\frac{b+c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right]^{a-1} \left[\dfrac{b^{\left(\frac{a+c}{\Phi}\right)} r^{\left(\frac{a}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} w^{\left(\frac{a+c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right]^{b}} =$$

After some mathematical calculations we get,

$$\frac{\partial K}{\partial Q} = \frac{1}{\Phi} \left[\frac{a^{\left(\frac{\Phi-a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1-\Phi}{\Phi}\right)}}{r^{\left(\frac{\Phi-a}{\Phi}\right)} b^{\left(\frac{b}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right]. \tag{AIII-3}$$

Since $A, b, c, \Phi > 0$ and $r, w, \rho > 0$, and also Q is the output of the firm that can never be negative, obviously:

$$\frac{\partial K}{\partial Q} = \frac{\partial K^*}{\partial Q} > 0. \tag{AIII-4}$$

Appendix-IV

Now we want to study the effects on capital K when its interest rate increases. From the equation (28) we find that,

$$\frac{\partial K}{\partial r} = -\frac{1}{|J|} \times \text{Cofactor of } [C_{22}]$$

$$= -\frac{1}{|J|} \begin{vmatrix} 0 & -Q_L & -Q_R \\ -Q_L & U_{LL} & U_{LR} \\ -Q_R & U_{RL} & U_{RR} \end{vmatrix}$$

$$= -\frac{1}{|J|} \left\{ Q_L \begin{vmatrix} -Q_L & U_{LR} \\ -Q_R & U_{RR} \end{vmatrix} - Q_R \begin{vmatrix} -Q_L & U_{LL} \\ -Q_R & U_{RL} \end{vmatrix} \right\}$$

$$= -\frac{1}{|J|} \left\{ Q_L \left(-Q_L U_{RR} + Q_R U_{LR} \right) - Q_R \left(-Q_L U_{RL} + Q_R U_{LL} \right) \right\}$$

$$= -\frac{1}{|J|} \left\{ -Q_L Q_L U_{RR} + Q_L Q_R U_{LR} + Q_L Q_R U_{RL} - Q_R Q_R U_{LL} \right\}.$$

$$= -\frac{1}{|J|} \left\{ -Q_L Q_L U_{RR} + 2 Q_L Q_R U_{LR} - Q_R Q_R U_{LL} \right\}. \tag{AIV-1}$$

By using (AII-1) and (AII-2) in (AIV-1), we can write:

$$\frac{\partial K}{\partial r} = -\frac{1}{|J|} \left\{ b^2 c(c-1)\lambda A^3 K^{3a} L^{3b-2} R^{3c-2} - 2b^2 c^2 \lambda A^3 K^{3a} L^{3b-2} R^{3c-2} + b(b-1)c^2 \lambda A^3 K^{3a} L^{3b-2} R^{3c-2} \right\}$$

$$= -\frac{1}{|J|} \left(bc\lambda A^3 K^{3a} L^{3b-2} R^{3c-2} \right) \left\{ b(c-1) - 2bc + c(b-1) \right\}$$

$$= -\frac{1}{|J|} \left(bc\lambda A^3 K^{3a} L^{3b-2} R^{3c-2} \right) \left\{ bc - b - 2bc + bc - c \right\}$$

Issue 1/2021

$$= \frac{1}{|J|}(b+c)bc\lambda A^3 K^{3a} L^{3b-2} R^{3c-2}$$

$$= -\frac{(b+c)bc\lambda A^3 K^{3a} L^{3b-2} R^{3c-2}}{(a+b+c)abc\lambda^2 A^4 K^{4a-2} L^{4b-2} R^{4c-2}} \qquad \text{by (28a),}$$

$$= -\frac{(b+c)}{a(a+b+c)\lambda A K^{a-2} L^b R^c} \qquad\qquad \text{(AIV-2)}$$

Now using the values of K, L, R, and λ from (AI-4-7), we get:

$$\frac{\partial K}{\partial r} = -\frac{(\Phi-a)\left[\frac{b^{\left(\frac{a+c}{\Phi}\right)}r^{\left(\frac{a}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}w^{\left(\frac{a+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^{-b}\left[\frac{c^{\left(\frac{a+b}{\Phi}\right)}r^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}b^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{a+b}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^{-c}}{a\Phi A\left[\frac{r^{\left(\frac{a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1-\Phi}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)}b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]\left[\frac{a^{\left(\frac{b+c}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}r^{\left(\frac{b+c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right]^{a-2}}$$

After some mathematical calculations we find,

$$= -\frac{(\Phi-a)}{\Phi}\left[\frac{a^{\left(\frac{\Phi-a}{\Phi}\right)}w^{\left(\frac{b}{\Phi}\right)}\rho^{\left(\frac{c}{\Phi}\right)}Q^{\left(\frac{1}{\Phi}\right)}}{r^{\left(\frac{2\Phi-a}{\Phi}\right)}b^{\left(\frac{b}{\Phi}\right)}c^{\left(\frac{c}{\Phi}\right)}A^{\left(\frac{1}{\Phi}\right)}}\right] \qquad\qquad \text{(AIV-3)}$$

Since $A, b, c > 0$, $r, w, \rho > 0$, and Q is the output of the firm that can never be negative. Hence, (AIV-2) offers:

$$\frac{\partial K^*}{\partial r} = \frac{\partial K^*}{\partial r} < 0 \qquad\qquad \text{(AIV-4)}$$

which indicates that if the interest rate of the capital K increases, the firm has to consider decreasing the level of input K.

Appendix-V

Now we examine the effects on labor L when the interest rate of capital K increases. From the equation (22), we find that,

$$\frac{\partial L}{\partial r} = -\frac{1}{|J|} \times \text{Cofactor of } [C_{23}]$$

$$= \frac{1}{|J|} \begin{vmatrix} 0 & -Q_K & -Q_R \\ -Q_L & U_{LK} & U_{LR} \\ -Q_R & U_{RK} & U_{RR} \end{vmatrix}$$

$$= \frac{1}{|J|} \left\{ Q_K \begin{vmatrix} -Q_L & U_{LR} \\ -Q_R & U_{RR} \end{vmatrix} - Q_R \begin{vmatrix} -Q_L & U_{LK} \\ -Q_R & U_{RK} \end{vmatrix} \right\}$$

$$= \frac{1}{|J|} \left\{ Q_K(-Q_L U_{RR} + Q_R U_{LR}) - Q_R(-Q_L U_{RK} + Q_R U_{LK}) \right\}$$

$$= \frac{1}{|J|} \left\{ -Q_K Q_L U_{RR} + Q_K Q_R U_{LR} + Q_L Q_R U_{RK} - Q_R Q_R U_{LK} \right\} \qquad \text{(AV-1)}$$

By using (AII-1) and (AII-2) in (AV-1), we can write:

$$\frac{\partial L}{\partial r} = \frac{1}{|J|} \left\{ \begin{array}{l} abc(c-1)\lambda A^3 K^{3a-1} L^{3b-1} R^{3c-2} - abc^2 \lambda A^3 K^{3a-1} L^{3b-1} R^{3c-2} \\ - abc^2 \lambda A^3 K^{3a-1} L^{3b-1} R^{3c-2} + abc^2 \lambda A^3 K^{3a-1} L^{3b-1} R^{3c-2} \end{array} \right\}$$

$$= \frac{1}{|J|} \left(abc\lambda A^3 K^{3a-1} L^{3b-1} R^{3c-2} \right)(c-1-c-c+c)$$

$$= -\frac{1}{|J|} abc\lambda A^3 K^{3a-1} L^{3b-1} R^{3c-2}$$

$$= \frac{abc\lambda A^3 K^{3a-1} L^{3b-1} R^{3c-2}}{\Phi abc\lambda^2 A^4 K^{4a-2} L^{4b-2} R^{4c-2}} \qquad \text{by (28a),}$$

$$= \frac{1}{\Phi \lambda A K^{a-1} L^{b-1} R^c} \qquad\qquad\qquad \text{(AV-2)}$$

Now using the values of *K*, *L*, *R,* and λ from (AI-4-7) in (AV-2), we get:

$$\frac{\partial L}{\partial r} = -\frac{\left[\dfrac{b^{\left(\frac{a+c}{\Phi}\right)} r^{\left(\frac{a}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} w^{\left(\frac{a+c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right]^{1-b} \left[\dfrac{c^{\left(\frac{a+b}{\Phi}\right)} r^{\left(\frac{a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} b^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{a+b}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right]^{-c}}{\Phi A \left[\dfrac{r^{\left(\frac{a}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1-\Phi}{\Phi}\right)}}{a^{\left(\frac{a}{\Phi}\right)} b^{\left(\frac{b}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right] \left[\dfrac{a^{\left(\frac{b+c}{\Phi}\right)} w^{\left(\frac{b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{b^{\left(\frac{b}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} r^{\left(\frac{b+c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right]^{a-1}}$$

After some mathematical calculations we obtain the simplified form as,

$$= \frac{1}{\Phi}\left\{\frac{a^{\left(\frac{\Phi-a}{\Phi}\right)} b^{\left(\frac{\Phi-b}{\Phi}\right)} \rho^{\left(\frac{c}{\Phi}\right)} Q^{\left(\frac{1}{\Phi}\right)}}{r^{\left(\frac{\Phi-a}{\Phi}\right)} w^{\left(\frac{\Phi-b}{\Phi}\right)} c^{\left(\frac{c}{\Phi}\right)} A^{\left(\frac{1}{\Phi}\right)}}\right\}$$

Since $a, b, c, A > 0$, and $r, w, \rho > 0$, Q is the output of the firm that can never be negative. Consequently, we are confirming:

$$\frac{\partial L^*}{\partial r} = \frac{\partial L}{\partial r} > 0, \qquad\qquad\qquad\qquad \text{(AV-3)}$$

which indicates that when the interest rate of the capital increases, the firm can increase the level of labour *L*.

CORPORATE SOCIAL RESPONSIBILITY AND FIRM FINANCIAL PERFORMANCE IN NIGERIA: MEDIATING ON ETHICAL RESPONSIBILITY

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Abstract

The study examined the impact of corporate social responsibility on financial performance in Nigeria. The purpose of the study was to mediate the role of ethical social responsibility and its impact on the financial performance of the Nigerian manufacturing company. This study is predicated on the stakeholder theory, managerial theory, utilitarian theory and rational theory. Primary data sources were explored in presenting the facts of the situation.

This paper investigates how the relationship between corporate social responsibility and employee performance affect the financial performance of manufacturing firms. The upshots of the analysis, using structural equation modelling on 150 completed questionnaires sent to the manufacturing companies

in Nigeria, suggest that ethical social responsibility is significantly associated with the incorporation of corporate social responsibility through employee performance, which in turn has a significant and positive impact on financial performance.

The results contribute to previous studies that have found reliable results on the direct association between ethical social responsibility and financial performance by demonstrating that employee performance acts as a mediator in the relationship between ethical social liabilities together with the financial performance of the corporation. Managers can strengthen their stakeholder relations and ultimately improve their financial performance if ethical social responsibility to stakeholders is integrated into business routines.

Keyword: *corporate social responsibility; financial performance; ethical social responsibility; employee performance.*

JEL Classification: M41, C10

Introduction

CSR is a conservative ideology which defines the relation between a company and its stakeholders. An organization must offer its shares to society in terms of well-being which in turn can lead to a benign joint relationship between the company and society. [Wheelen, & Hunger 2012] The beginning of the 20th century was the start of the CSR ideology in the United States. CSR has been defined in a number of ways, including the assimilation of voluntary concerns related to society, the environment in companies and other shareholders [Fahy *et al.,* 2005], business communities using communal practices to meet mutually beneficial objectives [Rendtorff, & Mattsson, 2012], and considering business organizations as human institutions that work towards the improvement of society through the production of goods and services. [Freeman, & Ginena, 2015] "Moreover, by taking an organization as a system, the performance of that system depends on its parties, their relationships, and their objectives, actors within an organization. [Freeman *et al.,* 2020] Furthermore, the CSR consists of three important factors, including the practice standard of CSR, the response of the organization to social causes, and the outcome of collective behaviour. [Ahamed *et al.*, 2014)] All of these elements are aimed at improving the performance of an organization.

To enhance fiscal output is the major worry for all arrangements. With the inclusion of the concept of social responsibility in the SDGs, CSR is now a widely accepted indicator of the financial performance of enterprises. [Chung *et al.*, 2018] The dramatic increase in CSR research investment, reporting and analysis has focused on the value of CSR in trade documentation, and organizations can make abundant gains through better performance in the social and environmental sectors. The banking zone has been seen as the "core of society" and is expected to represent a higher level of social responsibility. [Chambers, & Day 2009] Banks use CSR as a way of increasing their credibility [Lin *et al.,* 2011] and scale up their positive image [Mocan *et al.*, 2015; Tewari, 2011] which attracts more customers and increases their earnings. [Polychronidou *et al.,* 2014] In general, banks rank higher in the international CSR investment index. [Perez, & Del Bosque, 2013] It is also making sure that companies coordinate their social objectives with their corporate targets where CSR acts as a marketing vehicle [Burianová, & Paulík, 2014] and a strategic mechanism to increase the overall value of all stakeholders.

It is also well documented that CSR performance can be an effective approach for organizations to grow positive terms with their employees. [Kim *et al.*, 2010] CSR puts a significant influence on job performance of employees [Story, & Castanheira, 2019] and is considered as a purpose of a firm's behaviour toward its stakeholders, thereby including employees as a major entity [Campbell, 2007; Cooper, 2017] which contributes toward employee job satisfaction [Edmans, 2011] and development, thereby proving as an important element of business success. [Bates, 1990; Colombo, & Grilli, 2005; Shane, & Stuart, 2002] Therefore, a higher level of workers' performance will have a progressive influence on the firm's operating performance. [Banker, & Mashruwala, 2007; Ouimet, & Simintzi, 2018] More employees increase corporate profits, which in the long run will improve financial performance. [Ahamed *et al.*, 2014] An organization may be considered a production machine that collects feedback from traders, shareholders, and workers and provides production to customers. [Donaldson, & Preston, 1995] Stakeholders such as employees, local and national authorities, and citizens have the right to expect and demand socially justifiable and positive behaviour from businesses and their leaders. [Kujala *et al.,* 2019] Employee rights include freedom and security in the workplace, the right to meaningful employment, respect and equality. [Bowie, 1998]

The study used the framework of stakeholder and manager theory which were developed considering the corporate creation and general class of value increase; it

hinted that the foremost significant component of depth psychology for a firm is the relationship of stakeholders and its connections which collectively measure business success. [Freeman *et al.*, 2020] Stakeholder theory makes it clear that CSR is a multidimensional concept centred on four major components: (1) economic social responsibility, (2) legal social responsibility, (3) ethical social responsibility and (4) discretionary social responsibility. In this study, component number 3 was put into consideration, that is, the employee's performance as a mediator, and the speculation that CSR leads to an increase in employee performance, which tends to further enhance manufacturing firms' performance.

High employee turnover, low motivation and absence from work are common problems faced by organizations [Ali *et al.,* 2010] that may be resolved by CSR as a contributory factor. Greenwood and Freeman (2011) suggested a vibrant relationship between a company's success and employees, as employees are greatly affected by the progress or decline of the organization. As a result of that statement, given today's modern business community, presumably the personal success and satisfaction of employees within an organization tend to be responsible for the progress and financial success of the organization as well. This study focuses on the relation between CSR and employee performance, which is a key area of stakeholder theory and a neglected area of research. Greenwood and Freeman (2011) argued that the term "intervener" has often been used in the employment context, but that the fact that employees are legitimate stakeholders in the business has been neglected. Employees have been identified as stakeholders with a specific role as they represent the organization [Crane, & Matten, 2004], as powerful influencers and as demanding stakeholders [Kaler, 2002].

Based on the description of the problem, due to improper relationships and lack of information, the fundamental aim of this research document is to study the relationship between CSR on the financial performance of the company by taking employee performance as a mediating factor. Based on our research objective and knowledge of the relationship between CSR, bank performance and employee performance, the research question was drawn, respectively. How will CSR affect employee performance and affect a bank's financial performance?

The study of CSR and financial performance by taking employee performance as a mediating factor could help build a bridge between practice and academic theory. [Cornelius & Gagnon, 1999] This study also contributes to an insufficiently studied area of stakeholder theory, i.e. human and behavioural aspects that need to be

developed and considered for analysis and further lead to exploring the actual behaviour of stakeholders. [Freeman *et al.*, 2020] There is no comprehensive study that links CSR to financial performance while using employee performance as a factor in mediation. However, based on the arguments and studies, none of the aforementioned studies used employee performance as a mediator between CSR and the financial performance of the organization. It is the importance and significance of this study that employee performance and the impact of CSR on financial performance have been studied together in the context of Nigeria.

Thus, the current subject field will be beneficial for bank directors who are active participants in CSR activities, fiscal analysts, and policymakers. Research focused on influencing the organization of CSR practices that benefit stakeholders, i.e. employees, including employee performance, satisfaction and incentive for financial performance, have become popular recently. This study stimulated interest in the area of employee performance and its effect on the financial performance of organizations. This study provides valuable input and knowledge on how CSR affects the financial performance of an organization where employee performance is a mediator. The current study adds to the expanding scope of recent research surveys on the field of study by providing critical information to academicians and organizational managers in the banking sector to boost employee motivation and satisfaction for better employee performance leading to fruitful outcomes for the organization's financial performance. The organization of literature review in different areas helps to map out the study, i.e. a relationship between CSR and financial performance, CSR and employee performance, employee performance and financial performance, and stakeholder theory and methodologies previously used in the area of research.

Literature Review
Related Conceptual Literature
Corporate Social Responsibility

Corporate Social Responsibility (CSR) refers to the strategies that corporations or businesses use to conduct their business in an ethical, socially responsible and developmental manner that is beneficial to the community. The issue of corporate social responsibility has been up for discussion since the 1950s. The most recent analyses from Glavas (2016) and Greening and Turban (2000) indicated that the definition of CSR has evolved in both direction and practice. The classical view of CSR was narrowly confined to philanthropy and then focused on the relationship

between companies and society, in particular on the contribution a company made to solving social problems. In the early 1900s, social performance was related to market performance. The pioneer of this view, Oliver Sheldon [1923, quoted in Ehsan, & Kaleem, 2012], however, encouraged the leadership to take the initiative to elevate both ethical norms and justice in society through the ethics of economics, i.e. conserve resources in the interests of effective resource mobilization and use. As a result, businesses create wealth in society and improve living standards.

The present-day CSR (also called corporate responsibility, corporate citizenship, responsible business and corporate social opportunity) is a concept whereby business organizations consider the interest of society by taking responsibility for the impact of their activities on customers, suppliers, employees, shareholders, communities and other stakeholders as well as their environment. This obligation demonstrates that organizations must comply with legislation and take voluntary initiatives to improve the well-being of their employees and families as well as the local community and society at large.

CSR simply refers to the strategies of companies or enterprises operating in an ethical and respectful manner. CSR can involve a variety of activities such as partnering with local communities, socially sensitive investing, developing relationships with employees, customers and their families, and our involvement in environmental conservation and sustainability activities. [Ehsan *et al*., 2012]

Ethical Responsibility

Ethical responsibility can be delineated as "an organization's intended activity to promote and pursue social goals that go beyond their lawful responsibilities". [Ho ATS, 2012] It states to organizations doing what is good, just and fair. [Freeman *et al.,* 2020] Nevertheless, is difficult to know what is right or wrong as ethical standards are not clear or classified. [Iftikhar, 2020)]

Impact of Corporate Social Responsibility on Financial Performance

Several studies analysed CSR's influence on financial performance and suggested that CSR has a positive impact on financial performance. [Ahamed *et al.*, 2014; Bird *et al.*, 2007; Kim, & Kim, 2014; Maqbool, & Zameer, 2018; Platonova *et al.*, 2018; Preston, & O'bannon, 1997; Waddock, & Graves, 1997; Wheelen, & Hunger, 2012] It has likewise been shown that total productive maintenance (including organization, equipment, operations, and employees) has a positive relationship with business

monetary performance. [Banker *et al.*, 2014] However, contrary studies are imposing no relationship between CSR and financial performance. [Cordeiro, & Sarkis, 1997; Hemingway, & Maclagan, 2004; Wright & Ferris, 1997] There are also researchers who take a neutral stance with respect to the relationship between financial performance and CSR. [Griffin, & Mahon, 1997; Kraft, & Hage, 1990; McWilliams, & Siegel, 2000] It is argued that CSR activities generate positive results for companies by increasing customer buy-in through remittance payments and reducing the risk to prestige, which collectively improves profitability. [Peloza, Shang, 2011] A recent study employing a linear model indicates that CSP (corporate social performance) and returns on assets do not experience a positive relationship, while the nonlinear model of CSP and accounting base performance as CFP have a positive association in the country for the future. [Peloza *et al.*, 2011]

Influence of Corporate Social Responsibility on Employee Performance

CSR activities help agencies improve the environment and meet the needs of internal audiences, resulting in improved performance. There are a number of measures that can be taken to address employee needs that reduce negative employee behaviour and develop positive behaviour. Employee performance improves with positive behaviour that increases profits and leads to a good reputation of the organization. The business caters to human needs, including physical, mental, and spiritual needs. [Freeman, & Ginena 2015] The firms can provide benefits to employees as part of CSR that includes meeting their employment demands, improved health care facilities, training and development, superior wages to incentivize [Ouimet, & Simintzi 2020), and retirement benefits which will ultimately improve employee morale, job satisfaction, and employee performance. [Edmans, 2011; Roberts, & Dowling, 2002] Considering the performance of employees in conditions of in role and extra-role behaviour, it was found that employees' perception of CSR and their functioning and waiver of intentions are related to the appointment of two mediators including (OBSE) organizational-based self-esteem and (OJ) organizational justice. [Ho, 2012] CSR tries to enhance the status of the work-life which contributes to productive employees. [Razaq *et al.*, 2011]

Employees require a CSR that can have a positive impact on their performance [McWilliams, & Siegel, 2000] including charismatic leadership which is one of the attributes that plays a positive role in each organization for employee engagement. [Vlachos *et al.*, 2013] Using a using a qualitative comparative analysis method, the

needs of employees, including existence, relationship and growth or ERG, which are met by the organization's CSR initiatives, that affect employee satisfaction and job retention were studied. [Lee, & Chen, 2018] Robust CSR performance in companies gives a strong result in employee aid [Trevino, & Nelson, 2016; Valentine, & Fleischman, 2008], thereby employees working with organizations who are socially responsible achieve better operating performance than their colleagues working in establishments with a less socially responsible performance. [Li Sun, 2015] It is also offered in a study that employing in CSR can also turn out to be more fruitful for organizations that aim for the job satisfaction of their aging and senior workforce because CSR activities cater to those sensitive requirements which are a priority of senior age. [Wisse *et al.,* 2018] Therefore, CSR should not be viewed as an alternative exercise, but rather as a futuristic business plan. [Maqbool, & Zameer, 2018]

Employee performance has been measured by a variety of factors through various studies, including: level of engagement, motivation, commitment, integrity, and reputation. The research suggests that an employee's positive approach to CSR initiatives improves engagement, the motivation and level of employee engagement that plays a fundamental role in the commitment to their organization, as well as the performance of the business. [Ali *et al.*, 2010; Greening, & Turban, 2000; Iqbal *et al.,* 2012; Maignan, & Ferrell 2001; Petersen, 2009; Singh, 2019] The high level of CSR within a company promotes a better reputation that in turn improves the positive attitude and integrity of employees and leads to better employee engagement. [Gross, & Holland, 2011; Turban, & Greening, 1997] Improved employee engagement leads to greater innovation and creativity. [Mocan *et al.,* 2015] A shred of further evidence is from a study that supports the idea of employees working in an organization with strong sense of purpose to the society being 34% more confident of growth in their organization

Using the regression of ordinary least squares, the relationship between CSR and employee performance made it possible to find a positive relationship between CSR and employee performance as employees willing to work for less privileges in socially responsible companies, suggesting a positive relationship between employee performance and CSR. [Porter, & Kramer, 2006; Sun, & Yu, 2015] A significantly positive relationship between CSR activities and the organizational commitment of employees, CSR and organizational performance, and employee organizational engagement and organizational performance were observed in a survey conducted in Pakistan using an exploratory approach using the Structural Equation Model (MES)

technique. [Ali *et al.,* 2010] Results of study suggest positive correlation between corporate social responsibility and corporate citizenship behaviour, and negatively with intention of job change among telecommunications sector employees in Pakistan. [Khan *et al.*, 2005, 2014] Another study establishes the relationship between job satisfaction and organizational engagement among university employees of Pakistan using a survey. [Asrar-ul-Haq *et al.*, 2017] CSR results in increased retention, attraction and engagement of employees [Kim, & Park, 2011], which is of paramount importance. Firms with high employee participation also record higher earnings per share growth. Employee engagement showed a strong correlation, and CSR which can ultimately improve the financial performance of the organization. [Glavas, 2016; Gross, & Holland, 2011; Ur Rehman *et al.*, 2020; Mishra, & Suar, 2010]

Influence of Employee Performance on Financial Performance

There has been little research to analyse the relationship between the influences of CSR on employee benefits, leading to an improvement in employee performance and an increase in the financial performance of the organization. It was observed that employee contentment and employee performance can positively mediate the learning organization's relationship to monetary performance by using the partial least squares statistical method. [Wheelen *et al*., 2012] It was analysed that organizational engagement and corporate culture have an important correlation and that they both affect the financial performance of organizations. [Bird *et al.,* 2003] It has also been supported that an organization's workforce has a positive influence on financial performance and market worth. [Bontis *et al.*, 2005] There is strong nexus between employee-customer contentment and allegiance, and financial performance has been supported using panel data. [Burianova *et al.*, 2014]

Some studies suggest that the relationship between employee performance and monetary performance is not clear. Using structural equation (SEM) modelling, it was examined that there is no direct and substantial influence of employee satisfaction on financial performance. [Abbas, 2020] Nevertheless, there is an oblique relationship between constructions, which is mediated by customer satisfaction. [Chi, & Gursoy, 2009] Therefore, the employees forming an integral part of the organization and management have their livelihoods and the jobs associated with the organization. In exchange for the services and loyalty they provide to the organization, they expect security, benefits, gains and meaningful work. Employees are important because they represent an organization with multiple responsibilities.

As a result, a productive relationship between employees and the business is beneficial because it highlights an improvement in an organization's long-term performance.

Related Empirical Review

Various studies indicate that employee performance is positively associated with financial performance. [Edman *et al.*, 2011; Banker, 2015; Eshan *et al.,* 2020; Fahy *et al*., 2012; Rashid *et al.,* 2003] However, from the literature review above, it is clear that none of these studies take employee performance as a factor in mediating the influence of CSR on financial performance using the theoretical framework of stakeholder theory that provides the possibility to explore an employee-organization relationship. Therefore, this study fills this gap and complements existing knowledge about stakeholder theory, as suggested by a recently released overview of the theoretical framework by Freeman *et al.* (2020). The human and behavioural aspects of stakeholder theory need to be developed and taken into account in the analysis, which can lead to exploration of the actual behaviour of stakeholders.

Previous popular methods used to measure CSR in academic and professional settings have been the study [Ali *et al.*, 2010], the content discussion [Ahamed *et al.,* 2014; Freeman *et al*., 2015; Platonova *et al.,* 2018; Shabbir, & Rehman, 2015; Glavas *et al.*, 2007], and the case studies. [Fatma *et al.*, 2014] Also, indicators of pollution provided by some authorities, measures of attitudes and values, measures of reputation, behavioural standards or audit [Greening *et al*., 2000], and the amount of allowance or endowment given by the company for social work [Ehsan, & Kaleem, 2012] have been used as different methods of measuring CSR. The financial performance of the corporation was generally measured using the financial statements in the annual reports. From here on, accounting-based standards have provided the most positive correlation between CSR and corporate financial performance [Aras *et al.*, 2010; Saleem *et al.*, 2020; Iqbal *et al.*, 2012; Sun, 2012]; stock or measures supported by the market [Gross *et al.,* 2011; Iftihar *et al.*, 2020] have also been utilized.

Theoretical Underpin

The study is supported by stakeholders, utilitarian, managerial and relational theory. Stakeholders' theory underpins the direct effect of CSR on reputation and financial performance, whereas contingency theory supports the use of a moderator

variable for the study of the reputation of CSR and the relationship between CSR and the financial performance of the enterprise. Stakeholder theory explains CSR's impact on organizational performance. Clarkson (1995) explained that an organization is 'a network of interconnected stakeholders'. According to the researchers, stakeholders' theory is the most relevant theoretical framework for CSR research. [Freeman, 2017; Ho ATS, 2012; Iqbal *et al*., 2012; Li Sun *et al*., 2015] Several authors have used this theory to examine the relationship between CSR and the performance of the organization. [Maqbool *et al*., 2010; Moore, 2018; Mocan *et al*., 2015; Mcwilliam *et al*., 2016]

Ouimet *et al.* (2018) believe that stakeholder viewpoints can be applied in many ways. Therefore, the stakeholders' theory was classified into four different theses: descriptive, instrumental, normative and managerial. This study is based on the instrumental perspective of stakeholder and managerial theory. The instrumental thesis of these theories connects stakeholder and managerial with financial performance. [Ouimet, & Simintzi, 2018] The instrumental approach postulates that taking care of various stakeholders elicits a positive reaction from stakeholders that results in superior performance. [Ouimet, 1995]

Contingency theory underpins LR's moderating role. Contingency theory says there is no better set of CSR initiatives and contextual variables to achieve business benefits. A CSR – positive performance association is supported by specific CSR initiatives with some auxiliary variables. Freeman *et al*. (2020) believed that it is naïve to think that CSR and performance will be related under all conditions. As such, CSR can improve performance under certain conditions and hinder performance in others. He indicated that all CSR initiatives of all the corporations all the time cannot be financially rewarded. He revealed that some companies' CSR initiatives can sometimes pay off financially, and it is not clear which and when of those initiatives are paying off. He pointed out that the impact of CSR varies from organization to organization, and that such variations could be attributed to specific factors in each situation. Thus, based on contingency theory, the LR factor was used to determine the CSR-performance relationship. CSR earnings are based on examining appropriate contextual variables to determine the CSR-performance relationship. Researchers have recognized the complexity of the CSR–performance relationship is contingent upon situational factors [Paloza *et al*., 2011] that exhort researchers to use moderating variables.

Stakeholders' Theories

Stakeholders' theory emphasizes the maintenance of balance among all stake-holders and contributes to the well-being of all. A closer definition of stakeholders describes a group that is important to the success and survival of the organization, and a broader definition includes an association of members that may influence or be influenced by the organization. [Freeman, 2020] Employees can be incorporated into both stakeholder definitions. By exploring the employment relationship in stakeholder theory, in a sense we are trying to analyse the ethical analysis of HRM provided by stakeholder theory, while focusing on employees working in an organization as responsible persons with "names and faces". [Greenwood, Freeman, 2011]

Utilitarian Theories

In the utilitarian theories the corporation functions as a function of the economic system in which the function is mechanical, i.e. traditionally referred to as profit maximization. CSR ideas have emerged from the awareness of the need for a responsible economy, anchored in a company's business ethic. So, the old idea of letting business run its course leaves room for determinism, individualism, public control, and personal responsibility for social responsibility. Utilitarianism could also be considered synonymous with instrumental theories [Bowie, 1998; Campbell, 2007] in which the society is seen as only an instrument of wealth creation, and its social activities are only one means of obtaining economic results. Instrumental theories were also grounded in the basic idea of investment in a local community in which Friedman (1970) strongly stated earlier that investment will in the long term provide resources and facilities for people's livelihoods in the community.

Utility theories are linked to strategies for competitive benefits. The advocates of these theories are, for instance, Porter and Campbell (2007) and Crane *et al.* (2004) who viewed the theories as basis for developing strategies in the dynamic usage of natural resources of the corporation for competitive advantages. Strategies also involve altruistic activities that are socially recognized as marketing vehicles.

Freeman and Ginena (2015) further split the utilitarian group of theories into two, that is the social costs of society and the idea of functionalism. The social cost theory has a basis for CSR where it is said that the socio-economic system of the community is influenced by the non-economic strengths of the enterprises. It is also referred to as instrumental theory [Philip, & Sosodia, 2004] because it is understood

that CSR is simply a means to an end, which leads to the fact that the social power of society materializes specifically in its political relationship with society. The utilitarian theory, therefore, advises that the corporation needs to take social duties and rights to participate in social co-operation. Within this framework, the functionalist theory, specifically advocates that the corporation is viewed as a function of the economic system, whose one of the goals is profit making. The company is regarded as an investment, and the investment should be to the benefit of investors and stakeholders. From the internal point of view of the company, CSR was conceived as a tactic of defence of the industrial system against external attacks because it requires a balance between profitability and social goals for the balance of the economic system.

Managerial Theory

The analysis by Philip and Sosodia (2020) places more emphasis on the logic of management theory, which focuses on business management in which the company addresses CSR internally. That's the difference between the utilitarian view and the managerial view of CSR. This indicates that everything external to the corporation is taken into account for organizational decision making. Managerial theories have been split into three sub-groups: 1) Corporate social performance (CSP); 2) Social accountability, auditing and reporting (SAAR), and 3) Social responsibility for multinationals.

The CSP sets out to measure the contribution of the social variable to economic performance. The problem is therefore to manage the business taking into account social and economic factors. It is founded on the premise that business depends on society for its development and sustainability. CSP of a corporation is further sub-divided into five dimensions in order to keep detailed information about its existence in the corporate chains: 1) centrality measures the way CSR is compatible with mission of the core goals; 2) specificity gauges the advantages CSR brings to the corporation; 3) pro-activity that measures the degree of reaction to external demands; 4) voluntarism that accounts for the firm's discretion in implementing CSR; and 5) visibility refers to the way the responsible behaviour is perceived by community of stakeholders. As a finale, the managerial theory generates interest in the sense that CSR considers socio-economic variables to measure firms' socio-economic perfor-mance, as considerably as to link social responsibility ideology to business strategy. Secchi (2005) states that the SAAR is strictly linked to contributions to social

performance through accounting, audit and reporting processes. SAAR means a company is accountable for what it does. In doing so, businesses are controlled and regulated as part of their core business, while at the same time being accountable to the relevant community.

While all three activities are separate management activities, they are inter-related. All these lead to the socially responsible behaviour of a firm, which finally measures the corporations' activities that deliver social impact. Firms are involved in SAAR activities for communication needs, to have better stakeholder involvement and for disclosure concerns

Relational Theory

Relational theory arises out of the complex relationships between the firm and the environment. The concept of enterprise and society is proposed as meaning "enterprise in society" where CSR emerges as an interaction between the two entities. One measure of CSR is the growth of economic values within a society. Another is the obligation of a person to take into account the impact of his or her decision and action on the whole social system. Laid down in the form of a general relationship, the social responsibilities of businessmen must reflect the extent of the social power they have [Philip, & Sosodia, 2020]

The stakeholder approach was developed as one of the strategies to better manage the business. This is also said to be a way of understanding reality to manage a company's socially responsible behaviour. The stakeholder approach also considers a company to be an interconnected network of different interests where self-generation and community creation occur interdependently; and individuals behave altruistically. Based on the analysis of Garriga and Mele (2004), the stakeholder approach forms part of integrative and ethical theories, where the first focuses on integrating social claims, and the second on the right thing to do in order to achieve a good society. These are backed up by the work of Graffin *et al.* (1997) where balances among the pastimes of the stakeholders are the stresses; and the work of Freeman and Phillips (2002) that considers fiduciary duties towards stakeholders of the firms, respectively.

By and large, as narrated through reviewing literature, the majority of the available empirical evidence was centred mostly on corporate social responsibility and its impact on financial performance, little of the literature mediated on social and non-social environmental aspect and employee performance which appear to

be single sided. However, to the best of the researcher's knowledge, there seems to be no research on the impact of corporate social responsibilities on financial performance mediation on employee performance in the banking sector. In view of this, the researcher is interested to undertake a study which hinged on the intent to examine corporate social responsibility mediating on employee performance.

Hypothesis

H1a: There is significant positive relationship between the corporate social responsibility and financial performance.

H1b: There is significant positive relationship between employee performance and financial performance.

Research Methods
Design and Sample

This is a cross-sectional study amongst a sample of employees from 10 manufacturing firms in Nigeria. The data were collected by means of a questionnaire as a research tool. As of November 2020, 200 questionnaires were distributed and 150 respondents (71 per cent) completed and returned the questionnaires. Under the light of the present study's hypotheses, we examined the relationship between corporate social obligation and financial performance mediating on the role of employee performance.

Measures

All scales used in this study were evaluated by using 5-point Likert scale and rated from 1 (strongly agree) to 5 (strongly disagree). We adopted the Duygu Turker (2009) corporate social responsibility scale to measure corporate social responsibility and this scale consists of sixteen (16) points. When measuring financial performance, the 10-point scale was used. Neena Sinha & Garg Neelam Dhall (2016) developed this scale. To measure employee performance, Anupam *et al.* (2008) 15-item scale was used.

Table 1. Demographics Factor

Demographics	Demographics Factor	Frequency	Percentage
Age	Below 25 years	40	64.88%
	26-35 years	40	24.39%
	36-45 years	37	5.85%
	Above 45 years	33	4.88%
	Total	150	100
Education	Diploma	30	10.88%
	Technical	36	20.58%
	Bachelor	34	34.53%
	Master	35	25.57%
	Above Master	15	10.44%
	Total	150	100%
Experience		55	36.58%
0-5		30	34.15%
5-10		25	17.07%
10-15		15	7.32%
		25	4.88%
15-20		150	100%
	Above 20		
	Total		
Job Title	Stock clerk	47	24.44%
	Accountant	10	27.42%
	Marketer	50	24.43%
	Manager	10	30.68%
	Supervisor	25	100%
	Total	150	

Findings
Correlation

Table 2. Correlation

Variables	Mean	SD	CSR	EP	FP
CSR	2.16	0.317	1		
EP	3.41	0.572	0.806^{**}	1	
FP	3.43	0.427	0.217^{**}	0.366^{**}	1

** P < 0.05; N = number of participants; SD = standard deviation; CSR = corporate social responsibility; EP = employee performance; FP = financial performance.

The average CSR value is 2.16, slightly above 2, which means that the majority of respondents agreed and the SD value is 417 which showed a 41.7% change between replies. Moreover, CSR is positively and significantly correlated (r = 0.806**, 0.217**) with employee performance and financial performance at P < 0.01 respectively. Also, the average employee performance score is 3.41, which is greater than 2 but not 3, which means the most of the respondents agreed and the standard deviation value is 572 with replies of 57.2%. Moreover, employee performance is positively and significantly correlated (r = 0.366**) with financial performance at P < 0.05 respectively, while the mean value of financial performance is 3.43 which is close to 3, which means that most of the respondents agreed and the total variation among their responses is 0.427 which showed the 42.7% variation among responses.

Regression
Table 3 shows the interplay of FP as the dependent variable with CSR as a predictor. The findings suggest that CSR is positively and significantly related to FP. Furthermore, R = 0.21 indicates that the total 21% variation in the endogenous variable can be resolved by the predictor variable. The table shows how PS interacts as a dependent variable and CSR as a predictor. Table 3 also shows F = 1.431 and p < 0.05 which portrays the fact that the model is statistically significant which means that the predictor caused a change in endogenous variable. These findings supported the H1 of the study, which was formulated as CSR has a positive relationship with FP.

Issue 1/2021

Table 3. Relationship between CSR and FP Table 3 CSR and FP

Variable	B	SE	B	T	Sig
Constant	*4.07*	*0.30*		*6.42*	*0.5%*
CSR	*0.147*	*0.147*	*0.120*	*8.52*	*0.5%*

$_R2 = 0.21$
$F = 1.431$
$P = 0.5$

Table 4. Path Analysis

Paths	Coefficients	SE	t	Sig.
Employee performance and corporate social responsibility (a path)	0.137	0.059	17.8934	0.5%
Financial performance and employee performance (b path)	0.3178	0.1510	0.14366	0.5%
Direct impact of Corporate social responsibility and financial performance (c path)	0.14491	0.1264	0.4229	0.5%
Overall impact of corporate social responsibility and financial performance (c' path)	0.24511	0.3231	0.1189	0.5%

$P < 0.05$

Table 4 means that all routes (a, b, c and c') meet the requirements of partial mediation. Results indicate that employee performance is positively and significantly linked with corporate social responsibility (Path a) (b = 0.137, t = 17.893, p < 0.05). Similarly, employee performance also significantly and positively relates with financial performance (b = 0.3178, t = 0.14366, p < 0.05). This demonstrates that the path b is also significant.

Table 4 shows that routes c and c' are also significant in explaining the direct and overall impacts. A significant relationship exists between corporate social responsibility and organizational performance with b = 0.1449, t = 0.4229, p < 0.05 and the

88

coefficient value shows the direct effect of corporate social responsibility on financial performance (Path c). The overall effect of corporate social responsibility on financial performance is also significant with b = 0.24511, t = 0.1189, p < 0.05) in the presence of a mediating variable. These results indicate that employee performance plays a significant and partial mediating role in the relationship between corporate social responsibility and financial performance.

Conclusion and Research Implications

CSR is seen as a matter of co-operation between business, government and civil society. From a social perspective, CSR should be beneficial to the community as it has a very complex structure as it is made up of individuals with different levels of control over physical and intangible resources. Analysis of theories makes it possible to understand CSR beyond its traditional meanings; CSR therefore requires a multidisciplinary approach from its perspective and practice. Given that the current meaning of CSR is complex, knowledge of theories provides researchers with a better understanding of social relationships.

CSR roles in employee performance relate to how the stakeholder community perceives responsible conduct and how the implications are felt. The analysis shows that CSR proved to have many roles and impacts to the community as follows: closer ties and interdependencies between corporations and community, sharing the costs the company has to compensate due to environmental degradation, transfer of technology from international companies to producing states, joint actions by businesses and communities to protect the environment, reduce poverty in communities, human rights advocacy and help ICT companies to collect data to facilitate public organization. For many business leaders, it is difficult to know where their responsibilities for building infrastructure, creating economic opportunities and accessing essential services like health, the education and poverty reduction start and finish. The experience made it possible to ensure that sustainable CSR solutions at the community, state and national levels are based on partnerships between government, civil society and business.

It is also concluded that the competencies required by CSR managers vary due to the diversity of relevant disciplines and the complexity of the roles and responsibilities of a CSR initiative. There is no specific qualification requirement in this area. Because the field is new, transferable skills and knowledge from other related specialties such as Environmental Management, Business Ethics, Technology

Transfer, Human Resources Management and Community Development are appreciated. In summary, the skills required by CSR managers are categorized as business, human and technical skills; and specific competencies required are further defined by the mission and vision of the organizations where CSR managers serve.

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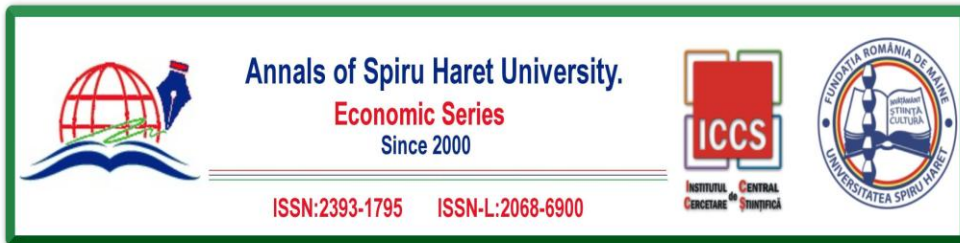
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COMPENSATION MANAGEMENT AND EMPLOYEES' JOB SATISFACTION AMONG STAFF OF CENTRAL BANK OF NIGERIA, LAGOS

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Abstract
The study investigated the compensation management and employees' job satisfaction among staff of the Central Bank of Nigeria, Lagos; it further examined the effect of wages and salaries on the bank's staff job satisfaction. These were with a view to providing information on the impact of compensation on their job satisfaction. The research design adopted for this study was descriptive survey. The study population, 140, was randomly selected using Taro Yamane formula. The questionnaire was used to gather relevant data. The collected data was analyzed using regression analysis. The results showed that value of R square 53.4% of the variation in the dependent variable (wages and salaries) is explained by the independent variable (employees' job satisfaction). The model is highly significant at $F = 156.832$, $p = .000$, which

shows that it can be used to predict the outcome variable. The value of coefficient (β = 0.140) is significant and positive, showing that wages and salaries lead to increase in employees' job satisfaction. The results also showed that value of R square – 75.3% of the variation in the dependent variable (direct and indirect) – is explained by the independent variable (employees' job satisfaction). The model is highly significant at F = 417.091, p = .000, which indicates that it can be used to predict the outcome variable. The value of coefficient (β = 0.868) is significant and positive. The results of this study indicate a link between total compensation management and employees' job satisfaction. The study concluded that awareness of the total compensation package of employees will help management to ensure that they create avenues for the employees to get abreast with the policies and compensation packages.

Introduction
Human resources of every organization have been identified as the most important assets of that organization as its success depends largely on their effective and efficient contributions. Thus, in today's competitive business environment and global workplace, one of the strategies that successful companies use to attract competent, skilled and qualified human resources, retain top talent, and maintain a highly motivated and satisfied workforce is rewards. [Wekesa & Nyaroo, 2013; Nadia, Syed, Humera & Khalid 2011; Mujtaba & Shuaib, 2010]

Compensation plays a vital role in attracting, motivating and retaining talented employees. According to Ibrahim (2016), compensation encourages effective employees to remain in employment for longer periods. Additionally, Ibrahim (2016) also explained that generous rewards retain employees and ultimately lead to job satisfaction, commitment and loyalty. Compensation management is a fundamental function of human resource managers in an organization as they deal with assessment of job values, the design and management of payments (expenditures), job satisfaction, pay system, employees' benefit and pensions. Mujtaba and Shuaib (2010); Kock (2007) asserted that effective, appropriate, timely and market-driven rewards tend to motivate both managers and employees.

Khalid, Salim and Loke (2011) also pointed out that compensation management is received as an exchange of services between employees and employers. Hence, the rewards offered by employers have been found to significantly improve employees' motivation towards their job and, consequently, increase job satisfaction. [Negash, Zewude, & Megersa, 2014; Khalid *et al.*, 2011; Rafikul & Ahmad, 2008; Milne, 2007] Job satisfaction is a yardstick for quality work experience. It is a positive emotional feeling, a result of one's evaluation of his job experience by comparing what he expects from his/her job and what he actually gets. Generally, job satisfaction describes how happy employees are with their jobs and the feelings that they have towards the various aspects of their jobs. Job satisfaction has become a very significant feature in every organization because of its importance to the behaviour of employees in the work place.

Therefore, human resources managers tend to seek for total reward programs that could enhance employees' job satisfaction and in turn increase organizational performance and productivity. [Galanou, Georgakopoulos, Sotiropoulos & Dimitris, 2010; Mujtaba & Shuaib, 2010] The use of effective rewards has been found to have a direct relationship with job satisfaction and motivation of the employees in organizations. [Priya & Eshawar, 2014; Rehman, Khan, Ziauddin & Lashari, 2010]

Statement of the Problem

The intention of any compensation management system is to attract, retain and maintain a satisfied workforce that will always stay focused on producing quality products or services in an efficient manner. [Mujtaba & Shuaib, 2010; Karami, Dolatabadi & Rajaeepour, 2013]. Consequently, a substantial number of literature have been developed, to advance the understanding of compensation management system and the extent to which it influences the level of employees' work related factors such as job satisfaction, commitment, performance, motivation. This is because compensation management system remains a controversial and difficult issue for both human resource managers and employees in the work place. Failure in designing appropriate compensation management has continued to have a negative effect on employees' job satisfaction and overall effectiveness of many organizations.

However, outsourced service providers have continually failed in their efforts at achieving organizational goals and objectives due to lack of job satisfaction (dissa-tisfaction) of their employees as a result of poor formulation and implementation of reward policies. [Armstrong, 2006; Chepkwony, & Oloko, 2014] Therefore, this

study is carried out to fill in the gap of compensation management and employees' job satisfaction among staff of Central Bank of Nigeria, Lagos State.

Formulated Hypothesis

$H_{O1:}$ Wages and salaries do not have significant effect on employees' job satisfaction.

$H_{O2:}$ Direct and indirect compensation do not have significant effect on employee's job satisfaction.

Literature Review
Concept of Compensation Management

Compensation refers to all the provided tangible and intangible rewards an employee receives from the employer as part of the employment relationship. The Society for Human Resource Management (SHRM, 2012) has defined compensation as systematic approach to providing monetary value to employees in exchange for work performed. Compensation may achieve several purposes like assisting in recruitment, job performance, and job satisfaction. It can be said that compensation is the "glue" that binds the employee and the employer together in the organized sector, which is further codified in the form of a contract or a mutually binding legal document that spells out exactly how much should be paid to the employee and the components of the compensation package. Rewards and benefits are also type of compensation program that are important for employees. [Cascio, 2003] Financially, the salaries must be fair according to employee's contribution. This gives a great sense of ownership and an interesting financial advantage for the employees. Non-financial reward should also be provided to employees for their contributions towards any organizations success (SHRM, 2012).

According to a research report by the Society of Human Resource Management (2012), 6 out of 10 employees indicated that compensation was very important to their overall job satisfaction, putting it only three percentage points below opportunities that use skills and abilities and only one percentage point below job security in 2012. It is further stated compensation, along with job security, has consistently remained on the list of the top five job satisfaction factors most important to employees. As the economic climate continues to warm up and hiring rates increase, attractive compensation packages will be one of the strategies organizations competing for talent will use to recruit and retain the best employees. [SHRM, 2012]

98

Types of Compensations

There are two types of compensation. They are as follows:
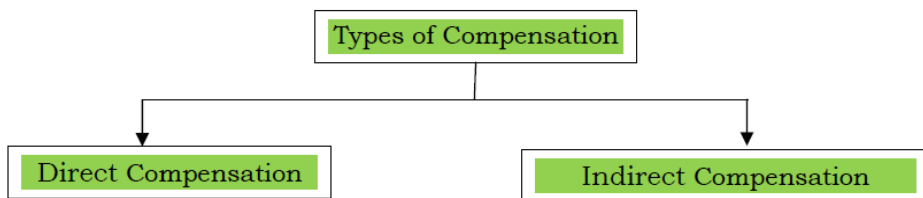
Source: SHRM, 2012

Direct Compensation: It refers to the monetary benefits offered and provided to employees in return of the services they provide to the organization. The monetary benefits include basic salary, house rent allowance, conveyance, leave travel allowance, medical reimbursements, special allowances, bonus, provident fund/ gratuity, etc. They are given at a regular interval at a definite time. [SHRM, 2012]

Indirect Compensation: It refers to non-monetary benefits offered and provided to employees in lieu of the services provided by them to the organization. They include Leave Policy, Overtime Policy, Hospitalization, Insurance, Leave Travel Assistance Limits, Retirement Benefits, Holiday Homes and flexible timings.

Components of Compensation

The following are some components of compensation that have been perceived either to contribute to job satisfaction or dissatisfaction. They include basic pay, allowances, and work environment.

Basic Pay: According to Armstrong (2006), the basic pay is the amount of pay that constitutes the rate for the job. The base pay also serves as the benchmarks against which bonuses and benefits are calculated. It may vary according to the grade of the job or the level of skill required and is influenced by internal and external relativities. The internal relativities may be measured by some form of job evaluation, while external relativities are assessed by tracking market rates. Other times, levels of pay may be agreed upon through collective bargaining with trade unions or by reaching individual agreements. The base rate may be adjusted to reflect

increases in the cost of living or market rates by the organization, unilaterally or by agreement with a trade union.

They further found out that basic pay was one of the key elements that significantly influence employees' job satisfaction. Mulvey (2002) further found out that poor pay translated to low job satisfaction, which was in turn related to low degrees of work engagement. In a similar fashion, research on performance appraisal has revealed that sufficient information, in this case on performance-appraisal criteria, increases satisfaction with the performance appraisal system.

*Allowances. A*ccording to Armstrong (2006), employee allowances include pensions, sick pay, insurance cover, company cars and a number of other 'perks'. Perks are used to recognize exceptional contribution, performance, commitment to culture and values. Perks include additional time off, tickets to events, trips, dinners and public recognition. They comprise elements of remuneration additional to the various forms of cash pay and also include provisions for employees that are not strictly remunerated, such as annual holidays.

*Working Conditions. A*ccording to Desslar (2003), working conditions include aspects like employee voice, employee recognition, quality of the working life, work/life balance, and talent management. The provision of modern equipment and facilities, quality furniture, well ventilated offices, well-spaced offices, secured, well-spaced staff quarters, among others are the conditions that are required to prevent job dissatisfaction in the organization. Therefore, organizations should allow employees to have some input in decision making that will affect them; establish goals and objectives but let the employees determine how they will achieve those goals and objectives. This study sought to establish the conditions under which the teachers work.

Overview of Employee Job Satisfaction

Employee satisfaction is a function of perceived performance and expectations. It is a person's feeling of pleasure or disappointment resulting from comparing a product's outcome to his/her expectations. If the performance falls short of expectations, the employee is dissatisfied and if it matches the expectations, the employee is satisfied. According to Bozeman & Gaughan (2011), human resource is considered to be the most valuable asset in any organisation. It is the sum-total of inherent abilities, aptitudes of the employed persons who comprise executives, supervisors and the rank and file employees. The human resources should be utilized

to the maximum possible extent, in order to achieve individual and organisational goals. It is thus the employee's performance, which ultimately decides the attainment of goals. Hence, the employee's performance is to a large extent influenced by motivation and job satisfaction. [Mayuri, & Mark, 2005]

Dimensions of Job Satisfaction

There are three important dimensions to job satisfaction:

1) Job satisfaction refers to one's feeling towards one's job. It can only be inferred but not seen.

2) Job-Satisfaction is often determined by how well out-comes meet or exceeds expectations. Satisfaction in one's job means increased commitment in the fulfilment of formal requirements. There is greater willingness to invest personal energy and time in job performance.

3) The terms job satisfaction and job attitudes are typically used inter-changeably. Both refer to effective orientations on the part of individuals towards their work roles, which they are presently occupying. Positive attitudes towards the job are conceptually equivalent to job satisfaction and negative attitudes towards the job indicate job dissatisfaction.

Theoretical Framework
Reinforcement Theory

The reinforcement theory was proposed by B.F. Skinner in 1970 as a way to explain behaviour and why we do what we do. If a person is rewarded for a particular behaviour, he or she is more likely to perform those actions again. You can probably think about a time when you did something that made your parents or teacher happy and you were rewarded in some way. The positive reaction of this theory is to motivate you to be active and do the same actions again because you would anticipate getting the same or a similar reward.

Equity Theory

The equity theory was proposed by J.S. Adams in 1960, and suggests that employees' actions will be changed based on their perception of how they are paid in comparison to their co-workers. For example, if you and Billy work the same number of hours and have the same type of job and a similar level of work experience, you would expect to be paid fairly and about the same salary. However,

if you discovered that Billy was paid more than you are, then your productivity will probably decrease so that you are only working up to the level that is fair based on your new perception of your compensation.

Executive Compensation System Approach

The analysis covers chief executive officers (CEOs) and other top executives who will be referred to collectively as executives or CEOs. It is divided into two section-forms of executive compensation and determinant of executive compensation. [Folayan, 2006]

The various forms of executive compensation can be categorized as follows:

1) *Basic Salary:* This consist of the annual salary that is taxable, it is in addition to this base salary that various types of financial incentives and supplement are provided for incentives.

2) *Incentive bonus:* These are short-term performance based incentives usually made available to executives as end of year cash bonuses. The fund from which bonuses are paid is a predetermined part of profits: The amount paid to each executive is based upon his performance and salary level.

3) *Stock Option:* Stock option constitutes one of the most important components of executive compensation. Stock option plans offer executives the right to purchase shares of a company's stock at a specified price for a specified period. If the actual market value of the shares appreciated substantially above the price specified in the option, the executive can "exercise the option", that is purchase the shares at the option price thereby making a huge profit.

4) *Deferred Compensation:* Deferred compensation is awarded in form of bonus (payable in cash or stock) or a pension supplement. It is paid after retirement when the person would have entered a lower income bracket.

5) *Perquisites:* Typical fringe benefits or perquisites (perks) which are enjoyed by executives include free medical service, educational facilities, company cars, and drivers etc.

Empirical Studies

Bozeman & Gaughan (2011) carried a research on the effects of both financial and nonfinancial compensation on job satisfaction among teachers in Kenya. Teachers in Kenya have always downed their tools lamenting about their compensation that raises concern about their job satisfaction. However, it is not

clear the influence compensation has on teachers job satisfaction to cause the many stand offs. This study therefore sought to establish the effects of compensation on job satisfaction among Secondary school teachers in Maara Sub-County, Tharaka Nithi County, Kenya. The objectives of the study were to determine the effects of both financial and nonfinancial compensation on job satisfaction. The study employed a descriptive survey research design. Stratified random sampling was used to select a sample size of 214 teachers drawn from the target population of 474. Responses were collected through administration of questionnaire. The validity and reliability of the questionnaire was enhanced through a pilot study carried out in three schools in Meru South Sub-County. To ensure the validity of the instruments, both face and content validity was used. Data collected was categorized coded and then tabulated using SPSS. The qualitative data was analyzed using descriptive statistics, means frequency tables and percentages.

The hypotheses were tested using chi-square. The study established that the basic pay, allowances and work environment affects teachers' job satisfaction to a great extent. The research concluded that teachers were highly dissatisfied with all aspects of compensation that they receive. The study recommends that the government reviews the teachers' compensation to commensurate the services rendered. It is hoped that the findings of this study could assist the education planners in formulating compensation policies that would enable teachers to achieve job satisfaction.

Adekoya I. (2013) posited that compensation management is one of the most important aspects of personnel management. It covers economic rewards in form of wages and salaries as well as in various forms of non-wage economic payment known as fringe benefits, indirect compensation or supplementary pay. Therefore, this research work has been carried out to look at the impact of organizational compensation management system on the performance of employees in the public sector. The result focus focuses on the analysis of data collected from the field using the questionnaire. It includes the frequency distribution table and the chi-square analysis as well as the inferences made from the analysis.

Research by Pienaar (2007) indicated that job satisfaction is the most significant predictor of turnover intention and is significantly and negatively correlated with turnover intention. Tian-Foreman (2009) found strong support for the hypothesized negative relationship between employee turnover intention and job satisfaction. Wheeler *et al.* (2007) however, revealed statistical support that person-organisation misfit and job dissatisfaction do not necessarily lead to turnover intention.

Issue 1/2021

Methodology

In this research, descriptive sample survey was adopted. The design describes the process of selecting sample of elements from a target population to conduct a survey. Questionnaire was adopted for data collection and the population and sample technique was determine by the use of Taro Yamane (1973) formula, where the total population is two hundred and fifteen respondent and the sample size adopted according to the formula is one hundred and forty respondent. Regression analysis was adopted to test the formulated hypotheses in the study and all analyses were done through SPSS software package in accordance with the research work.

Presentation of Data
Testing of Hypotheses

Two hypotheses were tested and the results are as indicated below:

H_{01}: Wages and salaries do not have significant effect on employees' job satisfaction among workers of Central Bank of Nigeria, Lagos State.

Table 1. Results of Linear Regression Analysis

Model	R	R Square	Adjusted R2	F	Sig (P≤0.05)	Standardized Coefficients (β)	T	Sig (P≤0.05)
1	.731[a]	.534	.530	156.832	.000[b]	.140	12.523	.000

$P = \leq 0.05$

The value of R square shows that 53.4% of the variation in the dependent variable (wages and salaries) is explained by the independent variable (employees' job satisfaction). The model is highly significant at $F = 156.832$, $p = .000$, which shows that it can be used to predict the outcome variable. The value of coefficient ($\beta = 0.140$) is significant and positive, showing that wages and salaries lead to increase in employees' job satisfaction. Hence on the basis of the aforementioned findings, H_1 was rejected, and it was concluded that wages and salaries have positive effect on employees' job satisfaction among workers of Central Bank of Nigeria, Lagos State.

H$_{02}$: Direct and indirect compensation do not have significant effect on employee's job satisfaction among workers of Central Bank of Nigeria, Lagos State.

Table 2. Results of Linear Regression Analysis

Model	R	R Square	Adjusted R2	F	Sig (P≤0.05)	Standardized Coefficients (β)	T	Sig (P≤0.05)
1	.868[a]	.753	.753	417.091	.000[b]	.081	20.423	.000

P = ≤0.05

The value of R square shows that 75.3% of the variation in the dependent variable (direct and indirect) is explained by the independent variable (employees' job satisfaction). The model is highly significant at F = 417.091, p = .000, which shows that it can be used to predict the outcome variable. The value of coefficient (β = 0.868) is significant and positive, showing that direct and indirect compensation lead to increase in employees' job satisfaction. Hence, on the basis of the aforementioned findings, H$_2$ was rejected, and it was concluded that direct and indirect compensation have positive effect on employees' job satisfaction among workers of Central Bank of Nigeria, Lagos State.

Discussion of Findings

Hypothesis one stated that wages and salaries do not have significant effect on employees' job satisfaction among workers of Central Bank of Nigeria, Lagos State. The study revealed that wages and salaries have positive effect on employees' job satisfaction among workers of Central Bank of Nigeria, Lagos State. Job satisfaction is a general attitude towards one's work, which shows the difference between the number of awards received by workers with the amount they believe they should receive. [Robbins, 2003] Conversely, satisfaction drawn from factors associated with the job itself or the direct result thereof, such as the nature of the work, achievements in employment, promotion opportunities, and the opportunity to develop themselves, as well as recognition.

The influence of wages on job satisfaction in this study is a significant wage effect on job satisfaction of workers in the manufacturing industry in Makassar Industrial Area. This means that the wages of workers consisting of receipts in the

form of money (cash), benefits in kind, social security (social insurance), work environment and incentives have a significant effect on job satisfaction of workers consisting of a sense of responsibility, discipline and obedient, proud as a worker, proud and respectful to his superiors, and are proud of the industry's image. The results of this study also showed that the higher wages received by workers, the higher the level of employee job satisfaction.

Hypothesis two stated that direct and indirect compensation do not have significant effect on employees' job satisfaction among workers of Central Bank of Nigeria, Lagos State. The study revealed that direct and indirect compensation have positive effect on employees' job satisfaction among workers of Central Bank of Nigeria, Lagos State.

Dartey-Baah (2010) state that there are other dimensions of job satisfaction aside rewards. These other dimensions include satisfaction with work attributes, other people, organisational context and individual differences. Conversely, this discovery debunks the arguments of Bessell *et al.* (2002), Drake *et al.* (2007), Eshun and Duah (2011), and Shanks (2007), who noted that, employee satisfaction results from a mixture of rewards other than any one particular reward. However, this finding supports the contentions of Herzberg regarding the importance of both motivators and hygiene factors in job satisfaction and eliminating job dissatisfaction. The presence of motivators serves to motivate the individual to superior effort and performance preventing dissatisfaction, but does not create on its own a positive attitude or motivation to work. Employees will be motivated if management enrich the content of the actual work through added responsibility, career development, growth and other intrinsic forms of motivation aside extrinsic factors of motivation. Overall, the research established that rewards (intrinsic, extrinsic and social) have no positive influence on work motivation and job satisfaction but discovered a statistically significant relationship between reward and work motivation. In addition, no relationship was established between reward and job satisfaction since there are other dimensions of job satisfaction aside rewards.

Conclusion and Recommendations

The results of this study have mapped a link between total compensation management and the job satisfaction of employees. Employees usually do not have the whole picture of their entitlement when it comes to compensation and this could be as a result of their employer's not providing them with the relevant policy

106

manuals to read and educate themselves or their own lack of interest in reading those manuals when they are provided for them. This study sets the tone for further research into the link between compensation systems, performance management and the job satisfaction of employees. It could also be the basis for comparing data from similar institutions on the subject matter. Based on the study findings, the following recommendation could be considered to address the issues revealed by the study:

1. Management of the institution should provide for every new employee a copy of the compensation manual and discuss the items therein during orientation. And for existing employees' periodic workshops and training should be organized to get them educated on the compensation policies and packages

2. Communication should be improved to cover issues that have to do with compensation by involving the various heads of units in the formulation and implementation process of policies concerning compensation. The entire employee populace could also be involved by organizing quarterly staff durbars where issues concerning compensation in general could be discussed.

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BOARD MEMBERS' EDUCATION DIVERSITY AND SUSTAINABILITY REPORTING

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Abstract
The objective of this study is to investigate the influence of an educationally diverse board on sustainability reporting of listed consumer goods in Nigeria

for the period 2014-2019. We developed a sustainability disclosure index using the Global Reporting Initiative (GRI) guidelines to score the information content of annual reports relating to sustainability performance. Board members' education level and background were used to proxy education diversity in the boardroom. We employed descriptive and inferential statistics to summarize the data and to draw an inference on the population studied. Results from the panel least squares regression revealed that board educational background diversity positively and significantly affects the sustainability reporting of consumer goods firms in Nigeria. However, we found no evidence on the nexus between diversity in the level of education of board members and sustainability reporting. The study concluded that board education diversity influences sustainability reporting in Nigeria. Consumer goods firms should frequently conduct workshops and symposiums on environmental and social reporting issues for their board members and employ directors from a diverse educational background into the board.

Keywords: *education level diversity; education background diversity; sustainability reporting; global reporting initiative, consumer goods firms.*

JEL Classification: M10, M14, M41, M48

1. *Introduction*

Sustainability Reporting (SR) is a trending issue in accounting and management sciences literature. It is a process wherein companies disclose information on the economic, environmental, and social impact on the society and environment as a result of their daily business activities. [Global Reporting Initiative (GRI), 2019] The report emphasizes the need for firms and business organizations across the globe to be socially and environmentally responsible. In terms of how firms and businesses respond to human rights protection, fair treatment of staff or workers, and a significant reduction of environmental hazards was a result of their daily activities.

The recognition of sustainability reporting by stakeholders of firms is due to businesses and firms' neglect of social and environmental responsibility. This is evident in the cases of British Petroleum (BP) oil spillage in the Gulf of Mexico, Chernobyl nuclear power plant explosion in Russia, and Lonmin Markana Mining firm's maltreatment of its workers in South Africa and a host of others. [Ismail & Latiff, 2019; Castro & Diaz, 2015] The consequence of the firms' neglect of social

110

and environmental responsibilities resulted in a huge financial and reputational damage. As seen in the case of British Petroleum (BP), who were charged for health and safety issues due to the oil spillage experienced at the Gulf of Mexico [British Petroleum, 2015], causing damage to the marine ecosystem, that also caused loss of livelihood and hunger for the residents. In consequence, it triggered devaluation of the firm's share price since substantial legal cost was imposed on the company by the authorities for a breach of the health and safety regulations. [Cruden, 2016; John & Cruden, 2016]

Another scenario is the case of Lonmin Marikana (a mining company in South Africa) where human rights violation and unfair treatment of workers often played as a general norm. [Ismail & Latiff, 2019] For instance, workers employed by the said company at their mining site were always in poor condition due to neglect and unpaid salaries even though the firm made an enormous profit. [Baron, 2013] This spell negative doom in two-folds for the company. First, it led to a halt of their essential business production activities (mining), and secondly, it damaged their reputation. [Chibber, 2012; Orji, Ogbuabor & Anthony-Orji, 2018]

These scenarios among several others sparked the interest of Socially Responsible Investors (SRI), who began mounting pressure on firms to start disclosing information on social and environmental performance alongside their conventional financial performance. However, for firms and businesses to align with this strategy and philosophy, corporate governance reform is deemed highly crucial in terms of a diverse board. [Ismail & Latiff, 2019] Likewise, arguments imply that a diverse board *will* broaden the board members' understanding and knowledge of complexities in the society and environment compared to a homogenous board. [Carter, Simkims & Simpson, 2003; Ujunwa, Okoyeuzu & Nwakoby, 2012] It is also believed that it will assist in promoting *the functional ability of the board in solving complex problems, strategic decision-making, and the monitoring of management.* [Forbes & Miliken, 1991] Notably, researchers document that an educationally diverse board has a constructive influence on firm sustainability performance and disclosure. [Umukoro *et al.*, 2019]

Shreds of evidence have established the link between board demographic diversity and sustainability reporting [see Anazonwu, Egbunike, & Gunardi, 2018; Berger, 2019; Fuente, Garcia-Sanchez & Lozan, 2017; Zaid *et al.*, 2020; Adeniyi & Fadipe, 2018; Awodiran, 2019; Iyafekhe, Aifuwa, & Odu, 2020), but some authors document contrary findings. Musa, Gold, and Aifuwa (2020) examined the influence

of board member educational level on sustainability reporting of listed industrial goods firms in Nigeria but failed to provide supporting evidence on the relation between board members' education level and sustainability reporting. Similarly, Iyafehke, Imagbe, and Odu (2020) examined the influence of an educationally diverse board on sustainability reporting of listed deposit money banks in Nigeria and equally found that board members education level background has no significant impact on sustainability reporting. Their findings are suggestive of an existence of a dearth of literature on the influence of an educationally diverse board and sustainability reporting. Therefore, the decision to examine this issue in the case of consumer goods companies in Nigeria, because, to the knowledge of the researchers, a study focusing on this sector is almost non-existent. Besides, the above-noted works of literature failed to further carry out a robustness test on the estimation of their results. Against this backdrop, our study aims to fill the void in the literature on the influence of an educationally diverse board on sustainability reporting for the consumer goods firms in Nigeria, after we controlled corporate administration and firm-level qualities.

The remaining part of our research paper is organized as follows: Section two focuses on the literature review and hypotheses development and the theoretical framework. Section three addresses the research methodology with an emphasis on the research design, data collection techniques, and model specification. Section four presents the data analysis, interpretation, and discussion of findings, and finally, section five concludes the study.

2. *Literature Review and Hypotheses Development*
2.1. **Sustainability Reporting (SR)**

Musa *et al*. (2020) defined sustainability reporting (SR) as the process of disclosing organizational information concerning its daily economic, social, and environmental activities and its effects on the society and stakeholders where it operates. Hanh, Preuss, Pinkse and Figgs (2014) defined SR as a set of firms' activities that reveals the inclusion of social and environmental concerns in the business operations and interaction with stakeholders. SR is the documentation of a firm's economic, social and environmental impacts on its performance to inform stakeholders at a specified time. [Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019] Baker, Ghazali, and Ahmad (2019) defined SR as the process of simultaneously addressing interlinked aspects of the economic, environmental, and

social well-being of an organization. Perusing the above definitions, we can conclude that SR encompasses three dimensions – economic, environmental, and social aspect of reporting, thus a multidisciplinary approach.

2.2. **Board Members' Education Diversity**

According to Dedunu and Anuradha (2020) and Musa *et al*. (2020), board education diversity (BED) is a sub-subset of board diversity that significantly affects the firm's strategic decision. It could be classified as education level, education background, and professional membership diversity of board members. [Aifuwa *et al.*, 2020] It is a cognitive aspect of the directors on the board of an organization.

A heated debate with conflicting opinions has been on whether BED affects firm performance. For instance, some researchers such as Hoffman (1959), Hoffman, Harburg, & Maier (1961), Hoffman & Maier (1962), Willems & Clark (1971) provided supportive evidence of a positive association. The authors argued that cognitively diverse groups tend to be more beneficial in creative and innovative tasks rather than the normal routine tasks. More recently, the studies of Umukoro *et al.* (2019) and Iyafekhe *et al*. (2020) documented that a highly-diversified board in terms of the board educational level showed a constructive influence on firm sustainability performance and disclosure.

Contrarily, Daft and Lengel (1986) and Glick, Miller and Huber (1993) found that BED negatively affects firm performance specifically on the team's ability to coordinate. They opined that should board members' perceptions differ significantly, it could spark friction and incompatibility of ideas in the team or board. Also, Dahlin *et al.* (2005); Knight, Weingart and Hinds (1999); and Weber and Camerer (2003) posit that diversity in the education of board members would make the coordination and accomplishment of the task to be ineffective and less efficient if members expectation and beliefs are incongruent. To provide an empirical basis to these arguments, our study examined the impact of board members' education level and background diversity on sustainability reporting.

2.2.1. *Board Members Education Level Diversity and Sustainability Reporting*

Education level diversity (ELD) in the boardroom shows the depth of directors' experience and competence in carrying out the board activities. Musa *et al.* (2020) asserts that ELD in the boardroom is evidence of the directors possessing a lower and higher educational qualification. The ELD of board members is an indication

that they possess undergraduate and postgraduate degree qualifications. [Iyafekhe, *et al.*, 2020] Meanwhile, Aifuwa *et al.* (2020) reiterated the importance of board members with diverse educational qualifications on improving the quality of an organization's workforce. In line with the Resource-Base View, Barney (1991) noted that ELD plays an important role in improving the firm's strategic decision. As per Hsu, Chen, and Chen (2013) and Musa *et al.* (2020), diversity in the education level of board members would contribute to improve and enhance their ability and proficiencies in processing information and recognizing new business opportunities. Similarly, Nielsen (2010) opined that firms would compete better in the international market when board members' education levels are diverse.

On a contrary, Ngo, Pham and Luu (2019) believed that no degree could totally and systematically substitute for the board members' skills and experience or background knowledge. In their opinion, educational degrees are merely a part of a board's knowledge and expertise. Aifuwa *et al.* (2020) further argued that ELD would not lead to improved market performance for the firms. While Ibadin (2021) posits that a wide gap exists between the education level of board members acquired locally and those from foreign institutions. Accordingly, a postgraduate degree acquired over the shores of Africa is far detailed and better than the ones acquired in the African locality.

Furthermore, from an empirical front, scanty works of literature have been conducted on the nexus between board members' education level diversity and sustainability reporting. For example, using a panel least square, Iyafekhe *et al.* (2020) examined the influence of educationally diverse boards on sustainability reporting of listed deposit money banks in Nigeria over the period 2014 to 2018. They however found no evidence proving the influence. A similar study was conducted by Musa *et al.* (2020) on the influence of a diverse board on the extent of sustainability reporting of the industrial goods firms listed on the Nigerian Stock Exchange for the period between 2014-2018. Employing the panel least squares for their investigation, they equally found no evidence of the supposed association. Similar studies that corroborate the arguments include Khan, Khan and Saeed (2019a) and Khan, Khan and Senturk (2019b) who found no evidence on the nexus between board education level diversity and the quality of corporate social responsibility.

Despite the opposing shreds of evidence, Umukoro *et al.* (2019) who examined the association between board expertise and sustainability reporting for the listed
114

banks in Nigeria found a significant and positive association between board member education level and sustainability reporting. The conflicting arguments are thus indicative of a linkage between ELD and sustainability reporting. Therefore, we hypothesize that:

Ho$_1$: Board members' education level diversity has no significant impact on sustainability reporting.

2.2.2. **Board Members Education Background Diversity and Sustainability Reporting**

Generally, it is believed that education background diversity (EBD) is a major impetus in understanding and achieving sustainable performance. [Iyakekhe *et al.* 2020] A board composed of varying members with a diverse educational background will be equipped with a wealth of intellects, cognitive abilities, and attitudes that can contribute to improving firm performance. [Aifuwa *et al*., 2020] Another suggestion is that diversity in educational backgrounds like business, management, sciences, art, law, and engineering or a host of other disciplines [Khan *et al.,* 2019a] can contribute to encouraging sustainability disclosure and subsequently its performance. [Iyafekhe *et al.*, 2020] Similarly, Clark and Maggitti (2012) believe EBD is a valuable resource and a catalyst for strategic decision-making on corporate social responsibility disclosure. While Krishnan, Wen, and Zhao (2011) and Vo and Phan (2013) reiterated that board effectiveness increases when the background education of board members is diverse such as having discipline in areas of accounting, engineering, humanities, finance, economics, law, and other related fields.

Despite these suggestions, empirical evidence to prove the nexus between education background diversity and sustainability disclosure is still scanty. Iyafekhe *et al.* (2020) examined the influence of educationally diverse boards on sustainability reporting of listed deposit money banks in Nigeria between 2014 and 2018. The author employed a panel least squares to empirically ascertain the influence of board education background diversity on sustainability reporting and found a positive and significant association. Other researchers proved a mixed relationship between board education background diversity and corporate social responsibility reporting. For example, in Pakistan, Khan *et al.* (2019b) found no evidence on the nexus, while Khan *et al.* (2019a) found a negative association between education background diversity and corporate social responsibility. Arguments from the identified studies are suggestive of inconsistent findings on the nexus between

board members' education background diversity and sustainability reporting. Hence, our hypothesis is that:

Ho$_2$: Board members' education background diversity has no significant impact on sustainability reporting.

2.3. *Theoretical Framework*

We hinged our study on the Upper Echelon theory proposed by Hambrick and Mason (1984) and the Stakeholders theory of Freeman (1984) to explain the influence of an educationally diverse board on sustainability reporting for the consumer goods firms listed on the Nigerian Stock Exchange (NSE). The Upper Echelon theory explains the correlation between the organizational outcome and managerial background attribute. According to Hambrick and Mason (1984), organizational performance reflects the values and cognitive bases of powerful actors in the organization. Relating this theoretical stance to our study, powerful organizational actors such as the board of directors and their managerial attributes such as cognitive diversity, educational level, and background, affects the firm's performance. The reason is the board of directors, due to their cognitive abilities they strive to meet stakeholders' expectations.

Stakeholder theory addresses the expectations of specific stakeholder groups in the society and considers the effect of their expectation on information disclosure. [Freeman, 1984] Despite that sustainability has always been in the heart of stakeholders, it has been consistently ignored in the past. [Aifuwa *et al.*, 2019] But recently, stakeholders had begun demanding from firms to report on their environmental and social aspects. [Aifuwa, 2020] For these expectations to be successfully met, owners of businesses must use the services of an educationally diverse board to meet the needs of stakeholders in reporting on the economic, social, and environmental concerns as they affect the society they operate. Hence, our study propositions that an educationally diverse board will serve as a contributory to the extent of sustainability reporting.

3. *Methodology*
3.1. **Research Design**

Inclined on the positivist research philosophy and the deductive research approach, we adopted the multi-method quantitative research design for our study due to the following reasons. First, the study is designed to examine the

relationship(s) between variables measured numerically and analyzed using a range of statistical and graphical techniques; Secondly, our study employed more than one quantitative data collection technique and corresponding analytical procedure, i.e. content analysis of sustainability reports and the annual reports. [Saunders, Lewis & Thornhill, 2016] Furthermore, we employed the classical experimental strategy to determine the effect of the independent variables on the dependent variables [Saunders *et al.,* 2016] Besides, we used corporate administration and firm-level qualities to control for the influence of board members' education diversity on sustainability reporting of listed consumer goods firms in Nigeria.

3.2. **Data Collection Method and Analysis**

The study population comprised the consumer goods firms listed on the Nigerian Stock Exchange as of December 2019. We chose the firms because their activities revolve around the three dimensions of sustainability reporting earlier noted for which prior studies have not been investigated recently. This led us to a sample of nineteen (19) companies having a sound basis for generalization of the manufacturing industry. Secondary data sourced from annual reports of the firms' span between 2014 and 2019 with descriptive and inferential statistics being employed for the data analysis. The Panel least squares were equally utilized to test the research hypotheses since the study data had properties of time-series and cross-sectional data. Furthermore, we employed logistic analysis for the robustness check.

3.3. **Model Specification**

Our study adopted the model of Iyafekhe *et al.* (2020) in examining the impact of board education diversity on sustainability reporting of listed consumer goods firms in Nigeria. The author specified their model as:

$SBR = f(BEL; BEB;$ Control variables) …………………………….…….........(i)

In econometric form:

$$SBR_{it} = \beta_0 + \beta_1 BEL_{it} + \beta_2 BEB_{it} + \beta_3 BSZE_{it} + \beta_4 BIND_{it} + \beta_5 BMT_{it} + \beta_6 FSZE_{it} + \beta_7 PROF_{it} + \beta_8 AUDC_{it} + \varepsilon_{it}$$…………..……………………………………….......(ii)

where: SBR = sustainability reporting; β_0 = constant; BEL = board member education level; BEB = board member educational background; BSZE = board size; BIND = board independence; BMT = board meeting/diligence; FSZE = firm size; PROF = profitability; AUDC = audit credibility; β_1, β_2 β_3 = coefficient of explanatory variables; ε = standard error; i = cross sectional (companies); t = time series. A priori expectations for with extant literature noted to be β_1, β_2 > 0

3.4. **Development of Sustainability Disclosure Index (SDI)**

In developing the sustainability reporting index, we used the G4 sector-specific disclosures of the Global Reporting Initiative (GRI). The rationale for this is that the general framework focusing on the economic, environmental, and social indicators addresses specific industry needs. [Ozordi *et al.*, 2020; GRI, 2013] Therefore, based on the content analysis, we developed an unweighted sustainability disclosure index for the economic, environmental, and social performance of the sampled firms. For instance, where the sampled firm fully discloses economic, environmental, and social information, they will be scored 1, otherwise 0 for partial or non-disclosure.

$$\text{Therefore, } SBR = \frac{TD}{M}$$

where: SBR = sustainability reporting; TD = total disclosure (N1 + N2 + N3); N1 = for the economic indicator i; N2 = for the environmental indicator i; N3 = for the social indicator i; M = maximum possible score of 158.

Table 1. Measure of Variables

Variable	Type	Measurement	Supporting Scholars
Sustainability Reporting (SBR)	Dependent Variable	GRI G4 framework on economic, social, and environmental sustainability disclosure as stated above.	GRI (2013); Anazonwu *et al.* (2018)
Board Member Education Level (BEL)	Independent Variable	Total numbers of the board members with Postgraduate degree divided by the total number of directors.	*Ngo et al.* (2019); Vo and Phan (2013); Aifuwa *et al.* (2020)
Board Member Educational Background (BEB)	Independent Variable	Blau index for board educational background diversity comprising six categories: Human Resource (HR) and Accountancy, Banking and Finance, Economics, Engineering, Law, and others.	Aifuwa *et al.* (2020); Blau (1977)
Board Size (BSZE)	Control Variable	The total number of directors sitting on the board.	Adeniyi & Fadipe (2018)
Board Independence (BIND)	Control Variable	The number of non-executive directors on the board divided by the total number of directors sitting on the board.	Aifuwa & Embele (2019); Saidu & Aifuwa (2020)
Board Meeting (BMT)	Control Variable	Total number of meetings held by the corporate board.	Iyafekhe *et al.* (2020)
Firm Size (FSZE)	Control Variable	Natural logarithm of total assets.	Aifuwa & Embele (2019); Saidu & Aifuwa (2020)
Profitability (PROF)	Control Variable	Measured by return on assets (ROA), i.e. Profit after tax divided by Total assets.	Aifuwa, Saidu & Gold (2020)
Audit Credibility (AUDC)	Control Variable	Dichotomous variable, i.e. 1 if a firm is audited by the BIG4 in a particular year; otherwise, 0.	Saidu & Aifuwa (2020)

Source: Authors' Compilation, 2020

4. *Data Presentation, Analysis and Discussion of Findings*

In this section, we described the data used in the variables of the study and also inferences were drawn on them.

Table 2. Descriptive Statistics

Variables	Mean	Minimum	Maximum	Std. Dev
SNR	0.349137	0.000000	0.727273	0.180211
GRI	0.221053	0.000000	1.000000	0.417157
BEL	0.485189	0.000000	1.540000	0.324351
BEB	0.698438	0.34588	0.80000	0.043781
BSZE	10.05263	4.000000	15.00000	2.803373
BIND	0.657716	0.400000	0.920000	0.119654
BMEET	3.168421	1.000000	6.000000	1.208592
FSZE	7.701260	6.240489	8.916817	0.653474
PROF	0.110437	0.160000	0.380000	0.093876
AUDC	0.610526	0.000000	1.000000	0.490218

Source: Authors' Computation, 2020

Table 3. Correlation Matrix

	SNR	GRI	BEL	BEB	BIND	BSZE	BMEET	FSZE	PROF	AUDC
SNR	1									
GRI	0.0635	1								
BEL	0.0313	0.0004	1							
BEB	0.1730	-0.0113	0.5518	1						
BIND	0.3523	0.0858	-0.0833	-0.0527	1					
BSZE	0.1990	0.0536	0.1490	0.2362	0.2127	1				
BMEET	-0.0985	-0.0113	0.0826	0.0720	-0.0941	0.0570	1			
FSZE	0.0224	0.0977	0.3047	0.6608	-0.2170	0.2478	-0.0608	1		
PROF	0.0912	0.1156	0.40093	0.3508	-0.0452	-0.1624	0.2385	0.2403	1	
AUDC	0.0909	-0.0947	0.5258	0.2359	-0.0566	0.1544	0.0221	0.3221	0.1661	1

Source: Authors' Computation, 2021

Table 2 presents the summary of statistics for the sampled listed consumer goods firms over the study period. The mean proportion of a company's sustainability disclosures was 34.9% while the company with the highest disclosure had 72.7% of the aggregate of sustainability disclosures. The mean value of the proportion of directors' with postgraduate education and directors with diverse educational backgrounds stood at about 49% and 70% respectively. The means of the board size, the proportion of non-executive directors, and board meetings were 10 board members, 66% independent directors, and 3 times attendance at board meetings respectively. While the mean of firm size was ₦7,701,260,000, profitability showed 11% growth in profit level, and for audit credibility, about 61% of the firms were found to have employed the services of the big four audit firms. Finally, all the variables exhibited considerable clustering around their means.

The linearity of variables (correlation matrix) as presented in Table 3 showed that the variables exhibited both positive and negative relationships. For example board meeting and sustainability reporting (-0.0985); and education background diversity in the boardroom and sustainability reporting (0.1730). Also, as seen in the matrix, the strength of the relationship between variables measured by the Pearson product-moment correlation showed that the association between the variables is relatively small and were below the threshold of 0.80, suggesting the absence of the problem of multicollinearity in the predictor variables. [Studenmund, 2014]

4.1. **Multivariate Analysis**

We present the result of the Hausman test and the Panel Least Squares Regression in this section. Hypotheses of the study were tested at 5% level of significance (that is, if p-value < 0.05 reject **Ho**, else accept otherwise)

Table 4: Hausman Test of Effect Specification

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.594599	9	0.6792

Source: Authors' computation, 2020

Issue 1/2021

The table above revealed the result of the Hausman test, HM (9) = 6.5946, p = 0.6792. Leaning on this result, we ignored the fixed effect model at 5%, therefore accepted the random effect model of the panel least squares the regression.

Table 5: Panel Least Squares (Random Effects Specification)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.289997	0.370092	0.783582	0.4361
BEL	0.040303	0.233841	0.172354	0.8637
BEB	0.303446	0.099628	3.045795	0.0033
BIND	0.350175	0.176069	1.988850	0.0509
BMEET	0.017431	0.016966	1.027366	0.3080
BSZE	0.012918	0.007773	1.661833	0.1013
FSZE	-0.071277	0.047028	-1.515615	0.1344
PROF	0.293045	0.280028	1.046487	0.2992
AUDC	0.080752	0.047250	1.709040	0.0921

Effects Specification				

Period fixed (dummy variables)

Root MSE	0.141915	R-squared		0.350863
Mean dependent var	0.338622	Adjusted R-squared		0.223003
S.D. dependent var	0.177253	S.E. of regression		0.156244
Akaike info criterion	-0.717172	Sum squared resid		1.611197
Schwarz criterion	-0.300317	Log-likelihood		42.68688
Hannan-Quinn criteria.	-0.550043	F-statistic		12.74412
Durbin-Watson stat	1.066556	Prob(F-statistic)		0.003644

Source: Authors' computation, 2021

The results of the panel least squares (random effect) regression in table 5 above reveal that board members' education diversity has an influence on sustainability reporting of listed consumer goods firms in Nigeria after controlling for corporate governance performance and firm-level qualities, F-statistic = 12.744, p = 0.0003.

122

Also, the Adjusted R-Square for the model stood at 0.223 which implies that about 22% of the systematic variation in the dependent variable is caused by the explanatory variable used in the study. While about 78% of the variations can be linked to other variables not included in the model but adequately captured by the standard error of the regression, SE = 0.1562.

For the first hypothesis, we found board members' education level diversity has no significant influence on sustainability reporting, $\beta1 = 0.0403$; SE = 0.2338, p > 0.05. Hence, we failed to reject the null hypothesis stated. Our study results failed to support the argument of neither of the two theories (the Upper Echelon nor the stakeholder theory), that board members with a diverse educational qualification will promote sustainability reporting. Notwithstanding, findings support the argument of Ngo *et al.* (2019) that no degree could completely and comprehensively substitute for the board members' skills and experience or background knowledge. Therefore, our findings are consistent with the studies of Iyafekhe *et al.* (2020) and Musa *et al.* (2020), which found no evidence of the nexus. Similar studies also corroborate this finding. For example, Khan *et al.* (2019a) and Khan *et al.* (2019b) found no evidence on the nexus between board education level diversity and the quality of corporate social responsibility. Our result support the argument of Dahlin *et al.* (2005); Knight *et al.* (1999); and Weber and Camerer (2003) that diversity in the education of board members would make the coordination and accomplishment of the task to be ineffective and less efficient when members expectation and beliefs are incongruent. Our findings are in dissonance with the work of Umukoro *et al.* (2019) which submitted a positive relationship between directors' education level and sustainability reporting of listed deposit money banks in Nigeria.

Secondly, we found the board members' education background diversity had a positive and significant impact on sustainability reporting, $\beta2 = 0.3034$; SE = 0.0996, p < 0.05. Hence, we reject the null hypothesis stated in the study since the result rather supports our theoretical framework of the Upper Echelon theory and stakeholder theory that a board with directors from diverse educational backgrounds will promote sustainability reporting, suggesting a board composed of directors with a diverse educational background ranging from the fields of sciences (such as Engineering, Environmental Science, Geology, Zoology, Botany), management field (such as Accounting, Banking and Finance, Economics, Management, Insurance, Taxation, Business Administration) and humanities (Law, Social works, History, Languages/Linguistics) would improve and increase the firm's sustainability

Issue 1/2021

reporting and performance as well. Our findings are therefore in tandem with the work of Iyafekhe *et al.* (2020), but in dissonance with the work of Khan *et al.* (2019a), which documented a negative association between board education background diversity and quality of corporate social responsibility disclosure in Pakistan. Also, Khan *et al.* (2018b) found no evidence on the relationship between board education background diversity and quality of corporate social responsibility disclosure in Pakistan.

Table 6. Logistic Regression

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-7.419397	4.320877	-1.717104	0.0860
BEL	1.220730	1.068748	1.142206	0.2534
BEB	1.794299	0.854556	2.099685	0.0358
BIND	2.158359	1.866010	1.156670	0.2474
BMEET	-0.161137	0.165880	-0.971408	0.3313
BSZE	0.128552	0.084907	1.514022	0.1300
FSZE	0.671094	0.537999	1.247389	0.2123
PROF	3.918411	2.682709	1.460617	0.1441
AUDC	-1.085270	0.539542	-2.011467	0.0543

McFadden R-squared	0.074753	Mean dependent var	0.162500
S.D. dependent var	0.371236	S.E. of regression	0.351128
Akaike info criterion	0.957477	Sum squared resid	8.753646
Schwarz criterion	1.225455	Log likelihood	-29.29907
Hannan-Quinn criter.	1.064917	Deviance	58.59815
Restr. Deviance	71.00677	Restr. log likelihood	-35.50338
LR statistic	32.40862	Avg. log likelihood	-0.366238
Prob(LR statistic)	0.00882		

Obs with Dep=0	67	Total obs	80
Obs with Dep=1	13		

Source: Authors' computation, 2020

4.2. Robustness Test

To find the robustness of the study, we further extend our regression model by classifying the sustainability reporting to high and low quality. We then allocate a dummy variable where 1 stand for any value greater than 0.5 signifying high-quality sustainability reporting and 0 stands for any value less than 0.5 representing low-quality sustainability reporting. Since the dependent variable is represented by the dummy variable, we then employ logistic analysis for the robustness check. From Table 6, these results confirm the robustness of the main test as the desired variables retain their result.

For both hypotheses tested, the results were the same. Education level diversity had no significant influence on sustainability reporting, $\beta1 = 1.220730$; SE = 1.068748, $p > 0.05$, while education background diversity showed a positive impact on sustainability reporting, $\beta1 = 1.794299$; SE = 1.068748, $p > 0.05$

5. Conclusion and Recommendations

The broad objective of this study was to investigate the influence of board members' education diversity on sustainability reporting for the listed consumer goods firms in Nigeria. Specifically, the study examined the influence of board members' education level and background diversity on sustainability reporting of listed consumer goods in Nigeria. Descriptive statistics and inferential statistics were used to summarize the data and inferences were drawn on the population studied. The result from the inferential statistics revealed board members' educational background diversity influence sustainability reporting. Based on the finding, the study concluded that board members' education diversity partially influences sustainability reporting for the consumer goods firms examined. We, therefore, recommend for the consumer goods firms to frequently conduct workshops and symposiums for their board members with a specific focus on the need to report environmental and social issues and also include among the board members directors having a diverse educational background.

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NEXUS BETWEEN EMOTIONAL INTELLIGENCE AND WORK OUTCOMES IN OSUN STATE UNIVERSITY, OSOGBO

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Abstract

The work outcomes dimensions are job performance and deviant work behaviour. The study investigates the nexus between emotional intelligence and work outcomes among senior staff in Osun State University. The study adopted a correlational design. The objective of the study is to examine the relationship between emotional intelligence and work outcomes (job performance and deviant work behaviour).

Primary data were used and data were collected using structured questionnaire having three scales including personal data. 148 responses were obtained through Taro Yamane formula. Senior staff of Osun State University was randomly selected across Okuku and Osogbo campuses were used for the study.

Two hypotheses were tested and revealed that there was a significant and positive relationship between emotional intelligence and job performance at p<.01, there was a significant and positive relationship between emotional intelligence and deviant work behaviour at p<.01.

The study recommended that the institution should include some programs in order to enhance emotional intelligence based on their job satisfaction, job performance, and employee work outcome.

The implication of the findings of the study was that the emotional intelligences and work outcomes are important variables that governments, employers, institutional management need to give more attention especially among University workers and other related workforce for high job performance and low deviant work behaviour.

Keywords: *emotional intelligence; work outcome; job performance; and deviant work behaviour.*

JEL Classification: J24, J31

Introduction

Open guidance foundations are among the associations that are pushing ahead in overseeing issues with globalization. In this way, to give the labourers who can show superior in any circumstance passionate insight is one in the entirety of the variables that ought to be underscored by the general open guidance organization. This will be on the grounds that singular execution has become a significant issue to the general open guidance foundations in their arrangements for the finish of the strategic world-class colleges. To acknowledge accomplishment in actualizing this strategy, guidance foundations must have representatives who are well both genuinely and intellectually. This is because Winarno (2008) considers that work although not dictated by appropriate instructions and therefore not controlled by flexibility and insight, however, the main significant commitment to help the individual is passionate knowledge. [Winarno, 2008]. In order to upheld this foundation, it's a need to lead an examination on the effect of emotional intelligence on work outcome at Osun State University among the senior staff. This will be on the grounds that there has not been a lot of research on the passionate insight that has been cleared out by the general open guidance institutions.

Commitment and elite of a worker are viewed as indispensable to a university to contend towards quality and in accordance with the changes [Rozman, 2007]. Today, in a surpassing globalization, passionate knowledge begins to encourage the

consideration of the generally open and seen as a significant viewpoint inside the hierarchical condition. A workplace with a great execution in a very good company is firmly identified with passionate insight that there is inside the employees [Adey, 2010]. Smigla and Pastoria (2000) [YengKeat, 2009] consider that passionate knowledge might be a pivotal component for making a profitable working condition. As well, it is useful for others to deal with individuals in an extremely helpful manner when trouble emerges. Inside the working environment, numerous people move and express various practices. Every one of these practices has various outcomes for the people working inside the association and for the final results. Inside the best possible case situation, these practices concur with the standards of the association, the authoritative standards being a development comprising of "anticipated practices, dialects, standards, and hypotheses that permit the work environment to perform at a suitable pace" [Appelbaum *et al.*, 2007]. Be that as it may, since the truth isn't the correct case, work conduct may likewise go outside the standards of the association. Opportunities at work have a genuine enthusiastic effect on members. The aftereffects of passionate states inside the work environment, both conduct and attitudinal, have generous note-worthiness for individuals, gatherings, and society. Positive feelings inside the work environment can assist representatives with acquiring good results including accomplishment, work advancement, and better quality social setting, while negative feelings, similar to fear, outrage, stress, threatening vibe, bitterness, and blame, are probably going to broaden the consistency of working environment aberrance. Feelings regularly are identified with explicit occasions or events and are sufficiently extraordinary to disturb points of view.

Salovey and Mayer (1990) were the first to characterize the term EI as "a sensibly social knowledge that includes the flexibleness to see one's own and others' sentiments and feelings, to segregate among them, and to utilize this data to direct one's reasoning and activity". This definition comprises three types of capacities: i) articulation and assessment of feeling, ii) guideline of feeling and iii) utilizing feelings inside the choosing procedure. A comparable definition was given by Bar-On (1997) as "a variety of enthusiastic, individual, and social capacities and aptitudes that impact a person's capacity to adapt successfully to ecological requests and weights". EI is guaranteed to a spread of non-intellectual aptitudes, capacities, or capabilities that will impact a person's ability. Subsequently, EI can be referred to in order to additionally characterized gratitude to the ability to see

and get feelings, to direct and sort out feelings and, to return up with and oversee feelings so on upgrade thinking and advance scholarly development. Harper (1990) found that 33% to 75% of labourers are occupied with practices such as vandalism, damage, undesirable truancy, and robbery, which affects work execution and at last outcomes in misfortunes for the organization [Bensimon, 1997; Bjorkqvist, 1994; Coccia, 1998; Webb, 1991].

Statement of the Problem

The prevalence of deviant behaviour such as fraud, theft, withholding effort, aggressive behaviour, and sexual harassment in the workplace is a big challenge for organizations. It is increasingly important to executives and to the researchers to prevent deviant workplace behaviour for good reasons. Job performance of employees is a crucial issue for any organization and indicates whether employees are performing well or not in a workplace. Job performance comprises behaviours that employees depict at workplace that are significant to the aims of the organization. Emotional intelligence develops innovation and inventiveness in employees which in turn helps in the enhancement of employees' job performance. Emotional intelligence stimulates effectiveness at all levels at the workplace and contributes to job performance by aiding people to control their emotions, perform well under stress and adjust to organizational change. The study attempts to test the degree to which emotional intelligent senior staff develop high job performance and diminish deviant workplace behaviour.

Research Objectives

The main objective of the study is to investigate the nexus between emotional intelligence and work outcomes among senior staff of Osun State University. Specifically, the study hopes to:

1) determine the nexus between emotional intelligence and job performance (work outcome) among senior members of Osun State University;

2) assess the nexus between emotional intelligence deviant work behaviour among senior members of Osun State University

Research Hypotheses

1. There will be a significant relationship between emotional intelligence and job performance among senior members of Osun State University

134

2. There will be a significant relationship between emotional intelligence and deviant work behaviour among senior members of Osun State University

Literature Review
Theoretical Review
Goleman's Perspective of Emotional Intelligence
Among other claims, Goleman (1995) defined emotional intelligence as comprising awareness, emotional management, motivation, empathy and social skills. Later on, in 2001, he modified it to abilities named 1) self-awareness, 2) self-management, 3) social awareness and 4) relationship management. Further, in 1998, he claimed that more the emotions in an organization higher will emotional intelligence be, but there are certain requirements such as: self-reflection, the desire to know the feelings of others, develop emotional control, desire to learn more listening skills, etc. Daniel Goleman, a psychologist, science writer and who has researched, analysed and written on brain and behaviour research for the *New York Times* took keen interest in the work of Saolvey and Mayer in 1990's. His own research resulted in the formulation and publication of the ground-breaking book *Emotional Intelligence* (1995).

This book renewed the interest of both private and public sectors in the concept of emotional intelligence. Goleman's model helped in the identification of four main emotional intelligence constructs. The constructs are self-awareness, self-management, social awareness and relationship management. Self-awareness deals with an individual's ability to identify one's emotions and analyse its impact. It also deals with the ability of gut feelings while taking decisions. The second construct, self-management, involves controlling one's emotions and impulses and thereby adapting to the situation and changing circumstances. The third construct, social awareness, accentuates on an individual's ability to identify, perceive and react to other's emotions while being a part of a social network. The fourth construct, relationship management, talks about the ability to motivate, influence and train others when dealing with conflict [Goleman, 1998].

Daniel Goleman has identified a set of emotional competencies which lie within each construct of emotional intelligence. Emotional competencies and traits are not inborn talents but are learned over a period of time by working on them. A mastery over these competencies helps an individual achieve and deliver outstanding performance. Goleman states that an individual is born with a certain level of

general emotional intelligence which later on determines his/her ability to learn and practice the emotional competencies.

The various competencies are not random, but appear in synergistic clusters or strata's that help, support and have cross linkages with each other [Boyatzis *et al.*, 1999] Goleman's conceptual model and the corresponding emotional competencies matching with the emotional constructs. These constructs and the competencies fall under one of four categories, that is, the recognition of emotion in oneself or others and the regulation of emotion in oneself or others.

Empirical Review

Olonade, Omotoye, and Oluwoye (2018) have investigated the impact of emotional intellingence (EI) on job performance among the civil servants in Osun State. 176 respondents felt the structure questionnaire and hypotheses were tested with regression. The findings show that antecedents of EI are positively associated with the task performance of the civil servants in Osun State. It was concluded that EI is a very important variable that makes awareness, shares knowledge and creates trust and concerns others. The study recommended that the government should organize workshops, training, and seminar programs to the civil servants in Osun State to reinforce the extent of their emotional intelligence.

Hilda, Hope, and Nnenne, (2016) analysed the association between Emotional Intelligence and proportion among the picked Banks in Anambra State. The study adopted a correlational research design; Pearson's Moment Correlation was utilized to investigate the data. The discoveries uncovered that emotional intelligence have a strong negative relationship with proportion.

Uzma and Tajammal (2013) examined 300 employees chosen from various associations inside the Telecommunication Industry and discover a connection between emotional intelligence, intelligent quotient and their effect on employee performance. The study adopted random sampling techniques in selecting the organizations and information was gathered utilizing a poll. The result revealed that IQ alone isn't adequate for the achievement of workers. Emotional Intelligence is found to have a mammoth relationship with representatives' presentations connoting that passionate knowledge has a higher priority than the IQ in the working environment. Furthermore, the association between emotional intelligence may likewise be seen through numerous examinations directed by numerous analysts.

Simarjeet and Sriparana (2019) examine the effect of emotional intelligence (EI) on the work environment conduct of the labourers inside the Indian financial division. The business was picked for this investigation as a result of the dynamic idea of this division pushing an increased requirement for similarity and strength of workers. The point of the investigation was twofold: (a) to show if there is a major effect of EI on working environment conduct of the labourers in both private and open area banks, and (b) to work out if the effect is more in one division than the other option. Coleman's (1995) EI system and furthermore the Emotional Competence Inventory (ECI) were utilized for information assortment.

Reem, Taghrid, and Mohammed (2019) explored the effect of enthusiastic knowledge on counterproductive work conduct by looking at the intervening job of the authoritative atmosphere. Information was gathered from 304 authoritative representatives working in nine private colleges in Amman, Jordan. Research theories were tried through multivariate investigations and basic condition displaying techniques. Results of the study showed that there is an association between emotional intelligence and counterproductive work conduct.

Sahidur, Shameema, and Rana (2012) inspected the connections among emotional intelligence, deviant workplace behaviour, and job performance. Information for this investigation was gathered from 201 utilized MBA understudies learning at four private colleges in Chittagong. Results demonstrated a connection between emotional intelligence and deviant workplace behaviour and deviant workplace behaviour and job performance while emotional intelligence was found to correlate positively with job performance. The chief ramifications of the investigation were that sincerely canny representatives display higher employment execution and a lesser inclination to require a section in degenerate work environment conduct. Likewise, the nearness of freak work environment conduct was a past sign of poor occupation execution; thus directors should utilize their passionate insight skills to flavour up their own and others' activity execution.

Methodology

Correlational research design was adopted for the study. The population for the study comprises of all staff senior in Osun State University distribution. The total population of the senior staff in Osogbo and Okuku campus was 193. The sample of 148 respondents was obtained through adoption of Taro Yamane formula. Simple random sampling technique was used for the distribution of the

questionnaire. This gives every member of staff equal chance of being part of the study. Structured questionnaire was used for data collection. The questionnaire was divided into 3 sections. Section A consisted of Demographic information, while Section B consisted Emotional Intelligence Scale (EIS) that Goleman has developed (1995), the scales contain 33 items. The respondents were asked to rate the statements on Likert-type scale from 1 = Strong Disagree, 2 = Disagree, 3 = undecided, 4 = Agree and 5 = Strongly Agree. The Cronbarch alpha for the scale is 0.83. The last Section consisted of Work Outcomes Scale (WOS) developed by Sandra (1995). The respondents were asked to rate the statements on Likert-type scale from 1 = Never, 2 = Seldom, 3 = Sometimes 4 = frequently and 5 = Often. The Cronbarch alpha for the scale is 0.85. Reliability and validity tests were carried out on the questionnaire, and a reliability coefficient of 0.95 was obtained for the Instrument's reliability, and professionals' concurrence obtained for validity. Data collected were subjected to Inferential and Descriptive Statistics. Specifically, Pearson Product Moment Correlation was used for testing the hypotheses of the study. The formulated hypotheses were tested at 0.05 alpha levels.

Result
Hypotheses One
This stated that there is a significant relationship between emotional intelligence and job performance. The hypothesis was tested by Pearson, r correlation. The result is shown in table 1 below.

Table 1. A Summary Table of Pearson, r Correlation Showing the Relationship between Emotional Intelligence and Job Performance

Variables	N	X	SD	df	R	P
Emotional Intelligence	148	35.36	9.43	146	.55**	<.01
Job Performance	148	38.45	10.54			

The result in table 1 above revealed that there was a significant and positive relationship between emotional intelligence and job performance (r (146) = .55**, p<.01). Therefore, the hypothesis one was supported by the result of the study.

Hypothesis Two

This stated that there is a significant relationship between emotional intelligence and deviant work behaviour. The hypothesis was tested by Pearson r, correlation. The result is stated in table 2 below.

Table 2: A Summary Table of Pearson, r Correlation Showing the Relationship between Emotional Intelligence and Deviant Work Behaviour

Variables	N	X	SD	df	r	P
Emotional Intelligence	148	35-36	9.43	146	.34**	<.01
Deviant Work	148	40-56	12-54			

The result in table 2 above showed clearly that there was a significant and positive relationship between emotional intelligence and deviant work behaviour (r (146) = .34**, p<.01). Therefore, hypothesis two fully supported by the result of the study.

Discussion of the Findings

The first hypothesis which stated that there is a relationship between emotional intelligence and job performance was supported by the results of the study. The findings indicated that senior staff members who were higher on emotional intelligence were equally found to report more job performance. This finding was supported by the finding of the study conducted by George (2000), which showed how the aspects of emotional intelligence appraisal and expression of emotions, use of emotion to boost cognitive processing and higher cognitive process, knowledge about emotions and management of emotions contribute to effective leadership. For this study, it's important to notice that although it is theoretically significant to indicate how each aspect affects performance, it is more accurate to acknowledge that skills are available in groups and clusters in which they support each other [Goleman, 2001].

The second hypothesis stated that there is significant relationship between emotional intelligence and deviant work behaviour. Therefore, hypothesis two is fully supported by the results of the study. However, individuals with higher

emotional intelligence are less likely to be involved in deviant work behaviour. This result is supported by Sahidur Shameema, and Rana (2012), who say there is indirect correlation between emotional intelligence and deviant workplace behaviour.

Conclusion

The research was able to establish that there is a nexus between employees' emotional intelligence and work outcome (job performance and deviant work behaviour). Employees' performance is often achieved through their intelligence, and also through the empowerment of the workers which can cause a discount in deviant work behaviour. Employees who are empowered and are involved in innovation become more satisfied with their jobs and so more productive. Managing people in an innovative organization is about allowing people to develop and to form a contribution to strategic objectives. The implication of the findings of the study was that the emotional intelligences and work outcomes are important variables that governments, employers, institutional management need to give more attention especially among University workers and other related workforce for high job performance and low deviant work behaviour. The research established that there's a major relationship between senior staff' emotional intelligence and employees' work outcome

Recommendation

It is recommended that the organization include some programs to increase emotional intelligence, thus supporting employee satisfaction at work, performance at work, organizational commitment and work outcome. Such programs will assist them in developing better management of their work. Seminars, training and conferences should be introduced to the workers on how to manage the emotion and understanding and knowledge of emotional intelligence. These programs must be used to show about a way to control, recognize, and facilitate their emotions and their jobs. It is suggested that this study be replicated with other variables.

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Issue 1/2021

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THE CLIMAX OF GLOBALISATION[1]

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Abstract

The article summarizes the benefits and shortcomings of globalization. Although so far this socio-economic system has had a generally upward trajectory, it can lead to entropy and the events that began in 2019 in Wuhan reinforce this assumption.

Is it natural to wonder what we are heading for in the future. As a possible solution, in this article, I suggest embracing the uncreated energies, which are diverse and unlimited, and the liturgical singing of the Orthodox Christian Church as an easy and efficient way to connect to these energies.

Keywords: *globalization; economic entropy; uncreated energies; deficiencies; order.*

JEL Classification: F60, F63, N30, Z12

Introduction

Globalization is a reality that concerns both the economic and the social dimension. There are experts who consider that it follows a natural course of

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human development both economically [Dieterle, 2020] and socially [Robertson, 2014]. There are works in common literature, which claim that it provides a freedom that no individual state can ensure. [Soros, 2002]

As this kind of economy develops, it needs more and more resources also because the individual wants to access a higher standard of comfort. These economic processes cause entropy [Georgescu-Roegen, 1971] up until homogenizing the entire material universe.

The pandemic that began in 2019 highlights the need to address the culmination of globalization. Can this system continue without globalizing entropy or is it time for humanity to move to other perspectives?

To avoid losing diversity, it is necessary to be open to unlimited resources, such as uncreated energies. Only Eastern Christianity has the perception of these resources [Stăniloae, 1993], and the connection to them can satisfy the boundless thirst that is now directed towards the material and, implicitly, limited ones. The asceticism of the Orthodox Church keeps alive [Stăniloae, 1992] the possibility of connecting to these unlimited resources, even if many practise it quite formally. The liturgical song of the Orthodox Church is the one that contains the formation module for any person in order to connect to the uncreated energies, regardless of abilities and level of preparedness.

Contemporary science manages to discover something of the effectiveness of the ascetic-mystical feelings of Eastern Christianity [Ohsumi, 2016], which is something that can strengthen the interest of humanity to connect to such resources.

Controversies over Globalization

Works on the benefits of globalization have been written since the spring of 1776 [Smith, 2011] highlighting the efficiency of the free market as an invisible hand that regulates even social needs. Less than a hundred years later, in the autumn of 1867 [Marx, 1966], it became clear that this was a primitive accumulation and only changed feudal exploitation to capitalist exploitation. Starting with 1929, the great economic crisis begins and a new proposal appears in the economic literature. In the spring of 1936, [Keynes, 2009] proposes a minimal involvement of the state in running the economy, through investments in infrastructure. The Chicago School, through its principal representative [Friedman, 2009], less than sixty years later, reaffirms the values of globalist liberalism.

This cyclicality is highlighted by sociologists [Bădescu, 2011], but the periods seem to be shorter and shorter between one crisis and another than their expectations.

Preventive measures for the spread of the pandemic caused by the SARS-CoV-2 virus triggered a sudden crisis, effects of other crises over a period of three years in such a situation being overthrown in three months. [Pochet, 2020]

The problem addressed in this article is: has globalization come to an end or is it preparing for a new culmination? In academic studies that have looked closely at globalization trends, many have understood the importance of cultural inclinations in economic processes. [Georgescu-Roegen, 2006]

The academic world in Western Europe, after the fall of Constantinople, developed on the idea that we do not perceive reality, but mental images that we represent. [Puhalo, 2015] To avoid global entropy, in the article, I suggest a connection to unlimited energies, and the easiest way is through liturgical singing. [Saint Basil the Great, 1986]

The Consequences of Globalization
The benefits

Globalization definitely increases the comfort of the individual. Regardless of the season, you can benefit from a fruit, without waiting for the natural ripening time for the geographical hemisphere in which you are. The information arrives very quickly, everything being at a click away. The quality of some information is attested by the global systems, a specialized journal is well appreciated if it is attested in several international databases. Globalization also ensures a freedom of movement of the individual and, implicitly, of the labour force. What we have mentioned in this paragraph increases the desire for consumption and implicitly the profit in the global economy. In order to maintain consumption, producers lower prices and diversify the usefulness of products. All these premises make globalization desirable.

An ardent supporter of globalism, Soros says that the benefits outweigh the costs, the problem remains that those who win should reward those who lose without fear that they risk not going profitably ahead. Global trade produces undeniable advantages, but there are also injured parties, and in order to compensate the injured parties, the World Trade Organization should set rules that should also be respected by the winners. [Soros, 2020]

Ethical errors

Unfortunately, the consequences of globalization are not only positive. The global economy accentuates the gap between the rich and the poor.

Issue 1/2021

The big concerns, which support globalism through their economic policies, seek to conquer as much of the market as possible through methods that are not always ethical. Many pharmaceutical companies offer more and more luxurious holidays to pharmacists who reach higher and higher sales by recommending the products of a certain manufacturer, and the product, in the happiest case, is only more expensive than another with the same effect is. Many companies in the automotive industry (and not only) sometimes receive government tenders, or markets, by offering people with decision-making power various gifts. In order to maximize profits, double standard products have emerged, with global trade taking advantage of the legislative vacuum of some states regarding quality control. There were situations in which, in order to remain the market leader, a car company falsified the software of some exhaust fumes tests.

Schermerhorn observes objectively that illegal practices are used to optimize profits. Companies that work for multinational companies to win the tender for the contract offer very low production costs. These very low costs have been obtained, sometimes using young people who are employed as adults. However, we more often meet adult employees who work in precarious, unhealthy working conditions and with almost non-existent labour protection measures. Even in states with a high standard of economic development, we find emigrants accommodated in very small spaces, in primitive conditions and all this for a low cost of the finished product.

COVID 19 Pandemic
Biological difficulties

Globalization involves a movement of goods and people ideally without borders. This spirit has been at the root of pandemics since 1347, when on the Silk Road along with traders came the bubonic plague. The localities that monitored the traders for forty days before allowing them and their products to enter the market to see if they were contaminated escaped this epidemic.

The ethical issues presented in the previous section create socio-economic and environmental issues that facilitate the emergence of viruses from wild animals to humans. Between 1940 and 2004, 335 emerging infectious diseases were found. [Jones *et al.*, 2008] Poor working conditions in the seafood market in Wuhan, China have unleashed contamination with the SARS-CoV-2 virus. [Ahmad *et al.*, 2020] Both wild and domestic animals were traded in this market. The storage spaces of these creatures are small and with minimal veterinary assistance. Workers received relatively low incomes that did not create the premises for medical prophylaxis.

Specialist studies have hypothesized that it has been possible to cleave this virus from wild animals to humans through Malaysian pangolin illegally imported into China. [Lam *et al.*, 2020] The pleasant taste of the meat of this animal developed a wide traffic determined by the high price per kg, reaching even up to 100 US dollars.

Economic difficulties

Researcher Pochet, of the Interuniversity Research Centre on Globalization and Labour (CRIM Montreal), finds that the economic effects of the pandemic that still plague humanity will linger for a long time. The basic pillars of the European Union destabilized in three months, which in other crises happened in three years:

− the single market and freedom of movement;

− the euro and the Stability and Growth Plan (SGP);

− competition and state aid.

The analysis of the Institute of National Economy of the Romanian Academy shows the effects of this pandemic on the global economy. Isolation measures, as protection against the spread of the SARS-CoV-2 virus, have caused a clear contraction of the world economy. In the chain, as in a domino game, the workforce was affected in an overwhelming percentage, over 80%. Isolation has reduced the appetite for consumption, especially in developed countries, a situation that will mainly affect developing countries, which, as a whole, will lose over 800 billion USD. [Zaman *et al.*, 2020]

The pandemic crisis is not cyclical, but a public health one that has led to the closure of economic agents, through draconian measures taken to reduce the epidemicological effects. [Pop *et al.*, 2020] So this new crisis has rapidly destabilized the global economy and the effects will hardly disappear or is it likely that this is the final culmination of globalization?

Social difficulties

The pandemic crisis has effects on several levels, but we will still devote a few lines to the social deficiencies it created, because society is the one that can either support globalization, or not.

The "#StayatHome" campaign has created psychological problems for many social groups. Support services for victims of domestic violence reported an increase in requests for help, while at the same time calls for the UK's national abuse line increased by over 60%. [Mohan, 2020]

The quality of life of the vast majority of individuals is affected by the uncertain future, the vision of trust in the "better" being replaced by concern for the risks that are to be foreseen for the future. With the economic decline and rising unemployment, there will be a decrease in the real income of the vast majority of the population, which will lead to a lack of desire for tourist services and not only. [Zamfir, 2020]

A Possible Solution

Globalization promotes the well-being of the majority of individuals on the planet. In the current context and the perspective of the above, it is certain that not only social welfare is affected, but also the biological state, even the economic one.

What has been omitted from the goal of globalization is Christianity. Weber asserted that Protestant ethics underlies capitalism. The father of economic liberalism also took the following view into consideration – a social ethic of good manners, of balanced culprit merit, of the role of conscience, of morality enhanced by traditions, of happiness springing from virtue. [Smith, 2017]

Uncreated energies

Christianity promotes a divine way of life communicated by God himself who has materialized in a human body – Jesus Christ. After the Resurrection and Ascension, Jesus Christ received new energies, this being the opportunity open to any human being. This opportunity is accessed when, being alive biologically, the individual passes from the created works to the uncreated ones, at the level of the unlimited divine energies. [Stăniloae, 1992]

This profound teaching of faith is given to the common man through liturgical singing. When sung, the message ensures the opportunity for the listener to meditate on it and assimilate it. In order for the audience to be able to focus for a longer duration, the moments of utterance are alternated with those of singing, as well as many other well-polished techniques of more than two thousand years.

Biological order

The perception of connectivity, with these uncreated energies, with the distinction between the Divine Being and the divine energies, was preserved only by Orthodox Christianity. For more than two thousand years, in this religious area, the connection between the biological and the spiritual has also been highlighted, which is influenced both upwards and downwards. In the world of medical sciences,

correlations have only recently been made between psychological and physiological factors. [Alexander, 2008]

What Christianity has practiced for many centuries, the medical world supported in 2016. It can lead to the resurrection of neural cells and the health of those with incurable diseases by abandoning the energies created by fasting (starvation, autophagy) and connecting with the uncreated ones that restore the biological order. [Ohsumi, 2016]

Economic order

The need for more cannot be met by the economic or material world, because they are finite. No matter how rich a man is, he wants to acquire new economic goods. This thirst is planted in us by God himself, but it can be fulfilled only in communion with the unlimited, with the energies that have no limits.

Communion with uncreated energies brings us to the "primary matrix of all the results of human labour, benefiting from the potential capacities of the knowledge and creativity of the human mind that give them added value". [Pop, 2009]

Sociological order

The difficulties presented above have been able to reach the magnitude we are experiencing also because the vocabulary has been beautified to put the conscience to sleep. Linguistically, experiencing the reversed path, we realize that, in fact, comfort is to support comfort and more explicitly laziness. The path from the "flesh" of words to their "soul" is well concerted by the Orthodox Christian liturgical song and creates the premises for the discovery of the other in its perennial dimensions. [Schmemann, 1993] Aware of this aspect, we start our personal order as well as our connection with the other.

The connection between social and personal, even biochemical, is, by the gift of God, also discovered by the scientific world. Social stress causes inflammation [Slavicha *et al.*, 2010], so social balance brings personal stability.

Conclusions

Considering all of the above, it is obvious that globalization has benefits as well as shortcomings. Since the events of 2019 in Wuhan, globalization has begun a new decline. The effects of the pandemic crisis, which cannot be appreciated yet, will certainly bring humanity to reflections regarding the socio-economic approach.

Such reflections will also have as a research topic the answer to the question: can the deficiencies of globalization be corrected? Or, from this point on, will it start another way?

In this sense, we proposed as a possible solution the connection of humanity to uncreated energies that have no limits (such as created ones). For easy access, an appropriate method is the liturgical singing of the Orthodox Christian Church. Thus, the thirst for more, currently directed towards the economic and material, which is finite, will be able to be satisfied by the divine infinite.

A closer look is needed in future research to better estimate the benefits that such a trajectory could bring to humanity. A holistic research of humanity, from which the possibility of communion with the divinity through uncreated energies cannot be excluded, is possible to offer happy solutions to many problems that have not yet been solved.

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HERDSMEN INVASION: A THREAT TO FOOD AND STATE SECURITY IN NIGERIA

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Abstract

The connection between state security, herdsmen invasion and food security is dynamic and has become a thorny issue in the preservation of the corporate existence of Nigerian state. The friction between herdsmen, ethnic groups and socio-economic relationship has generated an obvious animosity, prejudices and violent conflict. Perceived conflict between farmers and herdsmen has in many times worsened the state security scenario that directly hampered food security. This paper examines the incidence of herdsmen invasion and its implication on food and state security in Nigeria putting into consideration the states that are vulnerable to the incessant attack. This investigation was largely anchored on the structural functional theory to further explain the phenomenon of herdsmen and farmers conflict owing to the fact that the society is structured with interrelated parts designed to meet social needs of every individual, thus farmers provide food for the sustenance of state and herdsmen equally served as a potential provider of food supplement (Meat). To compliment the effort of farmers, government with its policy act as a moderator to ensure that violence and friction, which can escalate to pose a threat to the security of the state, is curtailed. The paper suggests ways to

ameliorate the incidence of the activities of herdsmen, which threatened food and state security.

Keywords: *herdsmen; security; invasion; food; state.*

JEL Classification: Q56, Q57

Introduction

One of the major causes of food insecurity in Nigeria is the farmers-herdsmen clash, which is mainly as a result of disputes over grazing areas for herdsmen cattle. From 2017, the farmer-herdsmen clashes intensified and over 70% of farmers have been displaced from effectively carrying out farming activities to aid food production. The rising competition conflict between the two agricultural land users has in recent times demonstrated a high potential to exacerbate the nation's food survival security. Food security is a condition related to the supply of food and the individual's access to it and the concerns over food security have existed throughout history. This paper examines the incidence of herdsmen in Nigeria and its implication on food security and state security in Nigeria. The paper further suggest ways to ameliorate the incidence of the activities of herdsmen. Nigeria is a multi-lingual state. Crises are unavoidable as long as we live in a multi-lingual, cultural and religious community such as Nigeria. Violent conflicts and crises in Nigeria like other parts of the world has created a rift in human relations, caused serious threat to food security, among many other effects. Conflicts in most part of Nigeria especially the herdsmen and farmers clash have hindered farmers from peacefully carrying out farming activities. The fact that these conflicts create reduction in the quality and quantity of food production simply indicates the high level of food insecurity in rural communities with its negative repercussion. Food insecurity negatively affects the growth rate of the nation's economy as investors have become more rigid in making investments in affected areas due to the crisis and this has increased food importation, which reduces the value of the nation's currency.

Conceptual Clarification

Food Security. Food security is a condition related to the supply of food, and individuals' access to it. Concerns over food security have existed throughout

history. At the 1974 world food conference, the term "food security" was defined with an emphasis on supply. Food security, they said, is the "availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices". [United Nations, 2013] Later definitions added demand and access issues to the definition. The final report of the 1996 World Food Summit states that food security "exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". [United Nations, 2015]

Household food security exists when all members, at all times, have access to enough food for an active, healthy life. [USDA, 2008] Individuals who are food secure do not live in hunger or fear of starvation. [FAO, 2006] Food insecurity, on the other hand, is a situation of "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways", according to the United States Department of Agriculture (USDA) (2008). Food security incorporates a measure of resilience to future disruption or unavailability of critical food supply due to various risk factors including droughts, shipping disruptions, fuel shortages, economic instability, and wars. [Boeing, 2016] In the years 2011-2017 [FAO, 2017], an estimated 842 million people were suffering from chronic hunger. [FAO, 2017] The Food and Agriculture Organization of the United Nations, or FAO, identified the four pillars of food security as availability, access, utilization, and stability. [FAO, 2009] The United Nation (UN) recognized the Right to Food in the Declaration of Human Rights in 1948 [United Nations, 2015] and has since noted that it is vital for the enjoyment of all other rights. [United Nations, 2015]

Concept of National Security

Buzan (2012) sees national security as the "survival and pursuit of freedom from threats and the ability to maintain a nation's independence, identity and functional integrity against forces of change that are seen as hostile". National security is best described as a capacity to control those domestic and foreign conditions that the public opinion of a given community believes necessary to enjoy its own self-determination or autonomy prosperity and well-being. It is the ability to preserve the nation's physical integrity and territory to maintain its economic relations with the rest of the world on reasonable terms. All through there

is often a legitimate military dimension to national security. Further studies have proven that national security cannot be measured by military parameters alone. It is also a function of economic strength, political cohesiveness, social equity, cultural outreach and environmental soundness. The security dilemma is not peculiar or unique to Third World Countries and Nigeria in particular, but a universal concern particularly in these contemporary times of growing interdependence, globalization, shared danger posed by weapons of mass destruction and varying natures of terrorist acts. Since the end of the Cold War in 1989, there has been a serious debate over the redefinition of national security to respond to new global challenges. The debate is essentially premised on the need to focus more on political threats posed by regional, ethnic and religious conflicts as a result of explosion in global interdependence, communication and information technology and crisis on public world order. Apart from the issue at stake, the menace of the Boko Haram sect, order security problems currently confronting the nation have been identified to include political and election conflicts, socio-economic agitations, ethno-religious crisis, ethnic militias, boundary disputes, cultism, criminality and organized crimes. These problems individually and collectively constitute threat to the peace, security and development of the country. These have implications for the continuity and survival of the nation's nascent democracy. Indeed, the question has been whose interest does national security serves in Nigeria? According to Olukoshi (2014) and Imobighe (2013), states and dominant class interests obviously overshadowed national security in Nigeria. The security thrust is often directed toward the interests of the governing class and their propertied allies while most Nigerians are left high and dry and alienated from the security processes. The bad state of national security in Nigeria has become more alarming than the issue of power and energy in the country. It finds explanation at the rate in which armed robbery, kidnapping, religious fanaticism, political assassination and other criminal act have become the rampant. A situation where these brigands demonstrate superior firepower to the police is critical and worrisome and that can only serve to dampen the moral of the law enforcement agencies. There is no gainsaying the fact that Nigerian government has been very careless over security matters, for instance, the porous nature of Nigeria's borders is one of the challenges of the national security system. For too long, the borders have been thrown open as of 1980s to all manner of aliens from Niger, Chad and Sudan is very prominent in most of the cities and towns of northern Nigeria. Most migrated to Nigeria without Nigerian immigration ministry

actually challenging their identities. Perhaps, Nigerian government open its flanks to these nations in the spirit of one in brotherhood-Economic Community of West African States (ECOWAS), but fails to realize that these countries are strong members of Organization of Islamic Conference (OIC) and are capable of coming in to the country to indoctrinate the Muslim youths in the northern region. The United States is markedly known as the melting point in relation to cultural assimilation or multiculturalism, yet, it does not easily open its door to just any nation for security proposes.

Theoretical Framework

In explaining this study structural functionalism and the system theory would be used basically to explain the phenomenon of herdsmen and farmers conflict which is largely attributed to the fact that the society is structured into interrelated parts designed to meet social needs of every individual, thus farmers provide food for the sustenance of state and herdsmen equally served as a potential provider of food supplement (Meat) to compliment the effort of farmers. Government with its policy act as a moderator to ensure that violence and friction, which can escalate to pose a threat to the security of the state, are curtailed. David Easton defined political system theory as "that system of interaction in any society through which binding or authoritative allocation are made and implemented." According to Easton, it is the making of binding or authoritative allocations, which distinguishes the political system from other system both within and outside the overall society that form the environment of a political system.

This theory is of great value to this study because it explains the importance of governance (politics) as both the process and importance of the economy. This is because, when government input are receive it is the authority (politics) that ensure inputs are translated into output for the benefit of the citizenry. Thus, Nigerian government would be able to come up with adequate public policies on food security and state security as regards proffering solution the activities of herdsmen and the institution of workable mechanism to aid food security. For instance, members of the society's aspiration to feed themselves, the high demand and high cost of food items and the agitation for a reduced price of food items in the market when the prices are high could be received as the input, the government who will now employ its regulatory mechanism to rationalize, assess and convert these demands having been received from the society into output.

Outputs are the results of the processing of demands. They are decision and actions of the decision-making authority. Having received various demands from the society, the political system converts them into outputs. Subsidization of agrochemical and other agro-allied products, the government will empower banks to issue loan to farmers at reduced interest rates, construction of roads to ease food transportation problem. Outputs can take the form of laws, policies regulation, decisions and actions of government.

Fulani Herdsmen and Nigerian National Security

The *Fula* people, also known as *Fulani* in *Hausa* language, are a mass population widely dispersed and culturally diverse in all of Africa, but most predominant in West Africa. The Fulani's generally speak the Fula language. A significant number of them are nomadic in nature, herding cattle, goats and sheep across the vast dry grasslands of their environment, keeping themselves isolated from the local farming communities, making them the world's largest pastoral nomadic group. [Eyekpimi, 2016] They are massively spread over many countries, and are found mainly in West Africa and northern parts of Central Africa, but also in Sudan and Egypt. The main Fulani sub-groups in Nigeria are Fulbe Adamawa, Fulbe Mbororo, Fulbe Sokoto, Fulbe Gombe, and the Fulbe Borgu. [Eyekpimi, 2016] Nigeria as a nation state is under a severe internal socio-economic and security threat. At a more general level, the threat has special economic, political and environmental dimensions. Each of these dimensions has greatly affected the nation's stability and can be traced to the Fulani-herdsmen and farmers clash, ethnic militant armies, ethnic and religious conflicts, poverty, insurgency, armed robbery, corruption, economic sabotage and environmental degradation. [Damba, 2007]

Nigeria, blessed with a large amount of arable agricultural farmlands in all the States of the federation, is strongly affected by this threat as aside the loss of lives, the vast expanse of arable lands are left uncultivated due to the insecurity of the farmers. States like Benue (the Food Basket of the Nation), Taraba, Nasarawa, Kaduna, Delta, Edo, Jos, Ondo, Enugu, Oyo, Abuja traditionally known for farming and with abundance in food supply are faced with struggle to feed its own population and Nigeria. In the developing country of Nigeria, the Agricultural sector plays strategic role in economic development, making significant contributions to economic prosperity and providing basic raw materials for industries and household consumption. The sector employs approximately two-third of the total labour

force and contributes over 40% to the GDP. About 7.1 million people faced with acute food insecurity require urgent lifesaving response and livelihood protection to reduce the possibility of famine in the affected areas across Nigeria. When Nigerian farmers cannot plant and harvest crops peacefully, the price of commodities in the markets will greatly increase and encourage importation to supply the shortages; further discouraging the participation of youths in agriculture.

Causes of Farmer and Herdsmen Conflict in Nigeria

Problem does not exist in a vacuum and every problem was caused by something. A good number of factors gave rise to farmers and herdsmen conflict in Nigeria. This section is geared towards discussing them.

Land Use

Land use featured prominently among the major causes of conflict between herdsmen and farmers. Intensive crop farming has expanded into grazing lands in many areas over these years. These areas of encroachment agree with most of the conflict points recorded. [Muhammed, Ismailia, Bibi, 2015] They argued that the incessant clashes between farmers and herdsmen were partly caused by increase in population, which led to utilization of grazing pathways for agricultural activities and residential purposes. This made land very scarce for herdsmen and most often they graze on farmers' crop which leads to clashes. Past conflicts were solely due to overlap of farmlands with cattle routes, where farmers grow crops on the routes. [Muhammed, Ismailia, Bibi, 2015] Other studies show farmers encroachment on cattle routes is the real cause. [Nformi *et al.*, 2014] Farmer-pastoralist conflicts have been associated with the conflict of land resource use exacerbated by dwindling resources. [Blench, 2004] Some researchers have linked this crisis to the theory of eco-violence [Okoli & Atelhe, 2014], where environmental factors and exploitation of scarce resources leads to conflict and violence. This may explain the dwindling grazing resources (land, pasture etc.) and poor management of existing grazing reserves [Adisa, 2012] as one the major cause. Furthermore, the population is dynamic and ever increasing compared to land that is relatively static. The population growth rate of Nigeria per year is 3.2%. [National Population Commission, 2012] Therefore, more and more people will continue to compete over land.

Ethnic and Religious Differences

Recently, this conflict has escalated, taking another dimension of ethnic and Religious differences with little effort from government or community leaders aimed at addressing them. [Muhammed, Ismailia, Bibi, 2015] Ethnic jingoists and politicians have been benefitting in these strives and without doubt have succeeded in creating a divide between the farmers and pastoralist, especially in communities that are less educated. Leaders at the federal, state, local governments and even at community levels become perplexed and wondered on how these issues can be resolved. [Muhammed, Ismailia, Bibi, 2015] In a survey research conducted by Yobe State, Nigeria Bello (2013) examined "Herdsmen and farmers conflict in North-Eastern Nigeria; Causes, Repercussion and Resolutions." The sample size consisted of 500 farmers and 250 cattle herdsmen, making a total of 750. The study used quantitative methods with structured questionnaire as the major instrument for data collection. The result of the study revealed the following causes of farmers and herdsmen conflict in Yobe State, Nigeria: (a) Destruction of crops, cattle and other property (reservoirs, irrigational facilities and infrastructure) by the herdsmen themselves are the main direct causes for conflicts cited by the farmers; (b) Burning of rangelands, fadama and blockage of stock routes and water points by crop encroachment are important direct reasons cited by the herdsmen; (c) Increasing rate of cattle theft which is often accompanied by violence; (d) Antagonistic perceptions and beliefs among farmers and herdsmen could compound conflict situation, especially due to failing institutions and fierce competition for resources. In support of above claims, Ingawa, Ega, and Erhabor (1999) reported that the key underlying causes of farmer-herdsmen conflict in Nigeria are: 1. Decline in internal discipline and social cohesion, as the adherence to the traditional rules regarding grazing periods, and the authority of the traditional rulers is breaking down. This is exacerbated by increased rent seeking of the formal and traditional authorities in managing resource access. 2. Particularly severe on the traditional trek routes, which become favourite cropping sites because of their better soil fertility resulting from the concentration of animal manure from the trekking herds in these areas. Within the fadama areas, this is exacerbated by the fragmented nature of the crop plots, which makes prevention of animals straying in the crop plots difficult 3. Inadequacy of grazing resources, as increasing crop cultivation (and increasing commercialization of the crop-residues) and poor management of the existing grazing reserves have resulted in a significant reduction in available livestock feed

resources, in particular in the Northern States. 4. Moreover, the high value crops introduced by NFDP (tomatoes and onions) produce almost no crop-residues for livestock feeding. 5. Finally, the regulation that twenty percent of the Fadama would need to be set aside for grazing [National Agricultural Policy, 1988] has not been adhered to.

Negative Impact of State Security on Food Security

Violent conflict and crisis in Nigeria, like in other parts of the world, have created a rift in human relations, caused serious threat to food security, among many other effects. [Basil, 2015] Crisis is inevitable as long as we live together, especially in a multi-ethnic, cultural and religious community like Nigeria. However, violence leaves us with various forms of retardation and underdevelopment resulting from the destruction of lives, farmland and property. The menaces of violent crisis conflict have been on the increase in some most Nigerian cities in the last two decades. [Ilufoye, 2009] Most of these conflicts are generally regarded as ethno-religious bigotry and antagonism.

According to Kassam (2014) and Basil (2015), the conflicts in most part of Nigeria especially the Fulani herdsmen and farmers clash are largely uncalled for. Farmers can no longer farm peacefully because of Fulani herdsmen. These Fulani herdsmen and farmers clashes have pitched Christians and Muslims against each other. The conflict has had devastating effects on inter-group relationships especially in Nasarawa Egoon in Nasarawa State and Agatu L.G.A. of Benue State. Apart from the loss of lives, farmlands, food produce and property, it has profound influence on residential relationships, leading to new trends in the polarization of communities. This is evident in a physical manifestation of mono-religious areas in Nasarawa and Benue States, with Christians and Muslims living in dominant religious clusters. [Eyekpemi, 2016] Recent studies conducted by Basil (2015) and Ekpeyemi (2016) have shown that serious conflict erupted between Fulani herdsmen and farmers leading to loss of lives, valuable properties and destruction of vast expanse of arable agricultural farmlands thereby posing serious threat to food security since farmers for fear of attack could no longer go to farm and harvest their farm produce. The recent attacks by Fulani herdsmen are on the increase, with the attacks in June 2016 occurring in Ossissa community in Ndokwa East and Abraka community in Ethiope East Local Government Areas of Delta State and three more communities (Ugondo, Turan, Gabo Nenzev) in Logo Local Government Area,

Issue 1/2021

Benue State, total killings involving no fewer than 60 persons. [Ekpeyemi, 2016] The Federal Government recently ordered an inquiry, military crackdown on the group and affirmed its plans to establish cattle ranches as a solution to the frequent clashes between Fulani herdsmen and farmers in Nigeria. [Basil, 2015] In recent times, the killings recorded by Fulani herdsmen and farmers clashes have rampaged most communities displacing them of their farmlands and loss of their major source of livelihood. This is becoming unbearable with the Fulani herdsmen always having their ways, leaving the farmers at their mercy. Farmers now go to farm armed with weapons for defence in case of attack. [Ekpeyemi, 2016]

Recently, several deaths and casualties have been recorded in series of clash between Fulnai herdsmen and farmers. Most people attribute the clash between Fulani Herdsmen and Farmers to religious differences between the Muslims or Islam's and the Christians [Basil, 2015] Several farmlands have been destroyed due to conflict erupting between farmers and herdsmen. Herdsmen attribute the roots of the crisis to religious differences resulting in the killing of their cows while the farmers see the herdsmen as a threat to their crops and agricultural produce since the herdsmen allow their cows to feed on the farmer crops. Evidences have shown that herdsmen and farmers clash in several parts of Nigeria especially in the Nassarawa, Delta, Edo, and Benue states could be due to differences in religious background between the herdsmen and farmers. Several lives and farmlands being destroyed in this crisis. [Ekpeyemi, 2016] Recently, in Benue state, Fulani herdsmen attacked farmers at the farm and claimed one life, which prompted the indigenes of the state to riot.

Effects of Herdsmen Invasion

Lose of live and properties is one of the major effect of herdsmen invasion. In 2016, there was an estimated death toll of about 2,500 arising from herdsmen attacks. [International Crises Group, 2017] Farmers and herdsmen conflicts in Nigeria have grown spread and intensified over the past decade and today pose a threat to national survival and integration. Thousands of people have been killed, communities have been destroyed and so many farmers and herdsmen have lost their lives and property in an extended orgy of killings and destruction that is not only continuously destroying livelihoods but also affecting national cohesion. [Gambari *et al.*, 2018; Adisa, & Adekunle, 2010]

162

Another effects of farmers and Fulani herdsmen conflict in Nigeria are destruction of properties, theft of cattle and goats; destruction of crops; physical fight with machetes and sticks; pollution of drinkable water; destruction of reservoirs and source of drinkable water; burning of rangelands, fadama land houses and damages to irrigational facilities. All this have an immediate bearing to food and state security in Nigeria. The destruction has direct impact on the peoples' livelihood as their economic activities are tied to these environmental resources such as water, land (soil), and vegetation (herbs and food crops). [Bello, 2013]

Economic Depletion is yet another known effect of the persistence and consistency of farmers and herdsmen conflicts. [Adisa & Adekunle, 2010] Farm products, which also serve as Nigerian foreign exchange products, are destroyed during attacks. These farm products as cash crops add to Nigerians' National Domestic Products, but when these crops are destroyed it leads to depletion of economic growth. Economically, Nigeria does not do well with the incessant attacks on farmers and farm produce by the Fulani herdsmen, at the advent of conflict. On the other hand, cattle rearing have in no small measure contributed to the Nigerian economy. Nigeria is a country that exports cow meat and products and this adds to our GDP, however it can be observed that when farmers' farm products are destroyed by cows, there is always a reprisal attacks on the cow leading to the killing and injuring of hundreds of cows and this affects immensely Nigerian cow meat production, which in turn leads to the depletion of the Nigerian economy.

The economic effects have also been huge. According to a 2015 study, the federal government was losing $13.7 billion in revenue annually because of farmers and herdsmen conflicts in Benue, Kaduna, Nasarawa and Plateau states. The study found that on average these four states lost 47 per cent of their internally-generated revenues. In March 2017, Benue state Governor, Samuel Ortom, asserted that attacks by herders coming from more northerly states, and possibly also from Cameroon and Niger, had cost his state N95 billion (about $634 million at that time) between 2012 and 2014. [International Crises Group, 2017]

Conclusion and Recommendations

It is evident from this study that conflict between farmers and herdsmen hinged on land resource control, which has been heightened by pressure on land from the two conflict actors. This phenomenon of farmer-herdsmen conflicts represents what can be called a "land resource control conflict," which poses a threat to food

security in Nigeria. The incessant farmers-herders conflicts in Nigeria have become a very serious source of concern to Nigerians. This is against the background that such conflicts in recent times are taking a very dangerous dimension, which, if not nipped in the bud, will eventually metamorphose into more widespread destruction, capable of setting the whole nation ablaze.

The study therefore made the following recommendations as panacea to achieving peace in Nigeria:

1. A strong political will from governments at all levels is fundamental to resolving the herdsmen/farmers conflict's across the country.

2. Nigerian Government should make policies on grazing. There should be the establishment and operation of contemporary grazing reserves in the affected.

3. Government should set up conflict mediation, resolution, reconciliation and peace building mechanisms in rural communities, local government areas and states affected by the conflict.

4. Law enforcement agencies should be alive to their constitutional roles and government must strengthen the security around the farmers and herders across the country by providing necessary training and state-of-the-art equipment required anytime there is conflict.

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STOPPING AFRICAN MIGRATION INTO EUROPE: A POSSIBILITY OR A HOAX

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Abstract

In August 2018, the German Chancellor Angela Merkel embarked on a trip to three African countries (Nigeria, Ghana and Senegal) to discuss economic ties and partnership with the main aim to limit, if not stop the over-whelming migration of citizens from Africa. The trip has raised some hopes as well as question towards what it seeks to achieve and this paper tries to investigate the prospects using historical and theoretical approaches to understand why people migrate and as well the hold of government on its people if at all such partnership will yield positive results. Using Maslow's hierarchy of needs and the social capital theory, this paper concludes that the journey through such partnership is a rough one if not a dead-end unless some structural changes are made in the process of governance in the aforementioned countries.

Keywords: *Africa; migration; European partnership; government; social capital.*

JEL Classification: J30, J15, J16

Issue 1/2021

Introduction

In August 2018, the German chancellor Angela Merkel took a bold step to visit three African countries namely Nigeria, Ghana and Senegal. The reason behind this so called world event was due to the alarming influx of migrants coming to the shores of Europe with the hope of having a better life among other reasons which are not limited to persecutions in their home countries and they wanting flee from war thorn areas e.g. Sudan, Syria etc. More so, the motivation for her visit was focused on these three countries where it is presumed that most economically defined immigrant originate from; and with the hope to partner with the governments of these countries to provide means through which the said problem could be nipped in the bud [Associated Press, 2018]. Although the issue of migration has not always been a major problem as it is today as many of the countries in most western developed states including the European Union have enjoyed the opportunities of having professionals and skilled worked who migrate to their countries and in turn use their skills to develop the host countries and their economies [Adepoju, 2017]. However, there is much interest giving to the topic today especially after the 2015 migration crisis, a world event explained by experts in migration studies as a calamity where over 1.2 million asylum seekers forcibly attempted to enter into Europe [Adepoju, 2017] The number continues to increase daily and drastically as different means both legal and illegal are been employed by individuals especially from Africa in order to actualise the goal of getting into Europe. [European Agenda on Migration, 2015] In 2015 alone out of an estimated 1.2 million, some 14,000 claimed to be from Nigeria excluding over 4,000 who died in the Sahara desert and fatalities on the sea, among other unaccounted intending asylum seekers. In 2016, 37,000 Nigerians arrived in Italy via the Mediterranean constituting about 31% at each time with a distant 11% of Eritreans. Even made difficult is the inclusion of war thorn Syria, Afghanistan and other Middle-Eastern countries in dying hope of survival [Adepoju, 2017; Carbone, 2017]. The burden on the European Union in managing the migration crisis can indeed be understood and these desperate times call for desperate measures in curbing this menace, especially when the consequences of not doing so could result to a breakdown of law and order in different societies across Europe.

Understanding of the situation and its implication to Europe resulted in the recent visit of the German chancellor to these countries (Nigeria, Senegal and Ghana) among other initiative and incentives to resolve and as well partner with African

nations in solving the problems leading to a mass migration of their citizens and the overburdening of the Europeans boarders (an overwhelming humanitarian crisis).

To this effect, this paper seeks to analyse the prospects of the visit by the German chancellor. It will attempt to answer the question "Would the impact of the meeting with the leaders of these three African nations and the promise of its partnership deter its citizens from crossing through the Mediterranean among other means to get into Europe?" The methodology to be used in answering this question will be a secondary method of data collection as well as the use of theory to analyse why people migrate and how much hope citizens of these countries have in their government to make living conditions better for them and in turn demotivate them from risking their lives on the sea among other means to get into Europe. The significance of this study cannot be over-emphasised especially in this crucial period where expectations are high and the world is watching as this particular problem will be tackled for a return to normalcy not only at the boarders but also in the polity. Subsequent headings of this paper will focus on, firstly, a theoretical approach explaining why people migrate and even choose to risk their lives to do so. Finally, it will focus on a critical examination of the facts to see if the said partnership with these African nations would put an end or reduce the massive influx of migrants into Europe.

Why People Migrate: A Theoretical Approach

Overtime, many scholars have engaged the question "Why do people migrate?" [Carbone, 2017; Adepoju, 2017]. And when they do, they always conclude on many fundamental reasons bordering around the conditions present in the home countries of migrants affecting them negatively. Such conditions like war, persecution i.e. against gays, lesbians and the entire LGBTIQ community among other reasons that are not limited to economic conditions of their home countries. However, the focus of this paper is on economic migrants, the ones who seek greener pastures in developed countries and continents like Europe, America, etc. These individuals are with a strong motivation to live a better life outside their home countries. Theoretically, Maslow and Karl Marx have been over the years consistent in their analogies to explain human nature and to what extent their motivation towards life can be considered rational through the fulfilment of certain condition which sometimes cannot be compromised. Physiological, safety, associational, esteem and self-actualisation needs tend to be a very important aspect of life and the

inability to access these needs tends to drive people to wanting to break free and find alternatives [Maslow, 1943].
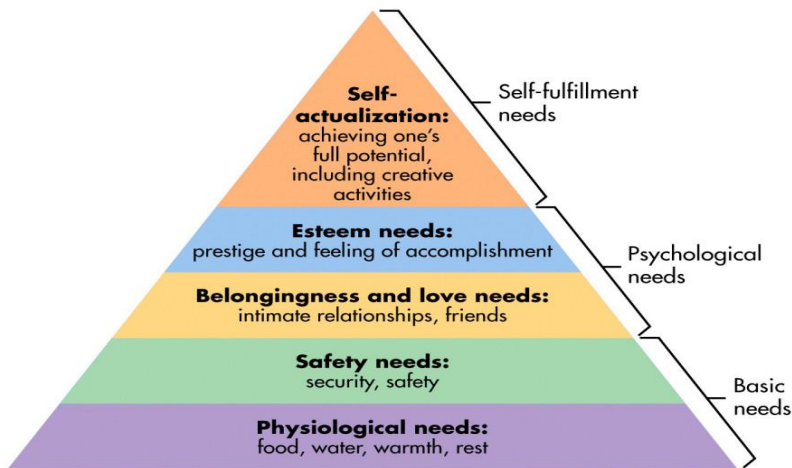

Fig. 1. Maslow's Hierarchy of Needs
Source: Wikipedia

Furthermore, it is in the opinion of this paper that such conditions of physiological needs and the inability to fulfil them is one of the most dominant reasons why people from 3rd world African countries migrate. To start with, the physiological needs according to Maslow in the three countries of focus are largely asymmetric. What this means is that there is a massive level of inequality among the population owing to unequal distribution of resources with benefits only to a few within the confines of the state. It is important to note that the inability to access basic needs such as food, clothing and shelter makes life in itself critical for man and as well reduces his level of survival and his motivation to life [Maslow, 1943]. Getting access to the physiological needs require employment which has continued to be a mystery in many African countries with only a few individuals getting reasonable employment. In Nigeria alone, over 500,000 people graduate from tertiary institution with more than half of them unemployed [Kazeem, 2016]. From the graphs below, the constant rise of unemployment rate from the year 2015 in Nigeria and Ghana shows the level of suffering which the people go through and as well Senegal with

fluctuations in figures but it still reflects a dominant number of unemployed citizens. More so, the non-availability of social benefits for these citizens makes things worse which contributes to the dependency ratio that mostly reflects on family members among friends at various community levels. It should be noted that the government barely plays any role regarding social benefits to unemployed citizens or even the less privileged. The government in other words can be said to be far away from the people.

SOURCE: TRADINGECONOMICS.COM | NATIONAL BUREAU OF STATISTICS, NIGERIA
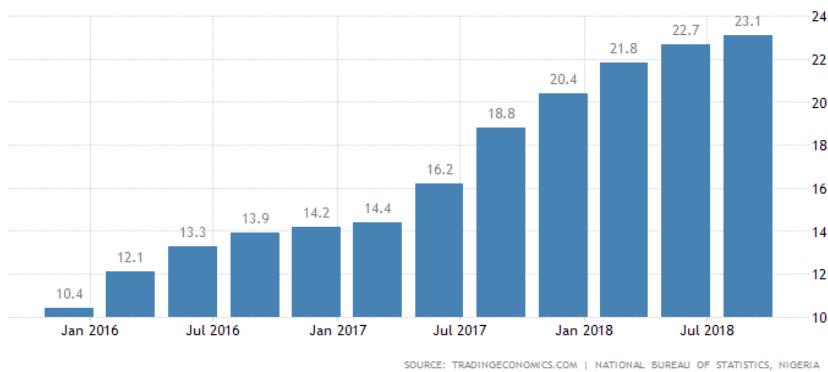
Fig. 2. Unemployment Rate Nigeria

SOURCE: TRADINGECONOMICS.COM | ANSD, SENEGAL
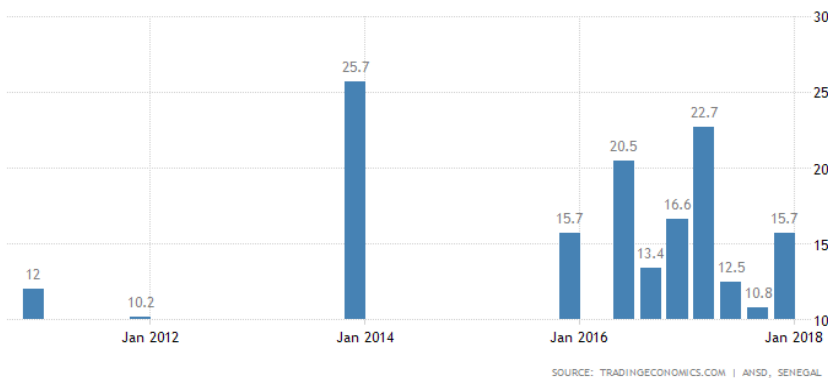
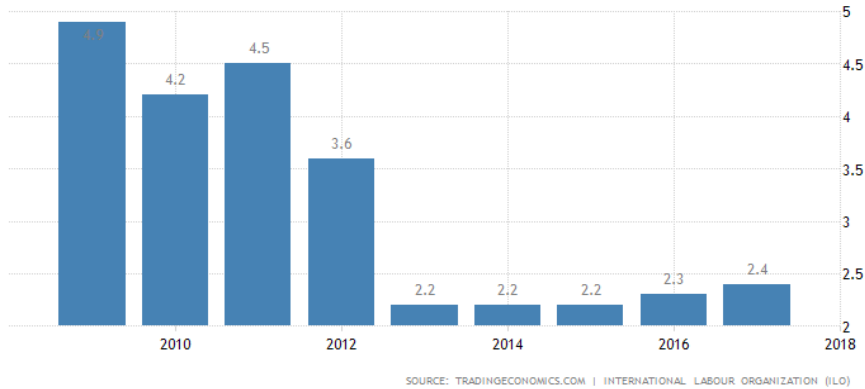**Fig. 3. Unemployment Rate Senegal**

Fig. 4. Unemployment Rate Ghana

Consequently, the Nigerian example shows an economy that is redundant and does not have the capacity to engage the youths who constitute more than 42 per cent of the population [CIA world factbook, 2018]. Furthermore, the dependency ratio in Nigeria stays at a high rate of 88.2 and the youth dependency rate at 83 [CIA world factbook, 2018]. What these numbers imply is that the poverty rate coupled with the level of dependency further endangers the population which pushes them to that stage of wanting to break free with the option of migration which many of the youths choose. Karl Marx argued that "it is not social well-being of man that determines his consciousness but his material well-being that determines his consciousness". He went further to say that man by nature is an economic being and can only survive in that environment that promotes his material well-being [Marx *et al.*, 1974]. Therefore, it becomes solely natural for frustrated youths who can no longer deal with the horrors of hunger and starvation, as well as unemployment and the inability to provide for their families and loved ones to finds ways to break free from poverty and underdevelopment which they see from migrating to other countries. The horrors from the unbearable conditions they face back home serves as a motivation to strive for greener pastures in foreign countries. This paper argues that the lack of fundamental physiological needs remains a dominant reason that drives most economic migrants away as the failure to have these basic needs such as food, cloth and shelter causes a breakdown of law and order, restricts the

sense of belonging and love, reduces esteem and limits the realities of self-actualisation according to Maslow's theory of needs.

African Migration, European Cooperation, Social Contract, Democracy and Social Capital

While economic reasons largely dominate why most young Africans migrate through the deserts among other means all the way through to Europe, the role of their government cannot be over emphasised. This paper believes strongly that the role of third world governments especially in impunity and corruption has further limited the chances of development and economic progression. To this effect and to its knowledge to the populace, they have apparently no hope or trust whatsoever in the functionality of the economic system, hence their search for greener pastures outside the shores of Africa. Furthermore, in the absence of trust in the system, the hope of a said partnership to stop migrants from considering the alternative of migrating to Europe and western countries is a hoax unless some deficiencies are remedied. The justifications of this "claim" are in the following arguments.

From the foundation of society, social capital has been a part of societal formation. The idea of individuals submitting their rights to the state to safeguard their lives, rights and properties or for the creation of moral and civic obligation is in and of itself done with the trust that the principles through which such agreements were made will be upheld [Hobbes, 1904; Locke, 1960; Rousseau, 1968]. This idea however, is the basic foundation of the modern state under democratic principles being led by the dictates of the constitution [Nyamaka, 2011].

Democracy with all of its institutions, systems and values cannot function properly without the generalised trust as a core ingredient [Putnam, 1993, 2000]. Therefore, it is safe to say that the formation of the modern state is built on the foundation of social contract, which gives birth to democracy that cannot function without social capital. The connections between the three variables are the root foundation of modern politics, and its dynamism is spread all over the world with accounts of the different waves of democracy [Huntington, 2016].

Francis Fukuyama (2000) defined social capital as an instantiated informal norm that promotes co-operation between individuals. He argued further that in the economic sphere it reduces transaction costs, and in the political sphere, it promotes the kind of associational life which is necessary for the success of government and modern democracy. Furthermore, social capital comes into existence as a result of shared values and culture, which basically formulates the rational trust that exists among

groups and individuals in the society. However, the understanding of trust in political contest is not limited to individuals alone particularly politicians, but also extends to institutions of government, which basically is the foundation of democracy in itself [Newton, 2008]. Newton argues further that distrust in politicians is not in any way a threat to democracy, but deep-seated lack of confidence in the system ultimately ruins any kind of social capital existing which could end up being a dilemma for democracy. A fundamental truth to why the said partnership is not visible.

Do People Know They Cannot Trust the System?

With the continuous rate of impunity and corruption in the system, the extravagant lifestyles of politicians, nepotism and its effect of having a very few individuals connected to those at the helm of power having unlimited access to employment, wealth and social benefits which is consequently inaccessible to other members of society, the dying or dysfunctional democracy and the rule of law with zero dividends and the continuous suffering of the people, of course they know they cannot trust the system. Nigeria alone has been said to be one of the most corrupt nations in the world topping the chart of the most corrupt nations in the world for years now.

Furthermore, with billions and billions of dollars stolen from the common wealth and saved in foreign accounts oversees which is also used in buying assets as well, the social capital in Nigeria is indeed in a deplorable state. People do not trust the government and its system. This is not only limited to Nigeria alone but shared among countries in the third-world

Prospects of a Partnership

With grounded understanding of the status-quo as explained in this paper, the presentation of economic realities and understanding the mind-set of a migrant or a would be migrant, the prospects of a partnership has little or no effect on the decision to stay or move away from the home country. This is so because the activities of the said government that should and as well be the fore runner of the said agreement is the reason for the hostile environment leading to desire for greener pasture. More so, the lost hope of better days to come in the home country as a result of corruption, unemployment, nepotism as well as other social vices hindering economic prosperity will continue to exist so long the idea of governance in these countries remain the same. Not to talk of the support European countries such as Switzerland give to corrupt politicians helping them to keep stolen public funds in secret accounts etc.

YEAR	RANKING
1999	98 out of 99
2000	90 out of 90
2001	90 out of 91
2002	101 out of 102
2003	132 out of 133
2004	144 out of 146
2005	152 out of 158
2006	142 out of 163
2007	147 out of 179
2008	121 out of 150
2009	130 out of 150
2010	134 out of 178
2011	143 out of 182
2012	139 out of 174
2013	144 out of 175
2014	136 out of 174
2015	136 out of 167
2016	136 out of 176
2017	148 out of 180

Source: Corruption Perception Index (1999-2017). Retrieved from Transparency International

Issue 1/2021

These among other issues have taken away the concept of social capital through which citizens put some level of trust on the activities of government. However it can be said without fear or favour that the citizens in these nations do not trust their government with any temptation or opportunity to leave the shore of Ghana, Nigeria or Senegal for a place in Europe, they will take it without thinking twice. To the average person, the government is not to be trusted and they are group of person seeking their own gain. The decision to however seek greener pastures in Europe is mainly one that is taken in order to redeem their self-worth and dignity as well as being able to take care of their family as well as to attain the height of self-actualisation. It is the opinion of this paper that Europe and the western world is on its own in solving the crisis and only when the attitude of African leaders can change towards governance that their legitimacy through social capital can further be entrusted. And until then, the idea of a said partnership remains a hoax.

Conclusion

The failure of governments in African has continued to affect the social-economic status of its citizens. The implication has resulted to a loss of control on the citizens' mind-set towards life generally leading to a complete breakdown of social capital and legitimacy. The government cannot control its people and the people as well do not have any interest in listening to the government. A divided people in divided nations. While the status-quo remains the same, whatever partnership envisaged by Europe cannot hold as the government itself has no hold over its people. It is the people's decision to migrate and the strong will to do so cannot be brought down by the weak will of government towards good governance.

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