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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.

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Globally, in June 2021, the World Bank improved its growth forecast for 2021 by 1.5 percentage points, to 5.6%, which means that the world economy will record the strongest growth in the last 80 years. However, the international financial institution warns that many countries, especially the poor ones, are left behind and will need several years to return to pre-pandemic levels.

According to World Bank President, David Malpass, coordinated efforts are needed globally to accelerate the distribution of vaccines and debt relief for low-income countries.

The World Bank report shows that the recovery will be uneven, given that the world's major economies, especially the United States, are benefiting from the progress of the vaccination campaign and stimulus programs. While among advanced economies, about 90% of them would return by 2022 to the per capita income they had before the pandemic, among emerging and developing countries only a third will achieve the same performance. As a result, the gap between advanced and poorest economies in per capita income will widen further, narrowing before the pandemic.

The United Nations also announced, in June 2021, that the growth of the world economy would reach 5.4% this year, returning after a 3.6% contraction in 2020. It is a better performance than is expected in January 2021, according to the latest World Economic Situation and Prospects report published by the UN.

However, growth prospects in some countries in South Asia, sub-Saharan Africa and Latin America remain "fragile and uncertain" due to slow progress in vaccination, according to a report published by the UN Department of Economic and Social Affairs in June 2021.

"Vaccination inequality between countries and regions poses a significant risk to a global recovery that was already uneven and fragile. Timely and universal access to COVID-19 vaccines will make the difference between ending the pandemic or losing several years of growth, development and opportunities," said UN chief economist,

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Elliott Harris. For example, China and the United States, which have made rapid progress with their immunization programs, are expected to experience economic growth of 8.2% and, respectively, 6.2% this year. In contrast, Nigeria's economy will grow by only 1.8% as the country has vaccinated less than 1% of the population.

The UN asked for vaccines to be made available to all countries and has also called on donors to fund the COVAX facility, which aims to purchase 1.8 billion doses of vaccine by the end of 2021 to ensure equitable access globally.

In a separate report released in March 2021, the UN called on countries to contribute \$ 20 billion to vaccinating poor countries this year and also called on rich countries to offer debt and investment cuts to less developed countries.

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 problems facing the new world state of economy. Whether or not they succeeded in responding to the challenges, we leave it to you to determine.

In their scientific paper entitled *Recent Trends and Developments in the Global Workplace and Their Impact on Employment Relations in Kenya*, the authors, Kennedy OLUNGO and Wilfred UKPERE, are talking about various perspectives that exist amongst people about globalisation – a phenomenon that has impacted local economies in terms of trade, foreign direct investments, agriculture, technology transfer, dominant culture, as well as international standards. The study relied on a mixed methodology approach, which is a combination of quantitative and qualitative approaches. A total of 500 closed end questionnaires were distributed to the employees of the sampled companies, out of which 483 were satisfactorily responded to, which amounts to 97% response rate. In addition, 10 key employment relations stakeholders were interviewed. The findings of the study revealed that there has been an increase in the rate outsourcing by many organisations in Kenya, which has partly contributed to raising incidents of downsizing and retrenchment that have exacerbated the level of unemployed. Technological advancements have also been noted as a major contributor to retrenchment in Kenyan organisations. Although technology has accelerated performance, which has helped many organisations reduce the operational costs, it has, at the same time, affected employees who have lost their livelihood as a result of the incursion of advanced technological innovations. Many organisations are currently engaging employees on casual or temporary work, which are sourced from labour brokers as a cost cutting mechanism. This state of affairs has affected the morale and psychological contract of many workers in Kenya.

The authors, Alidu Olatunji KAREEM, Musediq Olufemi LAWAL and Sheriff Omotayo RASAQ, in their scientific paper called *Effects of Fringe Benefits on Employees Productivity in Selected Organisations in Ogun State, Nigeria*, revealed that the provision of fringe benefits by the management of an organisation has positive roles to play in motivation of employees to higher productivity. It also defined the degree to which an employee identifies with the organization and wants to continue participating actively in it. Questionnaire was the major instrument adopted for this study, a total of 210 respondents were sampled from three food and beverages production organisations. Data generated through the questionnaires for the study were analysed making use of Statistical Package for Social Sciences (SPSS). The results showed that highly competitive fringe benefits have impetus for ensuring drastic reduction in labour turnover. Strong fringe benefits were therefore established to be correlated with employees' motivation on the job, job satisfaction; job performance, employee retention and that proper workplace environment helps in reducing the rate of absentees. The study therefore submitted that application of fringe benefits facilitates effective productivity, while it was also discovered that employees' involvement in organization activities contribute to organizational stability. The two hypotheses tested thus showed a significant relationship between employees' involvement in policy formulation and implementation on individual productivity as well as organizational performance (F Statistic (17.65)  $P < 0.05$  and sig.  $P < 0.05$ ) and that significant relationship exists between application of fringe benefits and individual productivity as well as organizational performance (F Statistic (8.982) and sig.  $P < 0.05$ ).

Ibrahim NASIBLI, in his scientific paper named *The Effect of Motivation on Employee Performance*, is telling us the with the abandonment of the classical management approach and the adoption of the modern management approach in the enterprises, it has been emphasized by the managers that the workforce is as important as the technology for the success of the business. The prominence of people in businesses has led to the creation of the human resources department and, accordingly, the emergence of many systems that direct people and increase their productivity. At the beginning of these systems is the motivation and performance evaluation system. It is very difficult to keep employees in the company for a long time and encourage them to act in favour of the company. The main purpose of motivation methods is to ensure that employees act in accordance with the company's goals and achieve successful results. The purpose of the study was to determine whether the factors influencing the performance of employees and employers were

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rewarding factors, additional payment factors or psycho-social factors, and whether these factors were age, gender, marital status, education level, work experience, occupation, etc. This study also investigates how it differs according to demographic factors.

Another interesting research paper is the one written by Musediq Olufemi LAWAL, entitled *How Cooperative Societies Enhance General Wellbeing through Housing Provision and Services in Nigeria*. This study discusses the activities of cooperative societies in meeting the challenges of housing provision in the face of seeking and repayment processes. The cooperative societies in formal and informal settings were studied. Cooperative societies in two tertiary institutions in Nigeria were used as cases for formal setting. Informal setting was represented by the oldest Coordinating Cooperative Union in Ibadan, Nigeria. A total of 330 respondents took part in the study. Questionnaire and interviews were utilized to collect data for the study. The findings revealed that all the cooperative societies ran multipurpose services with housing loan services being equally included. These services included mass purchasing of land (b) acquisition of rapid urbanization. The study made an exposition of housing and related services, loan fixed assets (c) housing loans to members who are about to complete their personal houses or in the process of having one. Cooperative societies were seen as the easiest channels of securing access to affordable housing due to absence of bureaucratic bottleneck and insurmountable conditions. The general feeling was that decision making on how, when and to whom the loan should be given was faster, reliable and enhancing social, mental and physical stability for better productivity.

Author Joel ISABIRYE in his paper entitled *Perspective on Firm's Responses to Economic Crises* examines literature that analyses how economic crises affect firms. Eighty-five studies were examined with the overall aim of finding out the impact of crises on firms. Studies published between 1805 and 2018 were sampled purposively through digital database searches, to establish the most recent literature on the impact of crises on firms. Consequently, the majority of the work assessed focuses on the global economic crisis of 2007 and its effect on firms in a different country and regional contexts. The literature demonstrates that economic crises affect firms negatively and positively with a tendency for crises to affect firms more negatively. Negative impacts include a decline in demand, fall in profitability, debt problems, operational challenges, bankruptcy, loss of goodwill or public image, uncertainty, and scale down of operations. Positive impacts comprise stimulation of efficiency, and improved performance for strategic firms. The

review further establishes that the impact of crises on firms varies from firm to firm, which requires that to examine the impacts of economic crises on firms requires that the firms are studied on a case-to-case basis.

The scientific study *Impact of Audit Quality on Tax compliance in Nigeria* written by Oladele ROTIMI examined the impact of audit quality on tax compliance proxy as tax revenue in Nigeria. Specifically, the study investigated the relationship that exists between auditor independence, engagement performance and tax revenue knowing that many times, tax assessment is based on audited financial statement presented by the firms. Survey research design was adopted using primary data sourced from administration structured questionnaire on the respondents selected from among; the staff of Federal Inland Revenue Service (FIRS), academia (Accountants) and practicing accountants/auditors within Ondo State. The ordinary least square (OLS) model was used to analyse data so collected. The  $R^2$  adjusted predictive power of the study was 0.623 (62.3%) and the F-statistic at the 0.01 and 0.05 level of significance which are 4.79 and 3.07 and is less than 6.047 which was a clear indication that, auditor independence and engagement performance have a significant effect on audit quality with resultant effect on tax compliance (tax revenue) in Nigeria. The study therefore recommends that auditors should embrace independence and strictly adhere to established standards and procedures laid down by the government, professional bodies when reporting to enhance audit quality at all times; it is believed this will foster tax revenue generation to argument dwindling revenues.

M. BEDA and Darlington Peter ONOJAEFE, in there scientific paper entitled *Factors Affecting Financial Sustainability of Water and Sewerage Provision in Cape Town, South Africa*, argued that financial sustainability of water and sewerage provision is undermined by consumers' inability and reluctance to pay service fees. South African municipalities are providing water and sewerage services at high maintenance and operational costs, households and businesses that are unable and/or committing to pay their full accounts timeously. This study examines the provision of water and sewage service and presents strategic framework to manage revenue collection to achieve financial sustainability of water and sewerage provision. The study applied the interpretive research method to collect and analyzed data for improved understanding of service provision and revenue collection mantra. The main objective of this study was to investigate factors affecting financial sustainability of water and sewerage provision in Cape Town. In this study, an interpretive research method was embraced and qualitative research design was used



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to collect qualitative data by means of interviewing the senior officials using semi structured interviews. Narrative methods of analysis were applied in analysing data collected from randomly selected Cape Town officials including observations and secondary data. The results showed that although Cape Town is making efforts of generating revenue by means of enforcing water and sanitation services payments, there is still a percentage of residents that refuses to pay for services resulting in revenue loss. The other reason for loss of revenue was unaccounted water which was the focus of Water and Sanitation. The reasons advanced for unwillingness to pay for water and sanitation services by consumers were unemployment, poverty, unequal distribution of services and general ignorance.

Godly OTTO, Eugene Abuo OKPE and Wilfred I. UKPERE, in their research paper entitled *Rice Production, Consumption and Economic Development in Nigeria*, are telling us that in recent times, rice production has become a topical issue in national discourse in Nigeria. Rice is a major staple food in all the regions of Nigeria. Over the years, Nigeria has imported rice from different countries to supplement local production, thereby putting pressure on the Nigeria foreign exchange. Since 2018, the Central Bank of Nigeria made policies aimed at curtailing the importation of some agricultural products including rice, by ordering the closure of land borders till further notice. The aim of the policy was to restrict the dumping of products such as rice into the country, which could generate an unfair competition with local rice producers. It is against this backdrop that this work investigated the effect of rice production and consumption on economic development in Nigeria, from 1986 to 2018. The data were sourced from the Central Bank of Nigeria Statistical Bulletin. To establish the empirical nexus between rice production, consumption and economic development in Nigeria, the work used the following econometrics tools of data analysis OLS, Unit root test, Johansen Cointegration and Vector Error Correction Model (VECM). The findings of the study prove that there is a significant relationship between rice production, consumption and economic development in Nigeria. In addition, the OLS result established that the relationship between rice import and the gross domestic product in Nigeria is statistically significant. The unit root test results justify that all the model variables were non-stable at levels but gained stationarity after first difference. The Johansen Cointegration test empirically established that there is a long run convergence between the variables in the model, while the VECM result attested that the model variables are jointly instrumental in eliciting long-run equilibrium. From the foregoing, government is encouraged to support the mechanization and modernisation of rice production in Nigeria, including



the introduction of modern equipment, pesticides and improved seedlings needed by rice farmers to increase rice production. This may be achieved through the provision of cheap credits to rice farmers.

Another interesting paper is the one written by George Marius MUNTEANU and Raluca Ionela CREȚOIU, entitled *Peculiarities of the Consumption Behaviour on the Real Estate Market in Romania in the Context of the COVID-19 Pandemic*. For many of the developed or developing national economies, real estate markets are areas of activity capable of substantially contributing to the structural good functionality of that economy. Transactions carried out within real estate markets provide logistical support for the proper conduct of a multitude of production activities or services of economic operators, on various levels of the economy. From this point of view, any large-scale crisis that also affects real estate field is a major challenge for the proper revitalization of many sectors and for the re-entry into a normal phase of most trade within economy. The crisis caused by the COVID-19 pandemic is a very special crisis not only because of the world scale and large span, but also because of the many plans on which it acted, economically, socially, politically, biologically, etc. This article aims to delve into the picture of the evolution of the Romanian real estate market during the pandemic, providing the main coordinates of this development and assessments on the implications that these market trends have at both Romanian and European market levels.

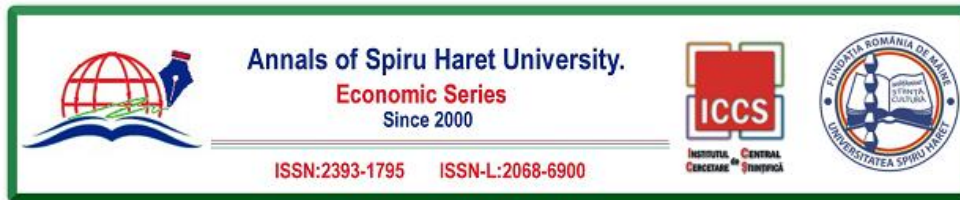
The authors, Ajibola S. GBOTOSHO and Kolawole S. AJIBOLA, in their scientific paper called *Appraisal of Gateway and Usage of Library Information Resources among Pupils in Osogbo LGEA, Nigeria*, are talking about the vital role of school libraries in the educational system. Here there are issues around the qualified human resources, adequate facilities and electricity supply among others. Another challenge is the proper attitudes towards the use of the available library information resources among library users. The trend is not helpful to national development in any way if not curbed. To find out ways around the emerging attitudes, this study was motivated to investigate the appraisal of gateway and usage of library information resources among pupils in Osogbo Local Government Education Authority (LGEA), Osun State, Nigeria. The intentions of the study were to determine the level of satisfaction of pupils towards school library information resources including human resources, and other facilities; to investigate access and use of school library information resources, to find out the factors that pose problem to pupils in the use of school library and strategies to overcome such challenges. In a descriptive survey, simple random was habituated to select 40

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respondents from each of the selected primary schools to make a sample size of 240 respondents in six primary schools purposively selected in the Osogbo Local Government Area of Osun State in Nigeria. The methods of data collection for the study were questionnaires, documentary review, personal observations and interview. Content analysis was espoused for qualitative data. Quantitative data were anatomised by using SPSS. The finding divulged that primary school pupils face many repressions in using the school library since there are no current library information resources but obsolete ones; inadequate of qualified and professional personnel. It was also found that books were the most frequently used library information resources. Furthermore, to effectively use the school's libraries by the primary school pupils, there is need to address the above-mentioned constraints faced by the pupils in using the school library. The study recommended that provision of fund is necessary to execute all the school library needs. The study further recommended continuous training and retraining for the library human resources.

Vladimir RADIVOJEVIĆ, Bojan KRSTIĆ and Jelena STANOJEVIĆ, in their research paper called *Performance Assessment of the Balkan Countries in the Information and Communication Technologies Sector*, are talking about the rapid technological development of the last decades that has affected practically all areas of the economy, society, and culture. Almost every aspect of life and work in the modern world to a greater or lesser extent depend on the use of information and communication technologies (ICT). The aim of this paper is to analyse the ICT performance of ten Balkan countries and to highlight areas that need further improvement. The analysis is based on the data published by the International Telecommunication Union in annual Measuring the Information Society Report. The research is conducted through comparative analysis and benchmarking method. The ten best-positioned European countries in terms of ICT development represent the benchmark group. The analysis finds low level of national ICT performance of the Balkan countries compared to the selected European countries. The conclusions of this research may serve as guidelines for ICT policy makers in the observed economies.

In his paper, entitled *Estimation of Cost Minimization of Garments Sector by Cobb-Douglas Production Function: Bangladesh Perspective*, the author, Haradhan Kumar MOHAJAN, is telling us that the Cobb-Douglas production function in the field of economics has a long history. In mathematical economics, it is used to find the functional relationship between the economic inputs and potential outputs. This study applies the Cobb-Douglas production function to predict the cost minimization



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policies of a running garments industry of Bangladesh. In the study, the effects of the variation rate of capital, labor and other inputs with returns to scale in the garments industry of Bangladesh are examined. In multivariable calculus, the method of Lagrange multiplier is a very useful and powerful technique. In this study, interpretation of Lagrange multiplier is given to predict the cost minimization policy using Cobb-Douglas production function. An attempt has been taken here to show the production of garments in minimum by cost using statistical analysis.

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 you to expose your ideas in new studies published by us.

Finally, hoping that you found interesting Issue no. 2/2021, I strongly invite you to address your comments and suggestions at [ashues@spiruharet.ro](mailto: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**



## **RECENT TRENDS AND DEVELOPMENTS IN THE GLOBAL WORKPLACE AND THEIR IMPACT ON EMPLOYMENT RELATIONS IN KENYA**

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### **Abstract**

*Various perspectives exist amongst people about globalisation – a phenomenon that has impacted local economies in terms of trade, foreign direct investments, agriculture, technology transfer, dominant culture, as well as international standards. This study relied on a mixed methodology approach, which is a combination of quantitative and qualitative approaches. A total of 500 closed ended questionnaires were distributed to the employees of the sampled companies, out of which 483 were satisfactorily responded to, which amounts to 97% response rate. In addition, 10 key employment relations stakeholders were interviewed. The findings of the study revealed that there has been an increase in the rate outsourcing by many organisations in Kenya, which has partly contributed to raising incidents of downsizing and retrenchment that have exacerbated the level of unemployed. Technological advancements have also been noted as a major contributor to retrenchment in Kenyan organisations. Although techno-*



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*logy has accelerated performance, which has helped many organisations to reduce the operational costs, it has at the same time affected employees who have lost their livelihood as a result of the incursion of advanced technological innovations. Many organisations are currently engaging employees on casual or temporary work, which are sourced from labour brokers as a cost cutting mechanism. This state of affairs has affected the morale and psychological contract of many workers in Kenyan.*

**Keywords:** *recent trends; developments; global workplace; impact.*

**JEL Classification:** F6; J5

### **Introduction**

The major drivers of Globalisation are the advanced countries of the world. Through globalisation, the developed countries have sold to their customs, habits, lifestyles, food, fashion, music, just to mention a few to the world. Although incipient globalisation existed before the current one, however, it was not strongly felt owing to lesser integration of economies across the globe [Castells, 2012]. Nevertheless, the late 1980s and early 1990s witnessed rapid global economy changes, which was signified by the breaking down of trade barriers, as well as reduction of trade protectionism, which accelerated the pace of globalisation [Betcherman, 2015]. Indeed, globalisation has contributed towards reducing trade restriction and costs of productions, thereby improving trade, enhancing technological advancements and competitiveness [United Nations, 2000].

More than that, globalisation seems to have brought about new ways of rewarding employees based on the value that they bring to the organization in terms of performance rather than rewarding them on the rate of inflation, as previously done [Dolan & White, 2007]. Previously, the labour market tends to increase employee rewards without basis due to weak labour practices, which in most cases lead to unsustainable wage bills [Hertog & Steffen, 2012].

### **The statement of the problem**

Kenya is currently witnessing increasing work interruptions occasion by rising strike actions, go-slows and lock-outs, which are all signs of workers discontent stemming from low wages, perceived and felt redundancy, downsizing and of





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course, retrenchment. All these anomalies are connected to atypical employment practices of labour brokering, outsourcing, re-engineering, automation, including the use of child labours. There have been efforts by researchers [Mandan, 2004; Scholte, 2005; Goldin & Reinert, 2007] to investigate the recent trends triggered by globalisation has affected the workplace in other nations and regions. However, no concrete effort has been made to investigate the impact of these new trends ushered by globalisation on employment relations in Kenya.

### Research Question

The study was guided by the following research question:

- What are some of the recent trends and developments in the global workplace since the dawn of globalisation?
- How have these recent trends impacted employment relations in Kenya?

### Research Objective

The study was guided by the following objective:

- To examine some of the recent trends and developments in global workplaces since the dawn of globalisation
- To establish how these recent trends have impacted employment relations in Kenya.

### Significance for the Study

The study will be significant to scholars as it will add to the array of new knowledge in the area of globalisation and employment relations, especially scholars in the field of human resource management and employment relations. The study will certainly fill some knowledge gaps within the domain of globalisation and its impact on employment relations in Kenya

### Recent trends and developments in the workplace since globalisation and their impact on employment relations in Kenya

Rapid competition has been one of the major outcomes of globalisation. Most firms have been forced to embrace the changes that come along with globalisation in order for them to remain in business. Cutting costs and increasing revenue has become very important in order to remain competitive. One of the major costs of any firm is the wage bill, which, if not handled with care, can lead to a loss in



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profits. Some businesses have resorted to retrenchments to reduce the wage bills, while others have resorted to changing the employment patterns of their workplaces. Due to the changing pattern of employment, most organisations now prefer to engage staff on a casual basis as opposed to a permanency, which attracts benefits that are considered as cost to the firm (Republic of Kenya, 2007). Despite firms benefiting from cost cutting as a result of engaging workers on a casual basis, the current development has impacted negatively on the employment relations.

More than that, advancements in technology have contributed to a paradigm shift in work structures. The fact remains that rapid technological innovations have been fuelled by globalisation [Roberts, 2006]. New technologies have altered the mode of production from a manual system to one of technology, where most works are no longer working manually, but engaging in sophisticated technological production systems that enhances efficiency [Roberts, 2006]. Technologies have also led to changes in work patterns for local workers as initial work that was previously performed by an unskilled workforce now requires a skilled person with knowledge of new technologies, such as information technology (IT) to perform [Roberts, 2006]. Hence, towards the end of the twentieth century, sophisticated machines have virtually replaced the manual system of operations in the workplace [Aronowitz & DiFazio, 2010].

Ukpere and Slabbert (2007) observed that globalisation has indeed contributed to advancements in technology, while technology has also greatly aided globalisation. Technology has brought about increases in competition and the war for talent at a global level [Roberts, 2006]. Technology has affected the major spheres of economy activities such as transportation and communication. The transport sector has undergone transformation, as the sector has become more cost effective and efficient than it was previously [Ukpere & Slabbert, 2007].

Globalisation has contributed to changes in employment patterns, as most employees are no longer engaged on a permanent basis [Neikirk, 2008]. According to Clott (2004), most organisations initially resorted to outsource most of their peripheral activities, while they concentrate on their core activities. This had an impact on the work structures of most organisations globally. In the past, outsourcing was used at initial production levels, which were perceived as noncore activities. However, recently, outsourcing is even utilised for core functions in the production of final products and services [Neikirk, 2008]. Outsourcing has been one of the ways of ensuring that firms remain viable and competitive in the global market,



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particularly in industrialised countries [Ukpere & Slabbert, 2007]. However, outsourcing also seems to have contributed to unemployment owing to redundancies witnessed in the workplace as a result of certain functions that have been outsourced [Clott, 2004]. Some organisations have been forced to change their scope of operations and employment patterns in order to remain competitive [Neikirk, 2008].

The tendency to overwork workers has made work flexibility an appealing economic choice in the globalised world of work [Ukpere & Slabbert, 2007]. As aforementioned, human resources have now been dichotomized into main groups of multi-tasked permanent workers and a part-time workforce who are engaged on a temporary basis [Adams *et al.*, 2006]. The method that is employed usually brings benefits to the organisations, but at the cost of the casual workers. Indeed, the working environments have changed owing to the current liberalised market [Ohmae, 2005]. While employers have emphasized changes in work structures to guarantee higher returns, employees, conversely, prefer higher wages and good conditions of service, which in most cases have prompted employers to threaten that jobs may be moved elsewhere such as to China and Bangladesh, where the cost of labour is cheap and the conditions of service deplorable [Ukpere & Slabbert, 2009].

Global unemployment is on the rise and there are growing signs that this trend will continue unabated [Zulkipli & Burt, 2013]. According to Ukpere (2007), one repugnant aspect of globalisation is the increasing rate of unemployment in societies around the globe. In Kenya, challenges in the labour market include the slow growth in employment creation, the non-productive and less sustainable nature of most jobs, and the perceptions of some jobs seekers regarding their preferred jobs since 2002 [Waweru, 2007]. Unemployed youths have become a major risk factor in Kenya [DiNardo & Lemieux, 1997]. However, it should be kept in mind that a majority of the youths have not acquired the right skills to enable them to secure proper employment, while others have willingly chosen not to work [Zulkipli & Burt, 2013]. This comes as a result of selectiveness by some of the youths in respect of available jobs owing to negative attitudes towards some job [Brewster, 2008]. The government has been developing policies that will attract youths to take up available jobs [GoK Report, 2009]. But the strategies have not worked since most of the youth continues to show negative attitudes towards some jobs that have been created. In addition, increased casualization of labour, contract employment and unregulated outsourcing of jobs have made workers more vulnerable, especially within the context of social protection and workers' rights [Brewster, 2008].



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Global competition has made organisations to search out for ways of cutting costs if they need to be globally competitive, and one of the strategies they have resorted to achieve that is through downsizing [Irungu, 2011]. As always, managers have the responsibility to determine how employees should be utilised to ensure maximum return on investments [Flingstein, 1996]. Several developments have occurred since globalisation and economic liberalisation [Brewster, 2008]. For instance, organisations are working hard to ensure that they have a lean work force in production lines. Although, Irungu (2011) once states that the restructuring taking place in the public sector is not merely as a result of globalisation, however one cannot rule out completely that globalisation has no effect in the public sector. Currently, everything is done with a global mind-set. Thus, globalisation has an effect on almost everything that takes place at a local level [Brewster, 2008]. Ukpere and Slabbert (2009) posit that new organisational behaviours such as downsizing, reengineering and organisational merger/combinations are direct consequence of globalisation, which has accelerated the pace of unemployment.

### **Research methodology: Sample and research process**

The main aim of the research was to establish recent trends and developments in global workplaces in order to establish their impact on employment relations in Kenya. The research used a mixed research approach to investigate the topic under study. The main reason for a mixed method is to ensure proper triangulation of information to minimise errors. The study targeted all companies operating in Nairobi and Mombasa in Kenya, but sampled a total of 500 employees using purposive sampling technique. The respondents were issued with a well drafted closed ended questionnaire. A total of 483 questionnaires were satisfactorily filled and returned forming a response rate of 97%. Of the 483 respondents, 37 were returned via Survey Monkey, while 446 were collected manually. Furthermore, 10 key employment relations stakeholders were interviewed. Prior to data collection, the researcher considered the content validity of the questionnaire by conducting a pilot study. The questionnaire was also vetted by the researcher's supervisor and peers. The test of content validity was established through inter judge consultants. The reliability of the instrument was also evaluated by performing Cronbach's alpha coefficient for all the items in the questionnaire to measure the level of internal consistency among the variables under study.

**Data analysis**

In order to establish the perceptions of the respondents on recent trends and developments in global workplaces in order to establish their impact on employment relations in Kenya, the researcher posed questions and made statements, which respondents had to either answer or respond to.

**Decisions on outsourcing**

This section sought to establish whether workers are consulted when management plans to outsource some services or activities in the selected organisations.

**Table 1. Management Prerogatives on Outsourcing Decisions**

Outsourcing of some services/activities is solely management’s decision				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	22	4.6	4.6
	Disagree	14	2.9	7.5
	Neutral	87	18.0	25.5
	Agree	224	46.4	71.8
	Strongly Agree	136	28.2	100.0
	Total	483	100.0	

(N=483)

Table 1 shows that 46.4% of the respondents agreed that outsourcing of some services/activities are solely management’s decision, while 28.2% strongly agreed, and 18% remained neutral regarding the statement. A total of 2.9% disagreed with the statement, while 4.6% strongly disagreed that outsourcing of some services/activities is solely management’s decision. In total, 74.6% (46.4%+28.2%) agreed that outsourcing of some services/activities are solely management’s decision, while a total of 7.5% (2.9%+4.6%) of the respondents disagreed that outsourcing of some services/activities are solely management’s decision. The high number of those who agreed with the statement shows that outsourcing of some activities were solely undertaken by management without consulting with workers to obtain their input.

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### Globalisation and downsizing/retrenchments

The rationale for this section was to establish whether globalisation has contributed to the high level of retrenchments in Kenya.

**Table 2. Rising Trends in Retrenchments since Globalisation**

There has been rising trends in retrenchments in recent times owing to globalisation				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	28	5.8	5.8
	Disagree	59	12.2	18.0
	Neutral	101	20.9	38.9
	Agree	216	44.7	83.6
	Strongly Agree	79	16.4	100.0
	Total	483	100.0	

(N=483)

Table 2 shows that 44.7% of the respondents agreed that there has been rising trends in retrenchments since globalisation, and 16.4% strongly agreed with this statement. However, 20.9% of the respondents decided to remain neutral on the subject, while 12.2% disagreed, and 5.8% strongly disagreed that there has been raising trends in retrenchments since globalisation. In sum, 61.1% (44.7%+16.4%) agreed with the statement, while a sum of 18% (12.2%+5.8%) disagreed. The high response rate of those who agreed with the statement indicates that retrenchments have increased in Kenya since globalisation. This development may have an adverse effect on employment relations.

### Procedural fairness in retrenchments since the advent of globalisation

This section sought to establish if management has been fair when executing the retrenchment process, which has far reaching consequences on staff morale and employment relations.



**Table 3. Due Process of Fairness during Retrenchments**

Due process of fairness is followed by management where retrenchment occurs				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	56	11.6	11.6
	Disagree	103	21.3	32.9
	Neutral	203	42.0	74.9
	Agree	94	19.5	94.4
	Strongly Agree	27	5.6	100.0
	Total	483	100.0	

(N=483)

Table 3 shows that a substantial number of respondents, namely 42%, were non-committal towards the subject, while 19.5% agreed that due process of fairness is followed by management where retrenchment occurs and 5.6% strongly agreed with the statement. However, 21.3% disagreed and 11.6% strongly disagreed that due process of fairness is followed by management during retrenchments. In sum, 32.9% (21.3%+11.6%) of the respondents disagreed that due process of fairness is followed by management when retrenchment occurs, while a sum of 25.1% (19.5%+5.6%) agreed with the statement. The high number of those who remained neutral is a sign that many workers chose not to take sides on the statement, probably owing to the tensions that retrenchment issues bring to the workplace.

### **Representation of employees in the retrenchment process**

Here, the researcher sought to establish whether employees have a say in the retrenchment process via their representatives.

Table 4 shows that a vast number of respondents, 40.8% remained non-committal as to whether or not employee representatives are involved in the retrenchment exercise. However, 20.5% agreed and 2.5% strongly agreed that employee representatives are involved in the retrenchment exercise, while 29.4% disagreed and 6.8% strongly disagreed with the statement. In sum, 36.2% (29.4%+6.8%) disagreed

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that employee representatives are involved in the retrenchment exercise, while a sum of 23% (20.5%+2.5%) agreed that employee representatives are involved in the retrenchment exercise. The high number of those who disagreed indicates that retrenchment exercises have been solely executed by management, with less or no involvement of employee representatives, which could have negative repercussions for harmonious employment relations.

**Table 4. Involvement of Employee Representatives in Retrenchment Process**

Employee representatives are involved in the retrenchment exercise				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	33	6.8	6.8
	Disagree	142	29.4	36.2
	Neutral	197	40.8	77.0
	Agree	99	20.5	97.5
	Strongly Agree	12	2.5	100.0
	Total	483	100.0	

(N=483)

### Payment of terminal dues during retrenchments

The rationale for this section was to establish the treatment of employees during the retrenchment process, and whether they are given all their dues to accord them some comfort. This would help to eliminate some discontent amongst the remaining employees that survived the retrenchment exercise.

Table 5 shows that 43.5% of the respondents agreed that employees are paid their termination dues before leaving employment and 9.1% strongly agreed, while 32.5% were neutral on the subject. However, 9.9% of the respondents disagreed and 5.0% of the respondents strongly disagreed that employees are paid their termination dues before they leave their employment. Altogether, 52.6% (43.5%+9.1%) agreed with the statement, while in sum, 14.9% (9.9%+5.0%) disagreed. The high number of those who agreed with the statement signifies employers' positive treatment of retrenched employees in terms of payment of their terminal dues.



**Table 5. Payment of Terminal Dues to Retrenched Employees**

Employees are paid their termination dues before leaving employment				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	24	5.0	5.0
	Disagree	48	9.9	14.9
	Neutral	157	32.5	47.4
	Agree	210	43.5	90.9
	Strongly Agree	44	9.1	100.0
	Total	483	100.0	

(N=483)

**Rising trends in outsourcing in recent times**

This section sought to establish whether globalisation has increased the reorganisation of work through outsourcing as opposed to the recruitment of permanent workers.

**Table 6. Increased Outsourcing of Work to External Organisations**

Currently, most of the work in organisation is outsourced compared to the past				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	16	3.3	3.3
	Disagree	74	15.3	18.6
	Neutral	110	22.8	41.4
	Agree	216	44.7	86.1
	Strongly Agree	67	13.9	100.0
	Total	483	100.0	

(N=483)



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Table 6 indicates that 44.7% of the respondents agreed that, currently, most of the work in the organisation has been outsourced in recent times compared to the past, and 13.9% strongly agreed. However, 22.8% were neutral on the subject, while 15.3% disagreed and 3.3% strongly disagreed with the statement. Cumulatively, 58.6% (44.7%+13.9%) of the respondents agreed that, currently, most of the work in their organisation has been outsourced recently compared to in the past, while in total, 18.6% (15.3%+3.3%) disagreed with the statement. The high number of those who agreed with the statement indicates that most organisations have resorted to outsourcing more of their routine activities in recent times, thereby rendering more workers redundant for future retrenchments.

**Modern technology and work allocation**

This section sought to establish the impact of modern technology, a by-product of globalisation, on work allocation, in order to ascertain whether technology has reduced workloads or otherwise.

**Table 7. Reduction of Workloads Because of Modern Technology**

Increased use of modern technology has reduced workloads				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	22	4.6	4.6
	Disagree	81	16.8	21.3
	Neutral	93	19.3	40.6
	Agree	196	40.6	81.2
	Strongly Agree	91	18.8	100.0
	Total	483	100.0	

(N=483)

Table 7 indicates that 40.6% of the respondents agreed that increased use of modern technology has reduced workloads, while 18.8% strongly agreed, and 19.3% of the respondents were neutral regarding the impact of modern technology on workloads. However, 16.8% of the respondents disagreed and 4.6% strongly

disagreed with the statement. Cumulatively, 59.4% (40.6%+18.8%) of the respondents agreed that increased use of modern technology has reduced workloads, while 21.4% (16.8%+4.6%) disagreed with the statement. The high number of those who agreed shows that the use of modern technology has led to a reduction in employees' workloads, which may potentially trigger redundancy in the workplace.

### Modern technology and redundancy

The rationale for this section was to establish whether increased use of modern technology has negatively affected employees in terms of redundancy.

**Table 8. Redundancy of Workers as a Result of Increased Use of Technology**

Increased use of modern technology has led to redundancy of workers				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	32	6.6	6.6
	Disagree	96	19.9	26.5
	Neutral	143	29.6	56.1
	Agree	162	33.5	89.6
	Strongly Agree	50	10.4	100.0
	Total	483	100.0	

(N=483)

Table 8 indicates that the subject elicited varied reactions, as 33.5% of the respondents agreed that increased use of technology has led to worker redundancy, while 10.4% strongly agreed, 19.9% disagreed, and 6.6% strongly disagreed with the statement. However, 29.6% of the respondents were non-committal towards the subject. In sum, 43.9% (33.5%+10.4%) agreed that increased use of technology has led to workers redundancy, while cumulatively, 26.5% (19.9%+6.6%) disagreed with the statement. The high number of respondents who agreed with the statement indicates that modern technology has indeed contributed to redundancy in the workplace, which ultimately has a negative effect on the relationship between employers and employees owing to retrenchments as a result of redundancy.

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**Technology and new developments in labour relations**

This section sought to establish whether technological developments, as a by-product of globalisation, have impacted on labour relations within organisations.

**Table 9. New Development in Labour Relations as a Result of Modern Technology**

Technological development has influenced developments in labour relations				
		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	6	1.2	1.2
	Disagree	70	14.5	15.7
	Neutral	198	41.0	56.7
	Agree	171	35.4	92.1
	Strongly Agree	38	7.9	100.0
	Total	483	100.0	

(N=483)

Table 9 indicates that 7.9% of the respondents strongly agreed and 35.4% agreed that technological development has influenced developments in labour relations, while 1.2% strongly disagreed and 14.5% disagreed, respectively, with the statement, and 41% remained neutral. In total, 43.3% (35.4%+7.9%) agreed that technological development has influenced developments in labour relations, while a total of 15.7% (14.5%+1.2%) disagreed with the statement. The high number of respondents who agreed with the statement indicates that technological development has influenced developments in labour relations.

**Skills development and casual employment**

This section sought to find out if Kenyan companies provide casual employees with opportunities to develop their skills in the era of globalisation.

Table 10 shows that majority of the respondents, namely 32.3%, were neutral on the subject, while 30.2% agreed and 12.4% strongly agreed that casual employees never get opportunities to improve their skills. However, 19% disagreed and 6.0% strongly disagreed with the statement. Altogether, 42.5% (30.2%+12.4%) of the

respondents agreed that casual employees never get a chance to improve their skills while a total of 25% (19.0%+6.0%) disagreed. The high response rate of those who agreed with the statement indicates that casual employees in Kenyan companies are not given opportunities to develop their skills.

**Table 10. Lack of Skills Development Opportunities for Casual Employees**

Casual employees never get an opportunity to develop their skills				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	29	6.0	6.0
	Disagree	92	19.0	25.1
	Neutral	156	32.3	57.3
	Agree	146	30.2	87.6
	Strongly Agree	60	12.4	100.0
	Total	483	100.0	

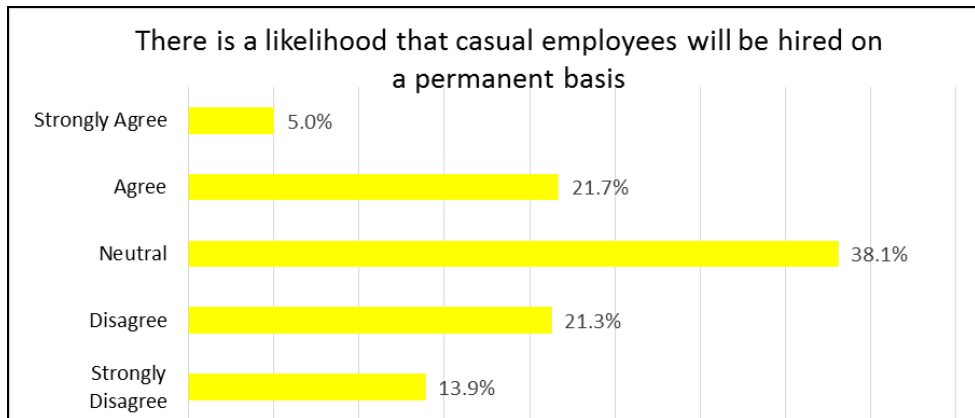
(N=483)

**Possibility of change in employment status of casual employees**

The rationale for this section was to establish if there is a likelihood that casual employees will be hired on a permanent basis during the era of globalisation, specifically if employers consider casual employees when permanent vacancies arise.

Figure 1 shows that 21.7% of the respondents agreed that there is a likelihood that casual employees will be hired on a permanent basis, while 5.0% strongly agreed and 38.1% of the respondents remained neutral regarding the statement. However, 21.3% disagreed and 13.9% strongly disagreed with the statement. In total, 26.7% (21.7%+5.0%) of the respondents agreed that there is a likelihood that casual employees may be hired on a permanent basis, while a total of 35.2% (21.3%+13.9%) disagreed with the statement. The high number of those who disagreed indicates that it is unlikely that casual employees may be hired on a permanent basis, while the great number of those who remained neutral may suggest some level of uncertainty from respondents as to whether employers consider hiring casual employees on a permanent basis.

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**Figure 1. Hiring of Casual Employees on a Permanent Basis**

### Labour brokering and employment creation

The rationale for this section was to establish if labour brokers have helped people to at least earn a living in the era of globalisation owing to the high rate of unemployment.

**Table 11. Labour Brokers' Assistance in Earning a Living**

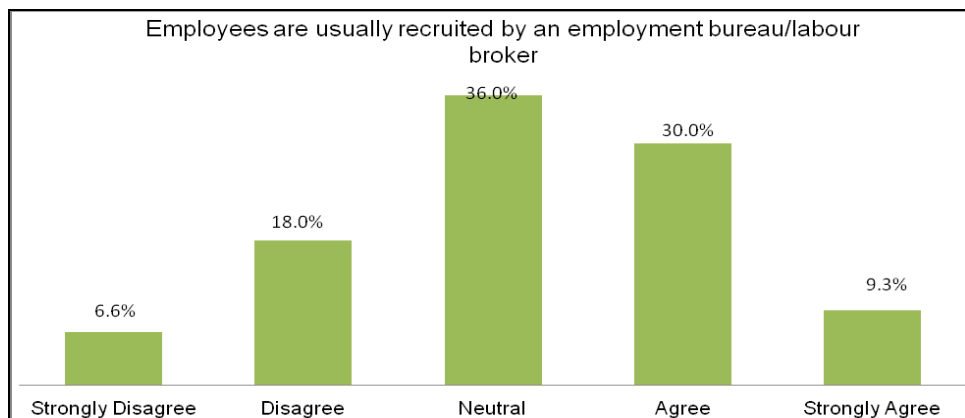
Labour brokers help people to earn a living where high unemployment is prevalent				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	13	2.7	2.7
	Disagree	85	17.6	20.3
	Neutral	192	39.8	60.0
	Agree	170	35.2	95.2
	Strongly Agree	23	4.8	100.0
	Total	483	100.0	

(N=483)

Table 11 shows that a majority of the respondents were non-committal on the question, with 39.8% remaining neutral, while 35.2% of respondents agreed and 4.8% strongly agreed that labour brokers help people to at least earn a living where high unemployment is prevalent. A total of 17.6% respondents disagreed and 2.7% strongly disagreed with the statement. In total, 40% (35.2%+4.8%) of the respondents agreed that labour brokers help people to at least earn a living where high unemployment is prevalent, while a total of 20.3% (17.6%+2.7%) disagreed. The high number of those who agreed indicates that labour brokers do indeed help people to at least earn a living in Kenya, where high unemployment is prevalent.

### Employees' recruitment and labour brokers

The rationale for this section was to find out if Kenyan companies recruit their employees through employment bureaus and labour brokers as opposed to engaging them directly to determine their suitability.



**Figure 2. Recruitment of Employees through Bureaus**

Figure 2 shows that 36% of the respondents were neutral regarding the question; 30% of respondents agreed that employees are usually recruited by an employment bureau; 9.3% strongly agreed; 18% of respondents disagreed; and 6.6% strongly disagreed with the statement. Cumulatively, 39.3% (30.0%+9.3%) of the respondents agreed that employees are usually recruited by an employment bureau/labour broker,

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while cumulatively, 24.6% (18.0%+6.6%) disagreed. The high number of those who agreed with the statement indicates that there is a rising trend in the recruitment of employees through employment bureaus/labour brokers in Kenyan companies in the era of globalisation.

**Trends in labour brokering**

The rationale for this information was to establish whether the use of labour brokers has been a rising trend in terms of recruiting employees instead of companies employing directly. In other words, whether the number of labour brokers has grown owing to the demand from employers for their services.

**Table 12. Rising Trends in Labour Brokering**

Number of labour brokers registered has increased since the era of globalisation			
	Frequency	Per cent	Cumulative Per cent
Valid Strongly Disagree	14	2.9	2.9
Disagree	19	3.9	6.8
Neutral	131	27.1	34.0
Agree	243	50.3	84.3
Strongly Agree	76	15.7	100.0
Total	483	100.0	

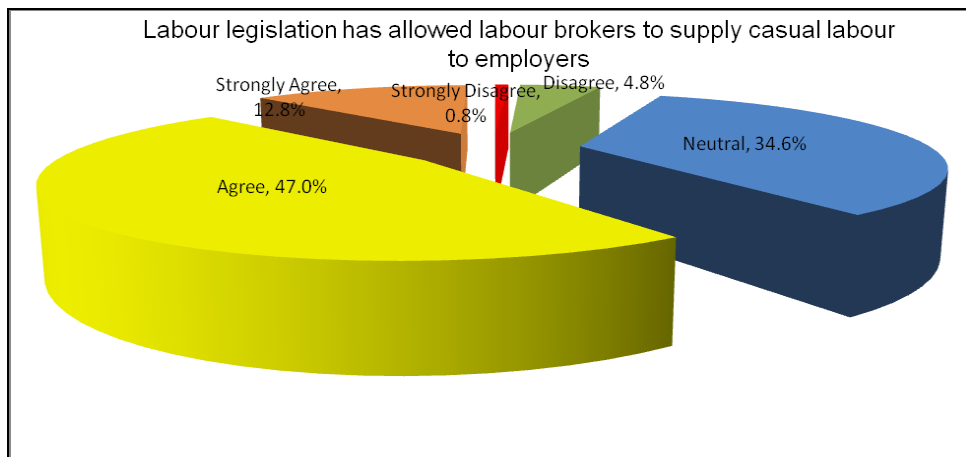
(N=483)

As shown in Table 12, 50.3% of the respondents agreed that there has been an increase in the number of labour brokers since the era of globalisation; 15.7% strongly agreed; and 27.1% of the respondents remained neutral. However, 3.9% of the respondents disagreed and 2.9% strongly disagreed with the statement. Cumulatively, 66% (50.3%+15.7%) of the respondents agreed that the number of registered labour brokers has increased since globalisation, while cumulatively, 6.8% (3.9%+2.9%) disagreed. The high response rate of those who agreed with the statement shows that the number of registered labour brokers in Kenya has increased in recent times.



### Legislation on casual employment

The purpose here was to find out if the increase in labour brokers that supply casual employees for employers has been as a result of weak labour legislation.

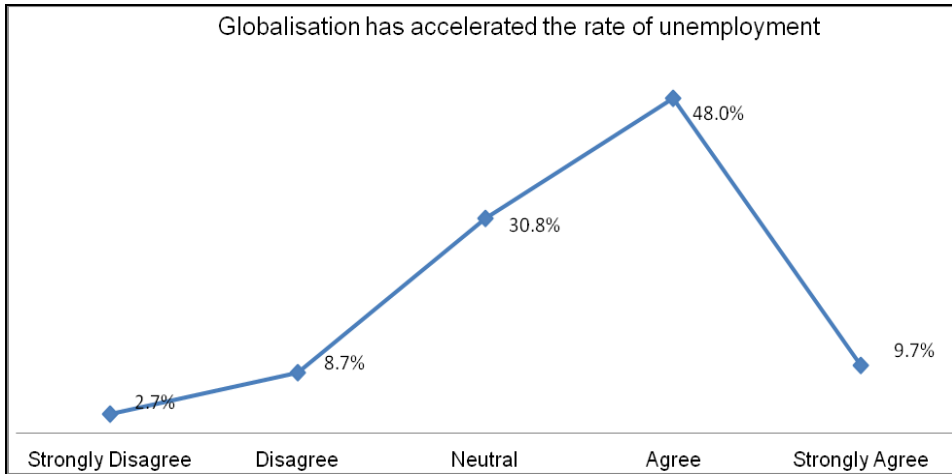


**Figure 3: Weakness of Legislation on Casual Employment**

Figure 3 shows that 47.0% of the respondents agreed that the number of registered labour brokers has increased since globalisation as a result of weakened legislation, and 12.8% strongly agreed. Conversely, 0.8% strongly disagreed and 4.8% disagreed with the statement, while 34.6% remained neutral. Cumulatively, 59.8% (47.0%+12.8%) of the respondents agreed that the number of registered labour brokers has increased since the era of globalisation as a result of weakened legislation, while cumulatively, 5.6% (4.8%+0.8%) disagreed with the statement. From the high response rate of those who agreed with the statement, it is clear that labour legislation has indeed been weakened to allow labour brokers to supply casual labour to employers.

### Globalisation and unemployment

The reason for this section was to establish if the rate of unemployment has increased more in recent times than previously as a result of globalisation.



**Figure 4. Rising Unemployment Owing to Globalisation**

Figure 4 shows that 48% of the respondents agreed that globalisation has increased the rate of unemployment in Kenya, while 9.7% strongly agreed, and 30.8% of the respondents remained neutral. However, 8.7% of the respondents disagreed and 2.7% strongly disagreed with the statement. In total, 57.7% (48%+9.7%) of the respondents agreed that globalisation has increased the rate of unemployment, while a total of 11.4% (8.7%+2.7%) disagreed. The high number of those who agreed with the statement is an indication that unemployment has indeed increased in Kenya since globalisation.

**Mergers, acquisitions and unemployment**

The rationale for this section was to establish if there is a connection between the various mergers and acquisitions in Kenya, and the increasing rate of unemployment. In other words, to ascertain specifically if mergers and acquisition, which is a rising trend in the era of globalisation, has resulted in increased job losses.

Table 13 shows that 62.3% of the respondents agreed that mergers and acquisitions in organisations in Kenya has increased levels of unemployment, while

12.6% strongly agreed, and 20.3% remained neutral. However, 3.1% of the respondents disagreed and 1.7% strongly disagreed those organisational mergers and acquisitions have increased levels of unemployment. Cumulatively, 74.9% (62.3%+12.6%) of the respondents agreed with the statement, while cumulatively, 4.8% (3.1%+1.7%) disagreed. The high percentage of those who agreed with the statement is an indication that organisational mergers and acquisitions have indeed increased levels of unemployment since globalisation.

**Table 13. Rising Unemployment Owing to Mergers and Acquisitions**

Organisational mergers and acquisitions has increased levels of unemployment				
		Frequency	Per cent	Cumulative Per cent
Valid	Strongly Disagree	8	1.7	1.7
	Disagree	15	3.1	4.8
	Neutral	98	20.3	25.1
	Agree	301	62.3	87.4
	Strongly Agree	61	12.6	100.0
	Total	483	100.0	

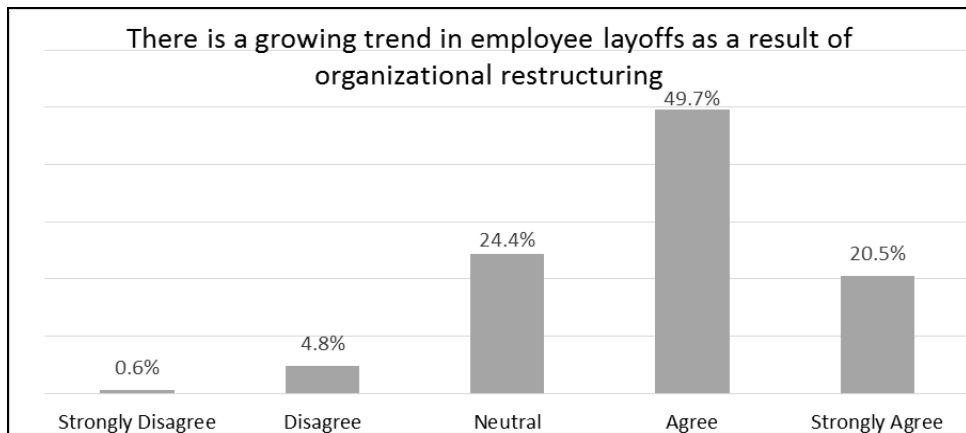
(N=483)

**Organisational restructuring and job destruction**

The rationale for this section was to establish whether there is a link between organisational restructuring, and the growing trend of employee layoffs amongst Kenyan organisations in recent times.

Figure 5 shows that 49.7% of the respondents agreed that there is a growing trend in employee layoffs as a result of organisational restructuring, while 20.5% strongly agreed with the statement, and 24.4% remained neutral. However, 4.8% of the respondents disagreed and 0.6% strongly disagreed that there is a growing trend in employee layoffs as a result of organisational restructuring. Cumulatively, 70.2% (49.7%+20.5%) agreed with the statement, while cumulatively, 5.4% (4.8%+0.6%) disagreed. The high number of those who agreed with the statement indicates that there is a growing trend in employee layoffs as a result of organisational restructuring, which has increased since globalisation.

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**Figure 5. Growing Trend in Employee Layoffs Owing to Organizational Restructuring**

**Qualitative data analysis on recent trends and developments in the workplace since globalisation and their impact on employment relations in Kenya**

The responses indicate that more pressure is exerted on workers in the current workplace, and workers obliged to the pressure due to fear of being retrenched. FKE 2 said that *“because retrenchment comes with company restructuring, those who leave the company are psychologically affected and those who remain are assigned new responsibilities. Sometimes those who remain are forced to work extra hours to make up for the lost workforce, which greatly affects the employment relations”*. Despite the negative impact of retrenchments, the above response indicates that workers who have better skills and experience are either promoted or they escape retrenchment because their colleagues who are less skilled or have no skills are retrenched instead. It further creates panic and a lack of interest for work, since employees are uncertain about their fate before completion of the retrenchment exercise. Retrenchment also helps companies to reduce their overheads, hence increase their profitability, which has driven more companies to undertake more retrenchments in recent times. KAM 1 noted that *“workers have lost interest in their job because they have divided attention to look for other jobs*



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before they are laid off. Also, there is stress to the few remaining workforce since they have to put in more time to maintain production". The responses generally show that rising incidents of retrenchments have indeed negatively affected employment relations in Kenya, since globalisation.

KEPSA 2 commented that "technology in the form of computer is good as it changes the way things are done e.g. before computers came, there were the typewriters that if one made a mistake, it would take *you a lot of time to correct a typed mistake*, but right now you can type something and correct immediately if there is a mistake. Right now management can make decision in real time because information is shared in real time". The respondents' views show that technology has improved the ways things are done in many companies, but at the same time it is the major reason for most retrenchments in many companies.

### **Discussion of findings**

The study established that most organisations have resorted to outsourcing more on their routine activities in recent times, thereby rendering many workers redundant for possible retrenchments. Outsourcing of some activities were solely undertaken by management without consulting with workers to obtain their inputs. The study established that retrenchments have increased in Kenya since globalisation. From the research, modern technology has led to a reduction in employees' workloads, which may potentially trigger redundancy in the workplace by management, with less or no involvement of employee representatives. The current state of affairs could have negative repercussions for harmonious employment relations. Modern technology has indeed contributed to job destruction in the workplace, which ultimately has a negative effect on the relationship between employers and employees owing to retrenchments as a result of redundancy. From the study, it is unlikely that most casual employees will be hired on a permanent basis in the near future.

The responses indicate that casual employees are not in regular employment and thus do not have a steady income. It further states that they are vulnerable to financial problems, which result to instability families. In addition, casual employees are exploited as a cheap source of labour with minimum costs. These employees greatly contribute to a firm's profitability, yet they are remunerated poorly compared to permanent employees, as most of them do not belong to any trade union and their employment seems very insecure.



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### **Limitations and future research**

The findings are based on the perceptions of participants/respondents that were sampled, which may not necessarily reflect the views of participants in other sectors or regions. Moreover, the mental functioning of the respondents could have an impact on the answers that they provide in the questionnaire. This could lead to outright misrepresentation of the recent trends and developments in the workplace since globalisation and their impact on employment relations in Kenya. The information was collected from Kenya only, which limits the reliance on the data in terms of generalisation. The data was captured from workers and their organisations, while other members of the broader public were not given an opportunity to express their views, which may not fully cover the perceptions of all working class individuals and potentials that are affected by the aforementioned recent trends and developments in the workplace and its impacts on their respective employment relations.

### **Recommendations and Conclusion**

The findings show that as a result of downsizing, retrenchments created panic and some lack of interest in work, since employees do not know their fate before the retrenchment exercise is completed. Most workers seem to have lost interest in their job because they have divided their attention to look for other jobs before they are laid off. Thus organisation should plan well for post retrenchment effect in order to minimise on the interruption of organisation's operations.

There has been an increase in the engagement of labour brokers to recruit employees on their behalf; this reduces the confidence and attachment between employee and employers, which may affect performance. Employers should strive to engage the prospective employees directly during the recruitment process. There is an increasing tendency for organisations to engage employees on a contract and/or casual basis as opposed to a permanent basis, while others are engaged on a temporary basis. These employees may not give their best in terms executing their task as they feel discriminated. Therefore, employers should endeavour to employ workers on permanent basis.

The study has established that there is an increase in outsourcing of services. In fact, as long as the venture may be viable to the employers in terms of cost cutting, it will continue to affects employees and may lead to high labour turnover.



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Organisations should minimise outsourcing and only explore it when there is no other alternatives.

### Conclusion

Since the advent of globalisation, there have been innumerable new trends in the global workplace, and particularly in Kenya, which have shaped employment relations. Most organisations in Kenya have resorted to mergers and acquisitions to boost their performance since globalisation; many organisations have established similar or almost similar lines of products or operations, and thus create stiff competition, thereby making mergers and acquisitions a viable option to take over the less performing organisations in order to withstand putative global competition.

Globalisation has contributed to the high level of retrenchments in Kenya. In the wake of globalisation, workers undertake a lot of work pressure for fear of being retrenched, because retrenchment comes with company restructuring. There is also an increase in the use of technology in recent times, which brought some benefits to Kenyan organisations. It is clear that one of the major changes that have been triggered by globalisation is technological advancement, and in the current era most organisations have embraced advanced technology, which goes a long way towards improving efficiency, cutting costs and thus increasing productivity. This may result in mixed effects on employment relations, which depends on its effect on workers.

Technology has improved output, but in the process many workers have lost their jobs and some are still being laid-off owing to their incompetence to use advanced technologies, such as computers. Technological changes have resulted in loss of jobs among some managers and senior staff that lack technological competencies. Most organisations in Kenya have increased engagement in outsourcing services since globalisation as a way of reducing the costs of operations in order to maximise profits and remain competitive.

In the wake of globalisation, many organisations in Kenya have become pressurized to remain competitive. This has mostly emerged from new entrants in the markets, as they have employed sophisticated means of operations that guarantee them profitability at a lower cost. Thus, organisations that are finding it difficult to break-even have resorted to downsizing, rightsizing and accelerated retrenchments in order to remain afloat in the competitive race within the global economy.





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## **EFFECTS OF FRINGE BENEFITS ON EMPLOYEES PRODUCTIVITY IN SELECTED FOOD AND BEVERAGES PRODUCTION COMPANIES IN OGUN STATE, NIGERIA**

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### **Abstract**

*The study revealed that the provision of fringe benefits by the management of an organisation has positive roles to play in motivation of employees to higher productivity. It also defined the degree to which an employee identifies with the organization and wants to continue participating actively in it. Questionnaire was the major instrument adopted for this study, a total of 210 respondents were sampled from three food and beverages production organisations. Data generated through the questionnaires for the study were analysed making use of Statistical Package for Social Sciences (SPSS). The results showed that highly competitive fringe benefits have impetus for ensuring drastic reduction in labour*



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*turnover. Strong fringe benefits were therefore established to be correlated with employees' motivation on the job, job satisfaction; job performance, employee retention and that proper workplace environment helps in reducing the rate of absentees. The study therefore submitted that application of fringe benefits facilitates effective productivity, while it was also discovered that employees' involvement in organization activities contribute to organizational stability. The two hypotheses tested thus showed a significant relationship between employees' involvement in policy formulation and implementation on individual productivity as well as organizational performance (F Statistic (17.65)  $P < 0.05$  and sig.  $P < 0.05$ ) and that a significant relationship exists between application of fringe benefits and individual productivity, as well as organizational performance (F Statistic (8.982) and sig.  $P < 0.05$ ).*

**Keywords:** *fringe benefit; industry; productivity; organizational performance.*

**JEL Classification:** J24

### ***Introduction***

In the current competitive business environment, the organizations are facing a lot of challenges and among these issues are getting right employees, retaining them, ensuring their commitment, and productivity [Akpan, 2020; Ekwochi *et al.*, 2018; Oguejiofor, & Umeano, 2018]. The success and the survival of any organization are therefore determined by the way the workers are remunerated and rewarded [Lawler, 2003]. This is because people work to satisfy some needs, which differ depending on individuals. The reward system and motivating incentives will determine the level of employees' commitment and their attitude towards work [Nisar, & Siddiqui, 2019; Sharma, & Jaiswal, 2018; Sierpińska, & Kulisa, 2018]. For many years, men were known to have certain needs at any given time; some of these needs are biogenic while others are psychogenic. The biogenic or innate needs arise from psychological state of tension such as higher level needs in Abraham Maslow's hierarchy of needs. These needs must be satisfied or else people might react in various ways depending on their perception of the situation. Therefore, the organizational goal could only be achieved when the motive of the individual workers making up such an organization is understood and appropriate motivation techniques are adopted towards achieving this. It is in this regards that the idea of



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rewarding the deserved behaviour and performance becomes a recurring issue within organizational studies [Ileka, & Muogbo, 2020].

The systems of reward for employee have grown so complex over the years that it is impossible to provide simple breakdown of procedure. Similarly, the methods by which firms reward their employees have grown more and more complex over the last decade or so mainly as a result of successive government policies. Therefore, there has been a rapid growth in discourse of fringe benefits as firms have sought other ways by which to increase the value to employees of the total compensation. Dixit and Bhati (2012) noted that poor incentives packages have been a major factor affecting employees' commitment and productivity. A thorough understanding of what drives the employees to perform efficiently and how to reward them accordingly become necessary for employers in every organization before they can achieve the objective for their existence in any competitive society [Mueller, 2011; Neumark, & Wascher, 2007]. Besides, employees must be motivated through adequate incentives plans and reward systems and this will invariably encourage them to be proactive and have right attitude to work, thereby promote organizational productivity [Falola *et al.*, 2014; Armstrong, 2007]. It thus became obvious that productivity can only be enhanced if the employees are well motivated through adequate incentive packages that are proportional to their performance [Mark, 2011; Michele, & Rob, 2008; Stolovich *et al.*, 2004; Simon, & Kaestner, 2004; Diener, & Biswas, 2002]. Meanwhile, the employers in a highly dynamic organization are appreciating this through deployment of incentives strategies in order to ensure that the best brains are retained in the best interest of the organization [Nelson, 2003].

Within and amongst all countries over the world, concerns were on the type of incentive that should be adopted in order to motivate people to work harder and produce more goals. He identified two basic schools of thought, one led by advanced and affluent societies which stress materials incentives such as high images, bonuses, fringe benefits and other rewards. The second schools of thought led by the poor or less affluent societies such as China, Cuba among others that call for moral incentive such as rewarding certificate to best workers. In conventional terms, the reward may take the form of personal praise, public recognition, commendation, promotion and others such as improvement in status or pay rise. In formal organizations, compensation can take three dimensions, such as – pay, incentives, and fringe benefits [Akpan, 2020; James, 2020; Ekwochi *et al.*, 2018; Kuranchie-Mensah, & Amponsah-Tawiah, 2016]. It is therefore worthy of note to understand what fringe benefits entail.



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In the words of Ali *et al.* (2018), Chukwudumebi and Kifordu (2018), Al Mamun and Hasan (2017) and Cole (1987), fringe benefits are the packages adopted by the organization as supplements to worker's original wages, which in the short and long run are of value to them and their families. Whether it is called a fringe benefit, perquisite, or perk, any property or service (or cash under certain circumstances) that an employee receives from an employer in lieu of or in addition to regular taxable wages is a fringe benefit that may be subject to taxation [Vogireddy, 2020; Argente, & García, 2015; Dyson, & Lloyd, 2013; Oyer, 2008]. Appleby (1969) equally identified two types of fringe benefits namely *direct* and *indirect* benefits. *Direct benefits* comprise profit sharing, co-partnership, sick pay and pension scheme. Payments are generally made in cash. *Indirect benefits* are aimed at improving moral and increasing the stability of employment. Examples are free-luncheon vouchers, sport or welfare facilities, provision of car or a mile-age allowance, telephone purchases at discount, education for children, canteen, social facilities, training and development. According to Craig *et al.* (2020), Khudhair *et al.* (2020) and Fashoyin (1979), benefits include the following (a) *Pension Scheme*, that is contributory or non-contributory, apart from this, there is insurance scheme, which covers injury, accidents, etc., (b) *Entitlements*, which include pay for holidays, domestic needs, staff club, canteen services, etc., (c) *Financial Assistance*, such as housing loan, relocation, discount on company product, house ownership loan, credit cards, car loan, scholarship, bursary for staff children, (d) *Allowance* that include transport allowance, subsidized meal, medical allowances, emergency/causal leave with pay, etc.

Bottomley (1983) identified six types of fringe benefits, which include (a) *Staff Benefits* such as cars for those who genuinely need cars for the performance of their job duties, for instance, a car will be very suitable in motivating salesman towards high performance, (b) *Pension Scheme*: These are designed to provide employees with security by currently building up rights which give a guaranteed income to the employee or his dependents on retirements or death. This can be contributory, that is, requiring contribution from both the employer and the employee or non-contributory, which requires only the employer to contribute, (c) *Payment for Time Not Worked*: These include sick-leave, maternity leave, public and annual holidays, study leave, etc., (d) *Health care and insurance Scheme*: Such as free medical facilities or reduced-life insurance, (e) *Loans, Discount and Bonuses*: These include loans in severe financial difficulties or guarantor to employee who wish to obtain bank loans



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such as mortgage loans, discount on foods, company products, bonuses derived through productivity or profit sharing, Christmas or holiday gifts, long service awards, etc., (f) *Welfare*: These include canteen, sports and social facilities, houses and so on. Other types of fringe benefits as revealed by the specialised literature include redundancy pay, unemployment benefits, retirement benefits, company provident funds, legal required benefits, counselling services, recreation service facilities. Fringe benefits are therefore different from ordinary wages that are paid regularly, usually at weekly, fortnightly or monthly intervals.

Albert (1962) opined that fringe benefits are important part of the total compensation of wages earners. They are the payments or benefits enjoyed by the workers, which are additions to the labour costs of employers. They are cost borne by the employers but for which no specific work is done [Ahn, *et al.* 2011; Grossberg, & Sicilian, 2004]. According to Bottomley (1983), benefits are indirect rewards available to employees or group of employees as a part of organizational membership. Fringe benefits are important part of the total compensation of wage earners, which include (i) those provided by law, (ii) those unilaterally introduced by employers, and (iii) those obtained by the union through collective bargaining.

Scheme (1969) stressed the importance of money in motivating people to work. He is of the views that people are mainly interested in economic gains. Atiomo (1987) and Gilchrist (1971) agree that the money are clearly a major inducement, but because of the complexities of motivation process, involving many different needs and goal, it is unsafe to adopt this age long theory of the economic man which states that money is the only motivator. This view was also supported by Mohr (1986), and Aluko (1998) who stressed that most Nigerian workers are extrinsically oriented and can therefore be motivated largely by extrinsic motivators such as pay, job securities, co-workers pressure to perform, etc. Simon (1958) refers to 'inducement' payment made by organization to its participants in return for contribution as the most effective instrument of motivation adopted by organization goals and objectives. Consequently, fringe benefits have become common supplements to wages, but may not have the incentive value of wages [Alam *et al.*, 2020; Siwale *et al.*, 2020].

### ***The Problem, Objectives and Significance of the Study***

It is observed that inadequate, poor and in some cases, lack of fringe benefits is the sources of low morale and low productivity of workers in most organizations.





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This had led to the expression of frustration and job dissatisfaction among workers in the work place, which has given rise to various forms of industrial conflicts such as increase in lateness, redundancy, high rate of absenteeism, labour turn-over and increase in number of workers engaging in moon-light activities. How best to use fringe benefits to address these organization problems is the main concern of this study. The objectives of the study are to (a) find out the various forms of fringe benefits that exist in the study organization; (b) determine the level of productivity of workers in the organization; (c) investigate the extent the introduction of fringe benefits programmes has contributed to workers' productivity; (d) find out the effect of fringe benefits on other variables such as absenteeism, reduction of labour turn-over and cooperation among workers.

This study is significant because of its potentials as a complement to the previous studies on this subject matter. It critically and objectively examined the organizations welfare schemes to determine its adequacy and effectiveness as compared to what obtains in similar organization. It also helps in establishing the basic motivational rate of fringe benefits in employee's job performance and serve in establishing links between fringe benefits in organization with regards to employee's productivity. It also helps the organization(s) to know which elements of the compensation packages should be given greater attention in ensuring employee's motivation, optimizing efficiency and quality production. The findings will be of immense benefits for the organization(s) in the redesigning of jobs to ensure effective utilization of human resources and in controlling labour turnover rate. It will also be of use in employee retirement selection and promotion.

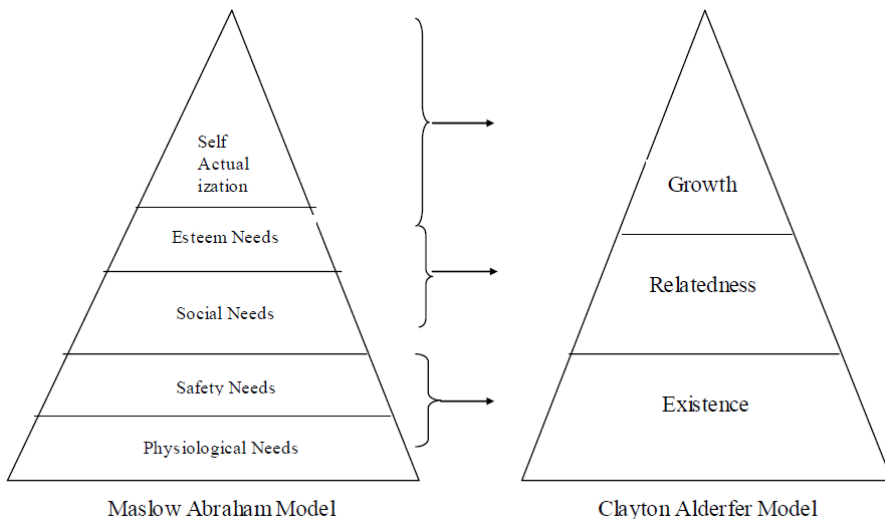
### ***Theoretical Framework***

**Maslow's Hierarchy of Needs:** Abraham Maslow's was a psychologist who developed a theory of human motivation and classified human needs into five categories in a hierarchical manner that is movement from one need to another after a need has been satisfied. His five categories of needs are (i) Physiological needs, (ii) Safety and security needs, (iii) Love needs, (iv) Esteem needs and (v) Self-actualization needs. Maslow's critics have, however, maintained that his model is rigid, and therefore amenable to scientific explanation and that his avowed hierarchy of needs may not be found to exist in a given place of work, and that people tend to satisfy their needs in a relative systematic way from the bottom to the top [Kenrick *et al.*, 2010].



**Douglas McGregor’s Theory ‘X’ and ‘Y’:** Douglas McGregor based his analysis on the assertion that management has created a work-world that had in it an implicit theory about the nature of man. This has been referred to as the ‘carrot and stick’ approach that uses rewards and penalties in order to induce desired behaviour. Such reward as wage, incentives, reprimand, dismissals, promotion, etc are used to attain company goal. Theory ‘X’ places exclusive reliance upon external control of human behaviour; theory ‘Y’ on the other hand, relies heavily on self-control, direction and implementation thought ‘job content’ factor similar to Herzberg’s satisfier’s theory. Theories X and Y summarize the human relationships and posit these as determinants of human behaviour [Carson, 2018].

**Existence, Relatedness and Growth (ERG):** Clayton Alderfer proposed his so-called theory of motivation. In his suggestion, he sees people’s needs arranged along a continuum rather than in any hierarchical order and that there are three needs, that’s her called *existence, relatedness and growth*. His existence needs correspond to Maslow’s lower needs while relatedness needs correspond to Maslow’s social needs, and growths correspond to Maslow’s higher needs [Alderfer, 1969].



The model of Alderfer is seen to be more dynamic than Maslow’s because of its allowance to deal with two sets of needs at once and also distinguish between long-lasting needs and occasional needs.



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### *Methodology*

This study was limited and conducted among workers of three purposively selected Food and Beverages Production Companies at Idi-Iroko, Ota in Ogun State. The choice of the companies was due to the present progress in Food and Beverages Industry, which has invariably been springing up in Nigeria. The limitation to three out of these companies was based on accessibility provided by the management of the Companies while decision not to disclose the names of the companies was anchored on agreement for ethical respect. The study was designed primarily to investigate the effect/impact of fringe benefits on employee's productivity and the extent to which fringe benefits programme has contributed to workers' productivity, reduction of absenteeism, reduction of labour turnover, and increase cooperation among workers. The respondents composed of 210 members of staff drawn from various sections of the company. The major instrument used in collecting data was questionnaire drawn by the researchers. A copy of questionnaire was given to each of the responding workers sampled for the study making a total of 210 copies of questionnaire. At the end of data collection exercise, the copies of questionnaire collected were screened and only 190 copies were certified fit for analysis. Objectives and hypotheses were raised to guide this study. The data collected from the workers of the company were subjected to statistical analysis using Chi-square and 5-point likert scales. Likert Scale was used to analyse attitudinal variables. Here, the mean of total scores awarded to each attitudinal statement (variable) was obtained. The 'mean' so derived through this process was weighed against the real 'mean' for position to be taking on whether the attitudinal statement is valid or not.

### *Results*

The respondents consisted of 71 females with the average age of 30 years and 119 males with the average age of 40 years. Academic qualifications of the respondents according to the data from this study include secondary school education (52%), Nigeria Certificate of Education/National Diploma holders (21%), Higher National Diploma/Bachelor (17%), Masters' degree (10%). A total of 19% of the respondents have less than 3 years of working experience in the study settings. The remaining respondents have between 3 and 5 years (27%) and above 5 years (53%).

**Table 1. Attitudinal Statements on Fringe Benefits and Productivity**

<b>Attitudinal Statements</b>	<b>Mean</b>
Employee performance and productivity are tied to fringe benefits that accompany the official responsibilities	3.23
A proper workplace environment with reasonable competitive fringe benefits helps in reducing the number of absenteeism and productivity	4.12
Overtime payment and leave bonus are available as fringe benefits that usually motivate workers for better productivity	3.88
Medical service as well as periodic review of salary and other remuneration	3.62
Labour turnover is very low in this organisation because of highly competitive fringe benefits to workers	3.22
The considerable recognition given to workers in the formulation and implementation of policies in this company is enhancing cooperation within the workforce and management	3.77
The fringe benefits in the companies is not limited to monetary values	3.90
The available fringe benefits in this company greatly serve as multiplier effects on our physiological needs, safety and security needs, self-esteem as well as self-actualization	4.08
Employee development by the organization is not included in the fringe benefit packages	2.16

**Source:** Authors' Computation, 2021

The respondents stated that employee performance and productivity are tied to fringe benefits that accompany the official responsibilities. They were equally of the position that (a) a proper workplace environment with reasonable competitive fringe benefits helps in reducing the number of absenteeism and productivity; (b) overtime payment and leave bonus are available as fringe benefits that usually motivate workers for better productivity; (c) medical service as well as periodic review of salary and other remuneration; (d) labour turnover is very low in this organisation because of highly competitive fringe benefits to workers; (e) considerable recognition given to workers in the formulation and implementation of policies in this company is enhancing cooperation within the workforce and management, (f) fringe benefits in the companies is not limited to monetary values, (g) available fringe benefits in this company greatly serve as multiplier effects on

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our physiological needs, safety and security needs, self-esteem as well as self-actualization, but disagreed with the position that (h) employee development by the organization is not included in the fringe benefit packages.

### *Test of Hypotheses*

#### **Hypothesis I**

**Ho:** Employees involvement in policy formulation and implementation has no relationship with individuals' productivity and organization performance.

**Table 2. Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.470 <sup>a</sup>	.221	.208	.812

a. Predictors: (Constant), EMPLOYEE INVOLVEMENT

**Source:** Authors' Computation 2021 using SPSS 16.0

The above table shows that the coefficient of determination is 0.221. It shows that 22.1% of the variation or change in employee productivity and effective organisation performance is caused by variation in employee involvement in policy formulation and implementation within the organisation. When the remaining 77.9% unexplained variation is due to other variables outside the regression model.

**Table 3. ANOVA<sup>a</sup>**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	34.904	3	11.635	17.653	.000 <sup>b</sup>
Residual	123.243	187	.659		
Total	158.147	190			

a. Dependent Variable: Productivity and Organisation Performance

b. Predictors: (Constant), Employee Involvement

**Source:** Authors' Computation 2021 using SPSS 16.0

Table 3 F Statistics (17.653) and sig.  $p < .05$  show that there is significant relationship between employee involvement in policy formulation and implementation and productivity and organisational performance.

**Table 4: Coefficients<sup>a</sup>**

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.
	B	Std Error	Beta		
(Constant)					
a) Involvement and Productivity	2.066	.189	-.067 -.107	10.931	.000
b) Employee Involvement	-.091	.104	.507	-.876	.382
c) Workplace Environment	-.108	.079		-1.366	.174
d) Absenteeism and commitment	.548	.076		7.249	.000

a. Dependent Variable: Record of Achievement

Source: Authors' Computation 2021 using SPSS 16.0

Table 4 shows the contribution of the predictors in the model.

### Hypothesis 2

**Ho:** Application of Fringe benefits has no relationship with employee productivity and Organisation performance

**Table 5. Model Summary**

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.517 <sup>a</sup>	.268	.238	.800

a. Predictors: (Constant), Fringe Benefits

Source: Author computation 2021 using SPSS 16.0

Table 5 depicts that the coefficient of determination ( $R^2$ ) is 0.268. It shows that 26.8% of the variation or change in employee productivity and effective organisation performance is caused by existence of competitive fringe benefits. When the remaining 73.2% unexplained variation is due to other variables outside the regression model.

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**Table 6. ANOVA<sup>a</sup>**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	40.237	7	5.7485	8.982	.000 <sup>b</sup>
Residual	110.074	172	.640		
Total	150.311	179			

a. Dependent Variable: Employee Productivity and Organisation Performance

b. Predictors: (Constant), Existence of competitive Fringe benefits.

**Source:** Authors' Computation 2021 using SPSS 16.0

In Table 6 Statistics (8.982) and sig.  $p < .05$  shows that there is significant relationship between employee commitment and organisational performance.

**Table 7: Coefficients<sup>a</sup>**

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.
	B	Std Error	Beta		
(constant)	1.829	.218		8.394	.000
a) Employees Commitment	.018	.080	.019	.230	.819
b) Employees commitment and compromise	.184	.084	.194	2.204	.029
c) Employees commitment and performance	.032	.126	.022	.257	.798
d) Commitment and performance	.177	.165	.099	1.072	.285
e) Environment and absenteeism	.446	.089	.415	5.003	.000
f) Work commitment and performance	-.382	.114	-.286	-3.345	.001
g) Commitment and productivity	-.008	.113	-.006	-.068	.946

a. Dependent Variable: RECORD OF ACHIEVEMENT

**Source:** Authors' Computation 2021 using SPSS 16.0



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### *Discussion of Findings*

The respondents reported that the rate of employees' commitment to their duties is central in the productivities on the job and overall performance of organization where they are working. Existing practice of employees' involvement in policy formulation and implementation equally encourages employees' commitment on the job and eventual productivity as well as organizational stability. It was further established that employees are committed to their work without compromise in whatever form with appropriate fringe benefits as motivators. It is also obvious that proper workplace environment helps in reducing the rate of absentees, while appropriate fringe benefits lead to job commitment and eventual facilitation of productivity. The study also tested for two hypotheses, and the results included the (a) establishment of significant relationship between employees' involvement policy making and implication and employees' productivity and organization performance [F Statistics (17.65)  $p < 0.05$  and significance  $p < 0.05$ ], and (b) significant relationship between application of fringe benefits and employee productivity, as well as Organisation performance [F Statistic (8.982) and significance  $p < 0.05$ ]. The outcome of the study further corroborated the position of Maslow's Hierarchy of Needs, Douglas McGregor's Theory 'X' and 'Y', as well as Existence, Relatedness and Growth (ERG) theory propounded by Clayton Alderfer on employees' motivations for better productivity and organizational performance.

### *Conclusion*

The results revealed that there is a positive relationship between employee welfare programmes and labour productivity. These no doubt have far reaching implications for employers of labour and management in various organizations. It was affirmed that provision of fringe benefits on one part encourage employees to be more committed to the achievement of organizational objectives, while on the other part help to motivate employees to higher performance. Fringe benefits therefore make up a significant portion of compensation packages paid to employees. This is pointing at the importance in the improvement of salaries, welfare packages as well as fringe benefits for the employees in order to give them the incentives and to motivate them to improve productivity in order to bring about societal economic recovery and growth. Incentives that may come in the form of fringe benefits therefore remain a very sensitive issue, not only to employers, but also to the employees. The implication of this is that ability of the organization to attract





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and retain employees depends on how much monetary and non-monetary they give. Thus the poor wages and salaries as well poor working conditions will remain the constant source of frustration to employee and subsequently bring about constant strife with the management and eventual decrease in productivity. In contrast to this, *promotion, better pay, fringes benefits and other social incentives* remain the great motivators of employee for increase productivity and sustainable development. In this process, a person's incomes will continue to determine his purchasing power and by extension his status decider. Within this context, employees will continue to be sensitive about how much they are paid in comparison to their counterparts in the industry. Identification of prevalence of inequity by the employees will engender dissatisfaction and eventual reduction in productivity or workers' turnover. In spite of the attractiveness of incentives as motivator for organisational growth, the desired results of such package can only be symbiotic where both the employees and the employers will benefit when its introduction and implementation is purposeful. This will enhance avoidance wrong perception and controversy by the employees through clear communication of reward system to employees with job measurement which according to Hartman (2011) will stimulate the much needed motivational drive in the employees. With this done, such incentives will propel and influence employees' attitudes in work place and as well stimulate understanding between the employer and the employee and consequently cumulating into unprecedented performance for both the employees and the organization [Barbara *et al.*, 2003; Heneman, 1992].

### ***Recommendations***

A number of recommendations emerged from the research study, the outcomes of the study informs the exposition that there are ways in which workers job performance can be enhanced.

1. The management must understand the fact that people are different and different people behave differently in diverse situation at different times. The manager need to know what the employee's goal and aspirations are and appreciate the direction their ability and interest can lead to since motivation involves how desired productive behaviour can be energized, then directed and maintained.

2. The management should bear in mind the status of individual employees when providing fringe benefits; for instance, fringe benefits like study leave with pay may not necessarily be of significance to a cleaner, whereas to an account clerk it is a great opportunity.





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3. It is recommended that promotion should cut across the board in order to motive all categories of employees since workers set it as symbol apart from increasing their income.

4. Training and Development are highly germane for better productivity. Training is a systematic process of altering the behaviour, knowledge, motivations of employees in a direction to increase the trainee's effectiveness and organizational goal achievement. Both reactions pro-action training approaches are recommended to the management of the organisation(s) because they are the methods for imparting narrow and specific job related knowledge to operative employees.

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## THE EFFECT OF MOTIVATION ON EMPLOYEE PERFORMANCE

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### Abstract

*With the abandonment of the classical management approach and the adoption of the modern management approach in the enterprises, it has been emphasized by the managers that the workforce is as important as the technology for the success of the business. The prominence of people in businesses has led to the creation of the human resources department and, accordingly, the emergence of many systems that direct people and increase their productivity. At the beginning of these systems is the motivation and performance evaluation system. It is very difficult to keep employees in the company for a long time and encourage them to act in favour of the company. The main purpose of motivation methods is to ensure that employees act in accordance with the company's goals and achieve successful results. The purpose of the study was to determine whether the factors influencing the performance of employees and employers were rewarding factors, additional payment factors or psycho-social factors, and whether these factors were age, gender, marital status, education level, work experience, occupation, etc. is to investigate how it differs according to demographic factors.*

**Keywords:** *motivation; performance; employee; productivity; measurement.*

**JEL Classification:** M12



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### Introduction

In our world transformed and globalized by technological developments, organizations need high-performance employees in order to survive under increasing competitive conditions. However, in order for businesses to achieve their goals, employees must also adopt the goals of the business and work in the determined direction. In today's world, where changes and developments in business life are increasing at an unstoppable speed, the most important elements of businesses are their employees.

Motivating employees to act for the benefit of the company and keeping them at work for the long term is hard work. The main objective of rewarding tools is to ensure that employees operate in line with company goals and achieve successful results. Creating an environment that will push employees to work efficiently, take responsibility, motivate them to solve problems and reward their success is one of the most important things to be done. Although it is not the companies themselves that motivate people to work, best practices companies create an inspiring atmosphere for creative solutions, hard work and commitment to the organization. This positive atmosphere provides many benefits, including the opportunity to develop talents and acquire new ones, and a sense of confidence.

The purpose of our research is to measure employee perceptions of how motivation affects employee performance in businesses. In order to obtain scientific information about the relationship between motivation, employee performance, motivation and performance, literature review should be done, the effect of motivation techniques applied in businesses on employee performance should be investigated, and after these researches, giving suggestions for companies are the duties of the research.

In the study conducted for our country's economy, regardless of product or service production, there are not many studies in the literature on the effect of motivation on employee performance in enterprises. In order to guide businesses and business managers, a research was conducted to measure the effect of their motivation on the performance of the employees of the businesses operating in Baku. In this context, the study provides important information on how to increase the performance of employees.

### Research methodology

A literature review was conducted regarding the theoretical part of the study. In the application part, the perceptions of the employees about the effect of motivation





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on performance were tried to be measured. Survey method was used as data collection tool, convenience and snowball sampling method was used as sampling method. A total of 117 people participated in the research, and the collected data were subjected to frequency and factor analysis using the SPSS program.

### **Theoretical perspectives of motivation and its scope**

Motivation was first taken from the Latin word “movement”, which was expressed as “movere” [Ghanbarpour, & Najmolhoda, 2013]. Scientists have made different definitions about the concept of motivation. We can list some of them as follows [Koçyiğit, 2016];

- Motivation is the name given to the inner force that provides the formation, direction and continuity of the action.
- Motivation is the act of making decisions and taking action by uniting around personal desires and wishes, goals and purposes.
- Motivation means that an action program specified in the individual opens some behavioural patterns. This program may be innate or modified by experience. But every biological species has instinctive, “hard-wired” patterns of behaviour. [Laming, 2004].
- Motivation is implying something done by one person or group to another. Another implication of this use is that it should cause motivated parties to take an action or make an effort that they would otherwise not want to do [Ganta, 2014].

Deci and Ryan (1995) evaluated the Self-Determination Theory and divided motivation into two as intrinsic and extrinsic motivation. Intrinsic motivation refers to the intrinsic push to perform an action because of something inside the individual while extrinsic motivation stems from external factors that motivate the individual to perform an action. The main difference between such motivations is shown through the source of stimulation [Hussein, 2018]. More than three decades of research has shown that the quality of experience and performance can be very different when a person behaves for internal and external reasons [Ryan & Deci, 2000].

It is possible for businesses to be successful in the markets in which they operate, to reach their future goals, to continue their existence with qualified employees, by knowing the value of the concept of motivation. Motivation is important for employees who play a role in realizing business objectives, providing managers with an effective incentive system, achieving results and realizing business goals. Managers who value motivation are on the side of achieving long-term success.



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When the concept of motivation is considered comprehensively, it is an important issue that should be considered in terms of managers and employees, especially organizations [Tunçer, 2013].

From the employee's point of view, motivation covers many phases from meeting the physiological and personal needs of the employee to psychological satisfaction and self-actualization. The main purpose in motivating employees is to find the factors that can create the desire and desire to work more, and to ensure that they come to work willingly every day. At the same time, it is to be able to give directions and interventions about their work willingly. The best analysis of employee behaviour is one of the issues that should be emphasized in motivation.

Motivation is the motivation of employees in achieving organizational goals and objectives. Therefore, there are some goals in motivation to reach the desired goals. In other words, the results desired to be achieved with motivation can also be expressed as the goals of motivation. In this context, the results of motivation, which is vital for every business; it is possible to list them as "efficiency, productivity, quality, profitability" [Omirtay, 2009].

The manager should both increase the performance of the employees through motivation and increase the profit of the business by following the technological developments [Kaplan, 2007].

### **Employee performance and motivation**

#### ***Employee performance and factors affecting it***

Performance is the degree to which a goal is achieved. It shows where the individual, team, work unit or organization doing a job can achieve through that job, according to the goals. According to another definition, performance refers to the level of success of the employees in the fulfilment of the task with various dimensions. In other words, the employee performs the work within acceptable limits in accordance with the defined experience and abilities. It is a concept that quantitatively or qualitatively determines what is achieved as a result of a performance-oriented and planned activity. [Ekingen, ve diğerleri, 2017]

The basic criteria for making a difference in employee performance are to know the organization and the employee very well. In this sense, correct inference and realization of advantages and shortcomings will be beneficial for the enterprise. There are seven factors that affect employee performance. These are:

- Morale and motivation,



- Stress,
- Punishment and reward,
- Occupational health and Safety,
- Management style,
- Working environment
- Job satisfaction

Managers should be concerned with employee motivations. The success of managers is directly related to the acquisition of employees who do their jobs with all their knowledge and abilities within the organization's goals. Every individual has different behaviours. Therefore, the appropriate motivation method should be applied individually, not to all employees. All employees have a desire and purpose in their behaviour. The demands of the employees must be fulfilled in order to achieve the desired goals. Employees who fulfil their desires by managers make great efforts to achieve their organizational goals and objectives. The benefits of a systematic motivational process in an organization are listed below:

- Increasing the commitment of employees to work and work cultures;
- Increasing efficiency and productivity in enterprises;
- High level of employee job satisfaction;
- Employees have no desire to leave the job;
- High working life quality for organization and employees;
- Reducing organizational costs;
- To increase the quality of products or services of organizations;
- Achieving business goals with effective motivation management

### ***The Relationship between Employee Performance and Motivation***

Human resources mean the employee of any organization. Therefore, motivation is the main factor affecting the human resources of the organization. The organization should motivate its employees for the best performance or to achieve the organizational goals. There is an increasing positive feedback relationship between motivation and performance: the higher the performance, the higher the motivation, and the higher the motivation, the higher the performance. Effective execution of the process is of great importance in terms of the positive effects of performance evaluation on motivation. Recommendation and motivation of the employee through performance evaluation is a natural result of this process. Because the feedback given during the evaluation includes the message to the employee that the activities and efforts made are important for the organization.



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Another issue that affects motivation is that evaluations within the performance management system make communication with employers regular and expectations are shared in a friendly environment. In the evaluation meetings, the manager is there to represent the organization and informs the employee about the expectations of the organization from him and takes the views of the employee. This situation causes the manager and the employee to agree on the expectations that can be realized, the employee's ownership of the work and as a result, the motivation increases.

Another issue that should be considered during performance evaluation is that the expectations of the evaluated person are realistic and that the internal task is given goals that it can achieve. Because the sense of success brought by the goals achieved will increase the motivation of the employees and provide more benefits to the organization in the long run. The continuity of the feedback is also an important issue in terms of the effect of the evaluations on the motivation of the employees. In order to increase the effectiveness, the feedbacks should be given immediately after the observed behaviours and should not be expected when performance evaluation opinions are made [Köroğlu, & Avcıkurt, 2014].

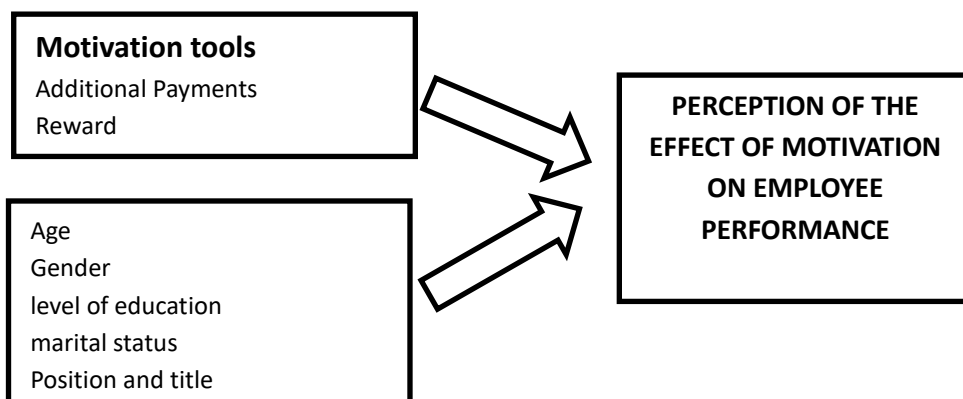
The effects of performance management applied in the enterprise on the motivation relationship show themselves in positive and negative aspects. The positive effects of performance management on motivation are rewarding, performance-based wages, promotion opportunities, and the negative effects are warning, punishment and dismissal [Özgür, 2006].

### **A research on the effect of motivation on employee performance in businesses**

The main purpose of the research is to measure employee perceptions of how motivation affects workforce performance. In addition to this main purpose, the sub-objectives of the research are to determine the perceptions of the effect of motivation on workforce performance, age, gender, job title, work experience, education level, marital status, etc. to reveal whether it differs according to demographic factors.

The research was applied to the employees of enterprises operating in the service, agriculture and industry sectors in the city of Baku within the borders of the Republic of Azerbaijan. Research was conducted on 117 of the questionnaires sent. This research is based on the assumption that motivation affects employee performance according to employee perceptions.

Research from the point of view of the problem is applied research. The scanning model was used according to the purpose of the research. With this research model, employee perceptions of how motivation affects employee performance in businesses were examined. The research model created is as in Figure 1. Independent variables; rewarding techniques and demographic factors that affect employee performance. The dependent variable is the perception of the effect of motivation on employee performance.



**Figure 1. Research model**

Within the framework of the general findings obtained within the scope of the research, the findings regarding the frequency and percentage distributions of the demographic characteristics of the employees are shown in Table 1. As can be seen in Table 1, when the distribution of the participants according to their genders is examined, it is seen that 65.8% of them are men and the rate of women is 34.2%. In addition, when analysed according to marital status, 43.6% of the respondents are married, 56.4% are single, and the rate of single respondents is higher than the married ones. In addition, 52.1% of the respondents were aged 25 and under, 30.8% were aged between 26 and 35, 11.1% were aged between 36 and 45, and 6% were aged 46 and over. When we look at the age-related ratios, it is seen that 82.9% of the employees participating in the survey are up to 35 years old. When the educational



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status of the employees participating in the survey was examined, it was determined that 8.5% of them had associate degrees and 91.5% had master's degrees (bachelor, master, doctorate, etc.). In the question we asked about the professions of the employees, the highest answer was Economist with a rate of 12%. Considering the ratios related to the staff situation, which is one of the important factors that connect the employees to the enterprise, it is seen that 83.8% of them work as full staff and 16.2% as flexible working hours. Considering the answers about the job titles, it was determined that 17.1% of them were technicians, 67.5% of them were specialists, and 15.4% were managers. Considering the answers received regarding the current workplace work experience of the employees participating in the survey, 22.2% of the participants stated less than 1 year, 54.7% for 1-5 years, 12.8% for 6-10 years, 10.3% for 11 years, and they seem to be working at their current job. Considering the rates related to the working year, it is seen that 54.7% work between 1 and 5 years. Considering the undeveloped and developing countries in general, when the income situation, which is observed to have a significant effect on the motivation of the personnel and increasing their performance, is examined, 17.1% of the employees participating in the survey are industry, 6% when the answers about the sector in which the company you work for last are taken into account. It has been determined that 0.8 of them work in agriculture and 76.1% in the service sector.

**Table 1. Frequency and Percentage Distributions for Demographic Characteristics**

<b>Gender</b>	Female	<b>40</b>	<b>65.8</b>
	Male	<b>77</b>	<b>34.2</b>
<b>Age</b>	25 years old and under	<b>61</b>	<b>52.1</b>
	26-35 years	<b>36</b>	<b>30.8</b>
	36-45 years	<b>13</b>	<b>11.1</b>
	46 years and older	<b>7</b>	<b>6.0</b>
<b>Marital status</b>	marriage	<b>51</b>	<b>43.6</b>
	single	<b>66</b>	<b>56.4</b>
<b>Level of education</b>	undergraduate and below	<b>10</b>	<b>8.5</b>
	Master degree	<b>107</b>	<b>91.5</b>
<b>Occupation (profession)</b>	Banking	<b>4</b>	<b>3.4</b>
	Chinese visa officer	<b>1</b>	<b>0.9</b>
	International Relations	<b>3</b>	<b>2.6</b>
	Operator	<b>6</b>	<b>5.1</b>



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	Geography teacher	1	0.9
	Ecologist	2	1.7
	Economist	14	12.0
	Economics law	3	2.6
	Doctor	3	2.6
	Lawyer	2	1.7
	Administrator	3	2.6
	HR specialist	1	0.9
	Cashier	2	1.7
	Computer operator	1	0.9
	Credit sales specialist	3	2.6
	Logistics expert	1	0.9
	Finance specialist	12	10.3
	Teacher	12	10.3
	Model construction	2	1.7
	Accountant	13	11.1
	Petroleum and natural gas engineer	8	6.9
	Security guard	2	1.7
	Police officer	3	2.6
	Process automation engineer	1	0.9
	Specialist on Industry organization and management	3	2.6
	Strategic manager	1	0.9
	Purchasing manager	2	1.7
	Sales representative	7	6.0
	System engineer	1	0.9
<b>Status of the Staff</b>	full time	98	83.8
	flexible working hours	19	16.2
<b>Job Title</b>	Technician	20	17.1
	Expert	79	67.5
	manager	18	15.4
<b>Job experience</b>	less than 1 year	26	22.2
	1-5 years	64	54.7
	6-10 years	15	12.8
	11 years and above	12	10.3
<b>Monthly average income</b>	0-500 AZN	48	41.0
	more than 501 AZN	69	59.0



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<b>Sector in which the Company Operates</b>	Industry	<b>20</b>	<b>17.1</b>
	Agriculture	<b>8</b>	<b>6.8</b>
	Service	<b>89</b>	<b>76.1</b>

Source: Created by the author as a result of research

In order to reduce and summarize the many variables that affect employee performance, factor analysis was performed in the research. Before factor analysis, Kaiser-Meyer-Olkin test was applied to 17 variables to measure the validity of the analysis and KMO: 0.877. According to Nakip (2003), a KMO ratio above 0.60 is sufficient to explain the correlation between the variables in pairs by other variables. Principal component factor analysis with varimax rotation was performed with 17 variables. A large number of variables affecting the performance of employees have been reduced to three factors as seen in Table 2. The three identified factors explain 63.22% of the total variance.

**Table 2. Sample Adequacy**

Kaiser-Meyer-Olkin Measure Sampling Adequacy	0.898
Barlett Test of Sphericity Approximate Chi-Square	1199.073
Df	136
P	0.000

Source: Created by the author as a result of research

As a result of the factor analysis, the first factor is vocational training, regular working environment, giving more authority and responsibility to successful personnel, giving employees opportunities to improve themselves, appreciating successful personnel, giving employees a say in the decisions to be taken, and finally, employees attend meetings and conferences according to their interests. Ensuring their participation is called the reward factor. As a result of the factor analysis, the statements clustered in the second factor were found in the second factor due to the monetary rewards given to the employees to increase the employee performance, the increase in the monthly income of the employees, the rent, fuel, family and clothing allowances, the wages, premiums and bonuses given to the successful personnel, and the increase in the monthly income amount factor is named as additional payments. According to the results of the factor analysis, the third factor was named psycho-

socially because of giving short-term leave to the personnel instead of awards when necessary, trying to be beneficial to the organization by giving awards to the employees when necessary, social activities, giving certificate plaques to the successful personnel, and finally thanking the successful personnel in front of everyone by the managers has been named. (Table 3)

**Table 3. Results of Factor Analysis**

	Component		
	1	2	3
Ensuring that employees attend various meetings and conferences according to their interests ensures their success.	0.794		
It is important for employees to have a say in the decisions to be made in the workplace in order to have a high performance.	0.792		
If employees are given the opportunity to develop themselves and their abilities, their success will increase.	0.752		
Trainings given to employees about their professions increase their performance and enable them to be more successful.	0.617		
It is important for work performance that the working environment is tidy and the tools/equipment used are sufficient.	0.598		
It is very important for successful personnel to be cared for, appreciated and praised by the managers.	0.574		
Successful staff should be given more responsibilities and their authority should be increased.	0.503		
The workload of the employees negatively affects their success.	0.574		
The increase in the amount of monthly income is an important factor in increasing the performance of the employees.		0.833	
Giving bonuses to successful personnel on special days (holidays, New Year's Day, etc.)		0.779	
For employees, monetary rewards (wages, bonuses, bonuses) increase employee performance.		0.723	
Rent, fuel, family and clothing allowances to be given to employees. It ensures the loyalty of the employee to the institution and affects his success.		0.528	
When necessary, giving short-term leave to personnel instead of awards is more effective on performance.			0.788
When employees are rewarded, they try to find things that will			0.718



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be useful to their organization, their interest in the work and their performance increase.			
Organized dinners, excursions and social activities, establishing sincere relations among employees, enable employees to be more successful.			0.693
Giving certificates / plaques to successful personnel is a trigger for more success.			0.569
Giving a public thank you or sending a thank you letter to the successful personnel at a meeting by the managers increases the performance.			0,565

Source: Created by the author as a result of research

In the next step, reliability analysis is applied to the data collected with the scale whose factor structure is determined by factor analysis. Cronbach’s Alpha coefficient is used for reliability analysis. The coefficient can take a value between 0 and 1. The closer the coefficient is to 0, the lower the reliability, and the closer it is to 1, the higher the reliability. In order to accept that the scale is reliable, the Cronbach’s Alpha coefficient should be greater than 0.70. The results of the Reliability Analysis performed are shown in Table 4. Accordingly, it has been seen that rewarding, additional payments, psycho-social factors give reliable results.

**Table 4: Reliability Analysis**

	<b>Cronbach’s Alpha</b>	
Reward	0.869	8
Additional Payments	0.862	4
Psycho-Social	0.854	5

Source: Created by the author as a result of research

The descriptive statistics of the participants’ views on the expressions in the scale of the effect of motivation on employee performance are shown in table 5. The statement with the highest average is the 9th statement – “The increase to the monthly income amount is an important factor in increasing the performance of the employees – (average 4.38 and standard deviation 0.817)”. The other expressions with the highest average according to their effect on performance are, respectively, the 11th Statement “Monetary rewards (wages, bonuses, bonuses) for employees



increase employee performance”, 3rd Statement “If employees are given the opportunity to improve themselves and their abilities, their success will increase”, 6th Statement “It is very important for successful personnel to be cared for, appreciated and praised by the managers”, 10th Statement “Giving bonuses to successful personnel on special days (holidays, New Year’s Day, etc.) is a factor that increases their performance”. The statement with the lowest average is the 5th Statement “Ensuring that employees attend various meetings and conferences according to their interests increase their success”. In general, when looking at the table, employees think that motivation increases employee performance (3.99), and that the additional payments factor affects employee performance more (4.245).

**Table 5. Descriptive Statistics on the Effect of Motivation on Employee Performance**

<b>Question</b>	<b>EXPRESSIONS</b>	<b>Response Averages</b>	<b>Std. Deviation</b>
	<b>Reward</b>		
<b>1.</b>	Ensuring that employees attend various meetings and conferences according to their interests ensures their success.	<b>3.32</b>	<b>0.979</b>
<b>2.</b>	It is important for employees to have a say in the decisions to be made in the workplace in order to have a high performance.	<b>3.93</b>	<b>0.898</b>
<b>3.</b>	If employees are given the opportunity to develop themselves and their abilities, their success will increase.	<b>4.24</b>	<b>0.847</b>
<b>4.</b>	Trainings given to employees about their professions increase their performance and enable them to be more successful.	<b>4.20</b>	<b>0.823</b>
<b>5.</b>	It is important for work performance that the working environment is tidy and the tools / equipment used are sufficient.	<b>4.04</b>	<b>0.941</b>
<b>6.</b>	It is very important for successful personnel to be cared for, appreciated and praised by the managers.	<b>4.22</b>	<b>0.911</b>
<b>7.</b>	Successful staff should be given more responsibilities and their authority should be increased.	<b>3.76</b>	<b>1.039</b>

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8.	The workload of the employees negatively affects their success.	3.64	1.137
	Additional Payments		
9.	The increase in the amount of monthly income is an important factor in increasing the performance of the employees.	4.38	0.817
10.	Giving bonuses to successful personnel on special days (holidays, New Year's Eve, etc.) is a factor that increases their performance.	4.20	0.940
11.	For employees, monetary rewards (wages, bonuses, bonuses) increase employee performance.	4.26	0.950
12.	The rent, fuel, family and clothing allowances to be given to the employees ensure the loyalty of the employee to the institution and affect his success.	4.14	0.928
	Psycho-Social		
13.	When necessary, giving short-term leave to personnel instead of awards is more effective on performance.	3.51	0.973
14.	When employees are rewarded, they try to find things that will be useful to their organization, their interest in the work and their performance increase.	4.13	1.013
15.	Organized dinners, excursions and social activities ensure that sincere relations between employees are more successful.	4.16	0.973
16.	Giving certificates / plaques to successful personnel is a trigger for more success.	3.88	1.044
17.	Giving a public thank you or sending a thank you letter to the successful personnel at a meeting by the managers increases the performance.	3.88	1.068

Source: Created by the author as a result of research

## Conclusion

In this study, in which the effect of motivation on employee performance in enterprises was examined, an online questionnaire was applied to the personnel working in the enterprises located in Baku and operating in the service, industry and



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agriculture sectors, and 117 feedbacks were provided to the sent questionnaires. Likert scale was used in the survey application in which the effect of motivation on employee performance in enterprises was examined, and the Cronbach Alpha coefficient of the reliability analysis of the scale was found to be 0.887. As a result, the reliability of the scale of the study was determined.

When the demographic characteristics obtained as a result of the research are examined, it is seen that 65.8% of the participants in the research are men. Again, as a result of the findings, it is seen that 56.4% of the employees are single, 52.1% are in the age group of 25 and below. According to the results of the research, it has been determined that 91.5% of the employees are graduates of higher education, and 59% earn more than 1000 AZN.

76.1% of the employees work in the service sector and 67.5% as specialists. Finally, 54.7% of the respondents have a work experience of 1-5 years.

In order to motivate the personnel, the managers must first show will and believe in the process. In addition, managers should not forget that the effectiveness of motivation tools may vary from person to person. Therefore, managers should consider the differences between individuals in the methods and tools they use to increase employee performance.

The results of the study showed that, additional payments are the most motivating factor.

Managers are required to pay wages that can eliminate the financial concerns of the personnel about the future and take this into account when determining the salary policies of the enterprise. In addition, the staff wants to be promoted in the company where they work. Considering rationally, the promotion of someone who knows the business, knows the business and knows his colleagues is also in the financial benefit of the business. In addition, training should be given to employees in both professional and other fields, and providing them with training both increases the motivation of the personnel and increases their performance. In addition, the personnel should be given authority and responsibility to improve themselves and increase their self-confidence. Bonus is one of the most important tools that motivate personnel and increase their performance. Because bonus is a motivation tool that enables a staff to work harder and to be a tangible value that they get when they work.



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## HOW COOPERATIVE SOCIETIES ENHANCE GENERAL WELLBEING THROUGH HOUSING PROVISION AND SERVICES IN NIGERIA

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### Abstract

*This study discusses the activities of cooperative societies in meeting the challenges of housing provision in the face of rapid urbanization. The study made an exposition of housing and related services, loan seeking and repayment processes. The cooperative societies in formal and informal settings were studied. Cooperative societies in 2 tertiary institutions in Nigeria were used as cases for formal setting. Informal setting was represented by the oldest Coordinating Cooperative Union in Ibadan, Nigeria. A total of 330 respondents took part in the study. Questionnaire and interviews were utilized to collect data for the study. The findings revealed that all the cooperative societies ran multipurpose services with housing loan services being equally included. These services included mass purchasing of land (b) acquisition of fixed assets (c) housing loans to members who are about to complete their personal houses or in the process of having one. Cooperative societies were seen as the easiest channels of securing access to affordable housing due to absence of bureaucratic bottleneck and insurmountable conditions. The general feeling was that decision making on how, when and to whom the loan should be given was faster, reliable and enhancing social, mental and physical stability for better productivity.*

**Keywords:** wellbeing; urbanization; cooperative societies; housing provision; loan.



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**JEL Classification:** Q56

### 1. *Introduction*

Access to safe and healthy shelter and basic services is essential to a person and by extension, the societal physical, psychological, social and economic wellbeing. Meanwhile, substantial proportion of the world's population particularly in developing countries lacks shelter and sanitation [UN-Habitat, 2010]. In view of this and coupled with the observations of Bond *et al.* (2012), this can impact on man's mental health. Going by the position of World Health Organisation (nd) that mental health signifies a state of wellbeing in which every individual realizes his or her own potential, has the ability to cope with normal stresses of life and work productively and fruitfully as well as being able to make a contribution to her or his community, it means reverse will be the case for the individuals without shelters. This therefore undermines the central position of man in sustainable developmental process [Adepegba, 2019; Olanipekun *et al.*, 2014]. In Nigeria, this scenario has attracted attention of scholars [Andrew, 2007; Agboola & Odunola, 2007; Agboola, 2005] over the years. Many cities, towns and their inhabitants were confronted with series of problems such as lack of employment opportunities, spreading of lawlessness and expansion of squatter settlements [Oladipupo & Anyanwu, 2011; Ilesanmi, 2010; Agboola & Odunola, 2007; Satterthwaite, 1999]. Adebari (2011) and Aluko (2011) equally asserted that increasing poverty, growing insecurity, inadequate and deteriorating building stocks, services and infrastructures formed parts of the challenges being faced in urbanizing environment. Equally playing prominent role is the problem of incessant migration [Balogun, 2010]; cities are growing inexorably causing unsustainable pattern of production and consumption [Oyetola, 2020] in addition to inadequate functional housing for the need of the residents of most of the cities and towns [Oyebola, 2019]. These have seriously challenged the capacities of governments at all levels (particularly those of developing countries) in realizing social and economic development as well as environmental protection [UN-Habitat, 2010]. Meanwhile, sustainable development is possible only in an environment where everybody has access to basic necessity of life such as food, clothing and shelter [Adelowo, 2020]. Shelter in this case denotes sustainable human settlements that encompass a healthy and productive life that is in harmony with nature. However, even distribution of shelter in the form of affordable housing



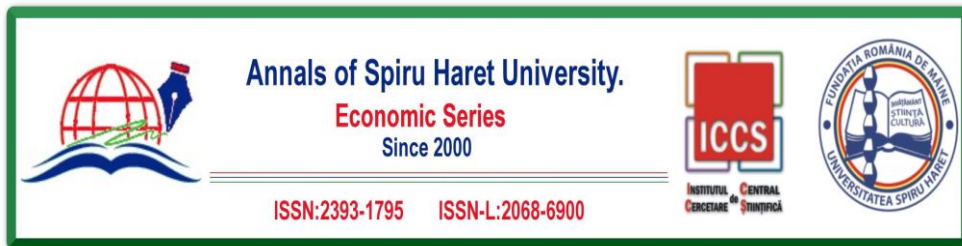


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has been identified by scholars [Ademiluyi & Raji, 2008; Andrew, 2007] as a great challenge in Nigeria.

In spite of the government, private sector and public-private partnership programme involvement in housing delivery, the situation in terms of adequate provision of housing still remains precarious [Ezennia & Hoskara, 2019]. Though the actual figure of housing needs in Nigeria over years remain sketchy, National Rolling Plan of 1990–92 estimated housing deficits in Nigeria as 4.8 million. The 1991 housing policy showed that 700,000 housing units were to be built each year if housing deficit was to be cancelled. The policy further indicated that not less than 60% of the new houses were to be built in urban centres. The housing deficit widened further with the ministry of Housing and Urban Development declaration in 2006 that the country needed about 10 million housing units before all Nigerians can be sheltered. UN-Habitat (2007) revealed that Nigeria has a backlog of 4 million housing units and that it was only able to supply 10,000 units per annum [Olomolaiye, 1999; Agbola, 1998; Adegeye & Dittoh, 1985] through the formal housing sector. The Federal Mortgage Bank in Nigeria put the country's present housing deficit at 22 million units in 2019; and the bulk of that is in the urban areas. The implication of the foregoing is that Nigeria is one of the most serious cases of wide gap between housing needs and housing supply in Africa.

Efforts of cooperative societies in meeting the challenges of housing delivery are well noted [Ademiluyi, 2010; Birchall, 2004; Birchall, 2003; Ajanlekoko, 2001, Olateju, 1990]. Mellor (2009) also acknowledged cooperative societies as providers of solutions to emerging problems occasioned by rapid urbanization most especially in developing societies. Having established this timely role by the cooperative societies in Nigeria, a need arose for information on the perspectives of beneficiaries of such lofty roles. This therefore informed the present academic effort that is beaming its searchlight on cooperative societies in formal and informal settings of Osun and Oyo States in Nigeria with specific concerns on housing provision and subsequent effects of this on the social wellbeing of the beneficiaries. The formal setting being considered included the staff cooperative societies in University of Ibadan (UI), Oyo State and Osun State Polytechnic (OSPOLY), Iree, Osun State. The informal setting is limited to the cooperators who were resident in the newly developing areas (Olomi and Olunde) in Ona Ara Local Government Area (LGA) of Oyo State. The choice of the study settings was based on the familiarity with the areas, the cooperative societies therein and assurance of willingness of respondents to



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partake in the study. Also, Olomi and Olunde in Ona Ara LGA were chosen because they play hosts to the oldest coordinating Cooperative Union in Ibadan land.

### *2. Materials and Method*

This study is exploratory in nature; the need for a well-grounded mental picture of cooperative housing delivery activities in the areas informed this. Data for this study were sourced through questionnaire (quantitative) and interview guides (qualitative). Members of staff of UI and OSPOLY who were equally members of these institutions' cooperative societies as well as the residents of Olomi and Olunde communities who were currently members of cooperative societies were involved in quantitative study. Other respondents included 15 executive officers of these cooperative societies who took part in key informant interviews; 15 members who were currently enjoying housing related services were also engaged for the in-depth interviews. The sample size composed of 330 respondents where 300 of them took part in quantitative survey and 30 partook in qualitative survey. A total of 75 respondents were randomly sampled from each of the University of Ibadan Staff Cooperative Society, Ibadan, Oyo State and Osun State Polytechnic Staff Multi-purpose Cooperative Society, Iree, Osun State. The coordinating cooperative society in Olomi area (Ibadan Cooperative Union) was used as the facilitator for reaching out to the cooperative societies under it. Out of these cooperative societies 5 that were found within Olomi and Olunde communities were selected. From each of the selected 5 cooperative societies, 30 members were sampled through convenience sampling approach on the days of their meetings.

### *3. Results*

Majority of the respondents (33%) from the formal setting of the cooperative societies perceived these societies as the outfits for the mutual benefits of members. This was followed by those who described them as societies that aim at satisfying the material wants of their members (29%) and the outfits that bring members together to promote their socio-economic wellbeing (21%). The table further shows that the outfits were perceived by the respondents from informal setting of cooperative societies (35%) as outfits that assemble their members for the promotion of socio-economic wellbeing. Other responses perceived these societies as that which aim at mutual benefits of their members (20%) as well as satisfying the material needs of their members (26%). See table 1 for this.



**Table 1. Respondents' Perception of Cooperative Societies**

Cooperative Societies in formal setting			Cooperative Societies in informal setting		
Response	Frequency	Percentage	Response	Frequency	Percentage
Outfits for mutual benefit	50	33.0	Outfit for mutual benefit	30	20.0
Channels for satisfying material wants of members.	43	29.0	Channels for satisfying material wants of members	39	26.0
Societies for meeting the needs/interest of members.	25	17.0	Societies for meeting the needs/interest of members.	53	35.0
Outfits for socio-economic wellbeing.	32	21.0	Outfits for socio-economic wellbeing.	28	19.0
Total	150	100.0	Total	150	100.0

Source: Authors' computation, 2020

**Table 2. Information and Motivation to Join Cooperative Societies**

Cooperative Societies in formal setting			Cooperative Societies in informal setting		
Response	Frequency	Percentage	Response	Frequency	Percentage
Advice of a senior colleague	63	42.0	Advice of friends	34	23.0
Previous information about their benefits	28	19.0	Previous information about their benefits	57	38.0
During membership drives of those cooperative societies.	46	31.0	Various assistance rendered to associates.	39	26.0
Need for sustainable source of income.	13	8.0	Desire to pool resources together	20	13.0
Total	150	100.0	Total	150	100.0

Source: Authors' Computation, 2020



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Series of reasons were given by the respondents on how they became members of their respective cooperative societies. In the formal setting of the study areas, some became members through advice of a senior colleague at the time of taking appointment (42%); previous information about the timely succour being enjoyed by the members (19%) and during the membership drives of those cooperative societies (31%), others decision was based on voluntary desire to pool their individual resources together (9%) for sustainable source of income. In the informal setting, the respondents became members of these cooperative societies through advice by friends (23%), previous information about the benefits therein (38%), motivation by the series of assistance rendered to their close associates (26%), and the desire to pool resources together (13%). A respondent narrated her perspective of housing related services from the cooperative society in which she is a member, 'I was advised by a neighbour to come and be member of a newly established cooperative society. I went there with the sole aim of having a place to make savings and contribution since the banks have failed and local thrift system (ajo) was daily becoming risky and unreliable. After six months of becoming a member, the executive of this cooperative society intimated us with the necessity of loan and why it is necessary as members to always collect loans to assist in our various endeavours' (IDI, Female/Member Ife-Oluwa Olomi (Ibadan) CTCS, Olomi, Ibadan, Oyo State, Nigeria).

Another dimension was added by a key informant on the detail of the services being rendered by the cooperative society. According to her, 'our cooperative society encouraged the members to always come with ideas of what they needed. This arose as a need to make provision of services a democratic issue. It was borne out of the need to avoid provision of what were never the immediate needs of the members. The modality involved calling on the members to come forwards with the list of what was by them. What we do included the clustering of these needs into consumables (basic daily needs) and non-consumables (which is further divided into household needs and housing related facilities). In certain circumstances, loans are given to those who wanted to do the purchase on their own. On several occasions, we have been mandated by the members to do the purchase while the members come to the cooperative house to come and take possession of these goods. There is no limitation to what we can buy in this process; it can be food items like bag of rice, beans, sugar, flour, groundnut oil, etc. It can also be deep freezer, television, computer, car, etc. For the housing related services, it can be roofing sheets, cements, doors, Louvre



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blades, packets of nails, and so on' (IDI, Female member of University of Ibadan Staff Cooperative Society, Ibadan, Oyo State, Nigeria).

The specific duties of cooperative societies according to the data collected from the respondents in the formal setting included provision of loans to the members (79%). On the other hand, avenue for savings disposable income attracted 62% as major specific duty of cooperative societies in the informal setting of the study areas. In the case of the cooperative societies under focus in this study, the types of services being rendered were specified as including Savings and Loans, acquisition of consumable and non-consumable properties. In the words of a respondent, 'the loan being given by the cooperatives could be sub-divided into two. The first one is known as long-term loan and soft loan. In some cooperative societies, especially the one in the college where I work, soft loan is called emergency loan. The difference between long-term loan and emergency loan is in terms of interests they attracted. For example, regular or long-term loan attracts 5% interest, while emergency loan attracts 7% interest' (KII, Executive member of OSPOLY MCS, Iree, Osun State, Nigeria).

Qualitative data presented by another participant further corroborated the above thus, 'every cooperative makes their mandates known to the public through their names. A typical case is a cooperative society with the acronym of CTCS (credit and thrift cooperative society) which is always into savings and loan, while those that got involved in all sorts of services in the quest of making their members happy and comfortable are known as multipurpose cooperative societies' (IDI, Male member of University of Ibadan Staff Cooperative Society, Ibadan, Oyo State, Nigeria).

### 3.1. Housing Cooperative and Related Services

All the respondents affirmed that their cooperative societies do provide housing and related services. Some of these services according to the data provided were enumerated in the table below.

According to table 3, housing loans carried highest proportion of the respondents in both formal (50%) and informal (32%) settings of the study areas. In informal setting, acquisition of landed properties (24%), developed and undeveloped lands (22%) and mass purchase of building materials (20%) were other housing related services mentioned. Unlike the conventional housing cooperatives which are owned by the residents, cooperative societies in Nigeria are still developing



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hence the absence of specialized cooperatives with sole mandate of housing provision. A key informant shed light on this: ‘though it is desirable to have cooperative societies with special interest in housing provision, but houses are not the main thing being lacked in developing societies such as Nigeria. Those countries that are already having such type of cooperatives have provision for the basic needs of the citizenry. Average citizen of those countries no longer have problems of what they are going to eat or the food will come about; but in Nigeria, nothing is on the ground for the common man. The realization of this informs the emergence of cooperative societies to handle the needs of the members. Such needs range from basic issues like foods, household equipments and lately housing related services’ (Male KII, Executive member of Ifelajulo Olomi (Ibadan) MCU, Olunde, Ibadan, Oyo State, Nigeria).

**Table 3. Housing Related Services of Cooperative Societies**

Cooperative Societies in formal setting			Cooperative Societies in informal setting		
Response	Frequency	Percentage	Response	Frequency	Percentage
Housing Loans.	75	50.0	Housing Loans.	48	32.0
Acquisition of landed properties (houses).	36	24.0	Acquisition of landed properties (houses).	39	26.0
Acquisition of developed /undeveloped lands.	18	12.0	Acquisition of developed /undeveloped lands.	33	22.0
Mass purchase of building materials.	21	14.0	Mass purchase of building materials.	30	20.0
Total	150	100.0	Total	150	100.0

**Source:** Field Survey, 2020

In similar vein, another key informant submitted thus: ‘If we decided to handle just housing needs alone, how we would have handled the problems of other basic needs that other countries have succeeded in putting behind? It is when the basic needs of the people are met that they have emotional stability for effective productivity. So, for now there is need for continuous incorporation of services;



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this is the reason why most cooperative societies are becoming ‘Multipurpose’ in terms of service provision’ (Male KII, Executive member of OSPOLY MCS, Iree, Osun State, Nigeria).

Qualitative data equally showed that housing related services covered areas such as bulk purchasing and distribution of building materials like roofing sheets, cements, and others based on the demands of their members. In the words of a respondent, ‘I have already purchased land through my personal savings; through the same source, I started the construction of the building until when I had financial challenges. A colleague later informed me that the staff cooperative society of our establishment is giving out cements to the interested members. I was encouraged to apply for the cements as a bonafide member of the cooperative. I eventually applied and I was given, few months later we were informed at the Annual General Meeting of the Cooperative that certain amount have been set aside as housing loan for the interested members. My application for this was also approved and the facility was given to me, that was how I became a proud owner of 3-bedroom flat. I have paid up my loans and only on look-out for other opportunities that will benefit me and my family’ (IDI, Male member of OSPOLY MCS, Iree, Osun State, Nigeria).

### 3.2. Loan Seeking and Repayment Processes

It was revealed that the processes involved in sourcing and obtaining loan for housing needs and non-housing services are similar. This involves writing of application to the President of the Cooperative society. Applications received are treated on monthly basis so that those qualified for loan will be answered by the following month ending. Holding of meeting to treat cases and eventual disbursement of loans depends on the liquidity reserves of the cooperative society. A key informant buttressed this thus: ‘here there is sufficient money on the coffer of the society, such cases are not allowed to wait till the following month ending before payment. Even the usual period of meeting may be adjusted for timely processing of application and disbursement of loans. All of these aimed at improving the standard of living and making life comfortable for the members. This also explains why cooperative societies are daily becoming the preferred choice of the people to banks’ (KII, Male/Executive member of University of Ibadan Staff Cooperative Society, Ibadan, Oyo State, Nigeria).

In the words of a respondent, ‘I collected loan based on the encouragement of my husband for the purchase and development of a plot of land located near our



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present abode. However, I remain the registered member of this cooperative society, but the pooling of resources together for repayment was a joint effort between my husband and I since the project was for the family. With consistence in paying up of the loan on record time, I have collected several loans after this to complete the said land' (IDI, Female/Member Ife-Oluwa Olomi (Ibadan) CTCS, Olomi, Ibadan, Oyo State, Nigeria).

Cases were also made on privileges being given to housing related services due to its status and issue on priority list. A key informant elucidated further on this: 'In line with the reality on the ground about the dire need for houses that will be available and affordable for everyone, high priority is being given to housing related services. Our cooperative society often allows members to source for loan a little bit above their normal savings. For instance, anybody with savings of One hundred and five thousand Naira only (N105,000.00) is entitled to a loan of two hundred thousand Naira only (N200,000.00), but because housing related service is on priority list, such individual can be allowed to have access to a loan that worth three hundred thousand Naira only (N300,000.00). However, this opportunity as said earlier is specifically meant to encourage housing construction, the same cannot go for purchase of property like car, etc.' (KII, Male/Executive member of OSPOLY MCS, Iree, Osun State, Nigeria).

Another difference noted was in the form of charges levied on loans, and the charges on goods purchased by the cooperative societies for distribution to the members. Another key informant further made the clarification about this thus: 'The position of the cooperative society is that charges on loan should be lesser than charges on goods bought by the cooperative society on behalf of their members. When goods are bought whether household related or housing services related goods, they are known as 'property acquisition'. For instance, in our cooperative society, interest being charge on regular loan is 5%, if the loan is requested for while a member is previously servicing one loan, the new loan is recognized and referred to as 'emergency loan', the interest charge on this is 7%. Interest on food items purchased by the cooperative society is 5%, but on items and services termed as 'property acquisition', the interest chargeable on them is 7%' (KII, Female/Executive member of OSPOLY MCS, Iree, Osun State, Nigeria).

For the respondents from formal setting of this study, the payment is from source. According to a member of one of the cooperative societies under study, 'the executives of our cooperative societies always liaise with the account department





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of our institution. These executives know the deadline for the submission of deduction from salaries of concerned staff of the institution. Before salaries are posted to the banks every month, these deductions are always attended to promptly, so there is hardly a room for defaulting in repayment of loans' (IDI, Female/Member of University of Ibadan Cooperative Society, Ibadan, Oyo State, Nigeria).

Loan repayment in the informal setting differs markedly to what is obtainable in formal setting of this study. A key informant provided insight into this thus, 'In informal setting, individual members are expected to come to meeting every week or as may be determined by the cooperative societies. They are expected to come for the periodic repayment of their loans; failure to do this always attracts financial punishment of payment of some token amount of money along with actual payment of what they have defaulted on. Lately, some cooperative societies will send their officers (usually referred to as 'police') to go and 'arrest' the guarantors where the defaulters could not be reached. In the presence of the guarantors, the amount payable for repayment will be deducted from their accounts' (KII, Female/Executive member, Ajenikoko (Ibadan) MCU, Olomi-Kunfayakun, Ibadan, Oyo State, Nigeria).

### 3.3. Assessment of Housing Related Services of Cooperatives

Most of the respondents (45%) revealed that cooperative societies were more effective when it comes to the issue service delivery when compared to other financial institutions (especially conventional banks). It was further shown that most of the houses being constructed in recent time owe their emergence to the assistance of cooperative societies (22%). The beauty of cooperative societies according to the respondents was premised on their prompt service delivery. Their decision-making process on how, when and to whom the loan should be given was rated faster and rest assuring than banking system (33%). A respondent has this to say in respect of the above: 'The administrative bottleneck of the conventional banking system is not in existence in cooperative societies. I've gotten a loan a week after the submission of application, which is a feat that cannot be met by most of our banks in the country today. In cooperative societies, the individual savings, the regularity in participation in periodic meetings and other obligations of the society and guarantors are the collateral needed to facilitate the loans' (IDI, Female/Member of OSPOLY MCS, Iree, Osun State, Nigeria).

Another respondent submitted thus: 'I once collected bank loan; it was cooperative society that assisted in offsetting that loan due to unstable interest



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charges regime. The loan started with 17% despite the fact that the total money requested was not given due to queer deductions. Before I could service the half of the loan, the interest had jumped to 25%, it was when feeding at home was becoming unbearable that I ran to my cooperative society for loan with which I made entire repayment. Despite the fact that I was willing and able to pay up the loan, they bank staff refused with insistence that I have to follow the payment to the stipulated period agreed when collecting the loan. It was until when I made a threat that I will discontinue the operation of my account with the bank that they unwillingly agreed to collect the money. Meanwhile, such a situation can never happen in cooperative societies. They interest being charged on loan is always stable and reasonable’ (IDI, Male/Member of Asejere (Ibadan) MCS, Olunde, Ibadan, Oyo State, Nigeria).

Also asserting to this, a respondent said: ‘Before I joined the cooperative societies, I have heard of several people that were duped in the process of buying plots of land to build a house. Many people have been duped severally before they eventually found genuine landowners from whom they eventually purchased the land upon which they build their houses. The fear of becoming a victim has been preventing me from having a plot of land to erect a building I could called my own. But I have been saved by the divine intervention of my cooperative society which assisted me in purchasing a plot of land and processed the documentation of the said land for me’ (IDI Male/Member of OSPOLY MCS, Iree, Osun State, Nigeria).

Another respondent said, ‘for every 10 civil servants that have building of their own, 8 out of them attained the feat through cooperative societies. To some people, purchasing a piece or parcel of land is a problem due to the escalation of criminal minded people; this is not even seen as a problem for some people but the processes of documentation of such land. In my own case, both the purchase and documentation of a piece or parcel of land are problems, but the cooperative society has assisted in the purchase of the land on my behalf, at the same time, the usual challenges being experienced in the course of processing documents at the Town Planning office have been drastically removed’ (IDI, Male/Member of OSPOLY MCS, Iree, Osun State, Nigeria). In another instance, a respondent revealed that, ‘Cooperative society is a God-fearing venture, because the society takes care of negative outcome of the business, while annual dividends payment and souvenirs being given to the members serve as motivations and as epitomes of being a stakeholder. This is not obtainable in conventional banks’ (IDI, Male/Member Ife-Oluwa Olomi (Ibadan) CTCS, Olomi, Ibadan, Oyo State, Nigeria).





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### 3.4. Housing Provision and Social Wellbeing

Housing provision has been severally described as a key driver of public health. Absence of housing provision leads to homelessness and subsequently engendering damages to health. Garnham and Rolfe (2019) noted that the routes from housing to health and wellbeing are wider and more complex than the negative effects of problems with housing. Scholars [Wolf *et al.*, 2016; Munoz *et al.*, 2005; O'Connell, 2005; Anderson & Barclay, 2003] further corroborated this with positions by noting that homelessness is bad for physical and mental health, particularly in its more acute forms, such as rough sleeping. Many people live in the slums that are characterized by poor physical housing quality thereby leading to what [Liddell & Guiney, 2015; Thomson *et al.*, 2013; Braubach *et al.*, 2011; Fisk *et al.*, 2010; Marsh *et al.*, 2000] referred to as endangering their physical and mental health. Within this purview, this study interrogated the participants' positions on the role the possession of houses through cooperative societies is playing on their social wellbeing. Information provided are as highlighted hereunder: 'I don't see houses as mere physical structures, apart from providing shelter they are equally homes because they provided the foundation for social, psychological and cultural wellbeing. Individuals' inadequacies are confined within the walls of one's homes. Houses or homes therefore provide spaces where we unwind, keep our possessions safe and take refuge from the rest of the world, afford the avenues for bringing up our families, socialise with friends' (IDI Male/Member of OSPOLY MCS, Iree, Osun State, Nigeria).

Another participant submitted thus: 'Don't you know that where we live do influence our health through several means. It is therefore undisputable that availability and affordability of personal house, which is appreciated as one's home do influence the physical health. Specific in this case is the effects such usually have on mental health and wellbeing' (IDI, Male/Member of University of Ibadan Cooperative Society, Ibadan, Oyo State, Nigeria). Similar contribution revealed that: 'possession of personal house even if it is not fully completed implies saving grace from the 'landlord' embarrassment and fear of defaulting in regular payment of house rents. From this, there is emotional and physical security due to knowledge that one will not be vulnerable to being kicked out at a moment's notice' (IDI, Male/Member of Asejere (Ibadan) MCS, Olunde, Ibadan, Oyo State, Nigeria).

Another submission showed thus: 'The very day my husband and I moved into our house, though not fully completed, we were highly elated. It was a memorable phase in our life because we felt and professed unique feeling of belongingness to the



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neighbourhood where the house was situated. The accompanied happiness and satisfaction have been a great propeller of meaningful social wellbeing in our life' (IDI, Female/Member Ife-Oluwa Olomi (Ibadan) CTCS, Olomi, Ibadan, Oyo State, Nigeria). Lending credence to this, a participated was of this view: 'With ability to afford a house of my own through cooperative loans, I was emotionally okay. I now have a stable and secure base, which makes me feel safe and comfortable. It is at this level that I begin to see myself as a responsible head of the household. Since moving into the house, my family and I have noticed tremendous improved better quality of life. Fear of unknown is no longer part of livelihood. My children no longer feel sick as frequent as it used to be. We were able to plan adequately for the family within the ambit of available resources' (IDI, Male/Member of University of Ibadan Cooperative Society, Ibadan, Oyo State, Nigeria).

### 3.5. Challenges and Management Strategies

The challenges being experienced by the respondents in the course of benefiting from housing services of cooperative societies were classified into micro and macro levels. The micro level included those experienced by the individual members of the cooperative societies. Macro level is limited to those experienced by the management of cooperative societies.

(a) *Challenges at Macro Level:* Challenges experienced at macro level as expressed by the executive members of the cooperative societies who are also the key informants in this study are as expressed below: 'Capital base of most cooperative societies is limited; the savings of the members are nothing to write home about. The implication of this is always insufficient funds and delay in disbursement of funds for those who apply for loans' (KII, Male/Executive member of University of Ibadan Staff Cooperative Society, Ibadan, Oyo State, Nigeria). In the words of another key informant, 'repayment of loan is not always easy in informal sector, hence the need to have very strong guarantors when seeking for loan. The guarantors who are also members of the cooperative are always made to understand the implication of what they are going to do. They are always encouraged to premise it on the person they are guaranteeing the implication of defaulting on their (guarantors) personalities and savings within the society' (Male KII, Executive member of Ifelajulo Olomi (Ibadan) MCU, Olunde, Ibadan, Oyo State, Nigeria).



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In another instance, an informant said, ‘there are people that have multiple-membership of cooperative societies within an institution or organization. For instance, we have 4 cooperative societies under different names in our organization; most of the staff belong to all of them, while some are members in at least two of them. As members of these societies, they are indebted to most of them so also is the problem of sufficient funds for deduction from their salaries at the end of the month’ (KII, Male/Executive member of OSPOLY MCS, Iree, Osun State, Nigeria) Another submission stated that, ‘there is the problem of low savings due to multiple memberships of cooperative societies and other social commitments on the part of the members. For instance, some members were saving N1,000.00 monthly until about 2 years ago when they were implored to at least increase it to N2,000.00. The so called N2,000.00 is nothing to write home about when taken into cognizance the economic situation in the country today. The reality is that somebody with a contribution as meagre as this may not muster enough financial strength to get reasonable loan to offset capital-intensive project like housing construction’ (KII, Male/Executive member of University of Ibadan Staff Cooperative Society, Ibadan, Oyo State, Nigeria).

It was also noted that, ‘larger proportion of the society still does not see the need to belong to a cooperative society in spite of the glaring benefits derivable from it. Meanwhile, the larger the proportion of members in a cooperative society, the larger the liquidity ratio of such society and ability to engage in more gainful ventures that will bring about more revenues’ (IDI, Male/Member of Asejere (Ibadan) MCS, Olunde, Ibadan, Oyo State, Nigeria).

(b) *Challenges at Micro Level:* Most of the respondents noted that they have in one way or the other experienced delay in obtaining loan due to excess demand for loans and insufficient funds to satisfy the demand for loans. Cases were also mentioned where amount eventually given out as loan was short of what they requested for. The case above cut across the cooperative societies in informal and formal settings. The problem of securing willing guarantors on time was another case. The situation here is peculiar to informal setting alone. In formal setting, everybody is always willing to act as guarantor since the mode of repayment is very easy, but informal setting is quite different. The fear of defaulting and the accompanied embarrassment always deter people from coming out willingly to stand as guarantors. As a result of this, people stand as guarantors for those they were intimately associated with.



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### 3.6. Adopted Management Strategies

The strategies adopted in managing the challenges noted in the course of accessing loan are as enumerated herein (a) There is always membership drive that is targeted at ensuring more participation from the members of the community for improved savings and capital base of the society, (b) Cooperative societies were involving in investment of available resources in viable businesses and purchase of shares in companies in order to widen the scope of revenue generation, (c) Most cooperative societies are daily sourcing for supports from government especially when there are government programmes that have to do with their mandates, for example housing provision, (d) Non-members with intent of trading with their money are always encouraged to come forward, (e) Members are always given enlightenment on the need to pay up their loan as at when due to facilitate the opportunity of seeking for further financial assistance.

### 3.7. Expectations for Better Service Outcomes

All respondents have certain expectations that feel should be put in place in order to enhance the position of cooperative societies for optimum performance. They are listed as follow: (a) Cooperative societies should engage more in construction of houses, (b) They should be involved in building and selling of houses to members at affordable rates, (c) Government should support the cooperative societies through the process of public private partnership programmes for the effective realization of some policies that address the grassroots, (d) Faith-based cooperative society should be introduced for those with high distance with secular cooperative societies, (e) Department of Cooperative Services (as operated in most states of the federation) should be upgraded into Cooperative Service Commission for the proper monitoring of cooperative activities all over the country. While this will safeguard the financial interest and the faith of the entire cooperators, the eventual success of the whole system will benefit the entire populace for sustainable development.

## 4. Discussion

The study revealed that the cooperative society with sole interest in housing provision (housing cooperatives) was not in existence in Nigeria. The existing cooperative societies in Nigeria are into all sorts of services of which provision of houses was included. Housing related services of these cooperative societies



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involved (a) mass purchase of land for eventual sales to the interested members at affordable prices and reasonable payment modalities, (b) engagement in acquisition of fixed assets, which included purchasing and renovation of old buildings as well as construction of houses, and (c) provision of housing loans to members.

It was revealed that the processes of benefiting in such services involved writing of application to the President of the Cooperative society. These are usually received and treated on monthly basis; the disbursement of fund to the qualified beneficiaries depends on the liquidity reserves of the cooperative society. Interest charges on loans and on goods purchased by the cooperative societies for distribution to the members differ. The respondents were of the view that decision making on how, when and to whom the loan should be given is faster and rest assuring than banking system.

The challenges being experienced by the respondents in the course of benefiting from the services of housing service of cooperative societies were poor capital base, difficulty in repayment of loan in informal sector, the problem of low savings due to multiple memberships of cooperative societies and other social commitments on the part of the members (macro level). Other challenges are delay in obtaining loan due to excess demand for loans and insufficient funds and problem of securing willing guarantors on time (micro level). Strategies adopted in managing the challenges included regular membership drive for more participation to improve savings and capital base of the society; direct investment in viable businesses, purchase of shares in companies, sourcing for government supports among others. Part of the respondents' expectations included engagement of the cooperative societies in construction of houses, sales of houses to members at affordable rates. At the end, the end was noted as justifying the means because possession of a dwelling they can call their own has really supported their state of positive living that engender a productive and satisfying life.

### 5. *Conclusion*

The outcome of this study suggests that provision of adequate housing still remains one of the recurring challenges posed by unprecedented urbanization in the developing countries like Nigeria. Escalation of this problem in spite of the emphasis in the last three decades on public housing schemes and the global paradigm shift on private shelter initiatives and housing production reinforces the necessity for new institutions like cooperative societies in the course of meeting these needs. Despite the absence of cooperative societies with speciality in housing



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services, information from this study showed that the available cooperative societies are really making valuable impacts in the life of the people in this regard. Cooperatives in housing, savings and credit have proved effective in reducing costs and risks, and being highly responsive to participants' needs. Nevertheless, these are being curtailed through myriad of challenges being faced by the existing cooperative societies in Nigeria, which cut across social, economic and political ramifications. In view of their recognition as effective channels for prompt service delivery to the needy, all efforts should be sought to ensure that cooperative societies are at the top of the list of solutions for achieving rapid development. There is the need for the creation of an enabling environment, including support of housing initiatives and investments by the people such as the householders, small-scale providers, and entrepreneurial private firms.

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### Conflict of Interest

The authors declare no conflict of interest

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## PERSPECTIVE ON FIRMS' RESPONSES TO ECONOMIC CRISES

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### Abstract

*This paper analyzes how firms respond to emerging economic crises. A firm's response to crisis is a mechanism for survival. It normally evolves out of the impact of the crisis, and it is linked to the strategic goals and operational objectives of the firm. Firms normally pursue one or more of three lines of responses to crises; retrenchment, investment and ambidextrous responses. Responses of firms to crisis are far from predictable or systematic and usually vary from firm to firm. They are predetermined by specific contexts of the firm's existence. These contexts range from the firm's size, ownership, sector of operation, history in business, country dynamics and resource capabilities. There is also a tendency for firms to move from one type of response to another during the course of the crisis. Retrenchment is the most preferred form of response, although investment responses tend to have long-term advantages. The study recommends that firms consider ambidextrous responses to realize the synchronized benefits of retrenchment and investment responses to crises. It is also recommended that studies on firms' responses to crisis should examine firms on a case-to-case basis, identify the particularities of their responses.*

**Keywords:** *economic crisis; crisis management; economic; Uganda.*

**JEL Classification:** G33, G34

### *Introduction*



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This paper examines how firms respond to economic crises in different countries and theoretical contexts. The paper examines 83 studies that directly explore how firms respond to economic crisis, and evaluates the common perspectives reflected about the responses of firms to crisis. Five sections constitute the paper – introduction, methodology, findings, discussions and conclusions.

### ***Background***

Historically, a selection of previous studies using evidence from frequent crisis periods has investigated how firms respond to the crisis, since the crisis of Rome in 33AD. [see Taylor, 2013; Pant 2001; Sutherland, 1984; University of Aberdeen Centre for Scottish Studies, 1994; Rose, 2010; Peterson, 1987; Taylor, 2011; Jensen, 1989; Boaz, 2008; Keneally, 2014; Mellahi & Guermat, 2009; Yu & Park, 2006; Lee, 1998; McDevitt *et al.*, 2013] The studies present a broad spectrum of responses that the firms adopt during a crisis and include: restructuring, downsizing, shut down of operations, wage cuts, massive layoffs, new work programs, and price increases.

More recent evidence of firms' responses to economic crises in African economies has been explored in some research papers. Kazeem (2016), and Okereocha Iroegbu-Chikezie and Agboola (2015) have examined responses to the crisis, adopted by private firms in Nigeria. Similarly, in Kenya, Omondi (2016), Wafula and Guguyu (2017), Mohammed (2012), and Karani (2011) use contemporary evidence to analyze approaches considered by firms during a crisis, providing some indication of the outcomes of their responses. Their findings, demonstrate a shared understanding, that the models of firms' responses to economic crises in different economies remain complex, and require further critical inquiry.

### ***Statement of the Problem***

The complexity of firm's response to economic crises makes it difficult to predict firm's behaviour during crises. As such, firms' response to economic decline has seen renewed interest based on emerging crises, with the latest round of analyses focusing on the global financial crisis of 2007 [Hansen & Nybakk, 2018]. Against this background, it is important to study emerging cases to deepen understanding of how economic crises impact on firms, households, and governments and how these economic agents respond to a crisis. Such studies are imperative because, in a world frequently beset by financial, economic and organizational crises, the speed and effectiveness with which a firm responds to a crisis often



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affect its survival, reputation and market performance [Calloway & Keen, 1996 cited in Tennant, 2011; Tennant, 2011].

### ***Significance of the Study***

Today, firms are increasingly concerned about the impact of the economic crisis on their operations and survival and how to conceive appropriate responses to the crisis. At the same time, governments, wary of the impact of the crisis on the private sector, the engine of economic growth, are equally bothered about how firms can effectively respond to the crisis. Policy-makers, firms, and researchers on firm's behaviour may find the study pertinent to their efforts to improve their understanding of how firms may react to economic crises and the factors that underpin these responses overtime.

### ***Objectives of the Study***

#### **Main Objective**

The main objective of the study is to examine how firms respond to economic crises.

#### **Specific Objectives**

1. To identify the types of responses firms adopt during economic crisis.
2. To examine the characteristics of each response firms adopt during economic crises.
3. To analyze the process through which firms select and implement their responses to economic crises.

### ***Methodology***

#### **Content Analysis**

Content analysis is utilized for the purposes of this review. Content analysis is the classification of key ideas in a written communication. Classification of the key ideas creates "categorical variables" that can be analyzed by standard statistical methods [United States General Accounting Office, 1996]. According to Gaur and Kumar (2017), content analysis is applied to literature reviews to assess extant knowledge and internalize the intellectual structure of a field. Whereas content analysis is predominantly conceived to relate to communication research, there is increasing utilization of this design and method in the review of studies about

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particular subjects and issues. This, however, requires that the content analyst establishes benchmark steps (selection of source databases and sampling) and coding schemes to guide the analysis of content of the studies reviewed. By deploying a specific pattern of analytic categories, a content analysis of literature services to contribute to areas of research that fall short in output [Seuring & Gold, 2012].

### Sampling and Units of Analysis

A purposive sample of 83 study texts were used as units of analysis and these were found to have examined how firms respond to economic crisis. Most of the studies reviewed in regards to how firms respond to economic crisis have been published in books, journal articles, reports, and book chapters/entries, among others as shown in Table 1 below.

**Table 1. Units of Analysis**

Unit of Analysis	Number	Percent
Books	36	43.4
Journal Articles	16	19.3
Reports	14	16.9
Book Chapters/Entries	11	13.3
Conference Papers	2	2.4
Theses (Masters)	4	4.8
<b>Total</b>	<b>83</b>	<b>100.0</b>

Source: reviewed studies

Keywords were used to trace related publications from different databases available electronically [see Duriau *et al.*, 2007]. The keywords ‘responses to economic crisis’ and ‘firms’ response to economic crisis’ yielded a large amount of data that was narrowed down to specific studies that directly examined the research question: how do firms respond to economic crisis. Subsequently, 87 studies were selected and formed the basis of this review (see references for full list).

### Analytical Procedure

The review was restricted to thematic analysis. Its scope, therefore, was restricted to the responses adopted by firms. The study identifies the different types of responses available in sampled studies and presents their characteristics and features. It also explores the processes through which firms select and implement their responses to economic crises. The review does not evaluate the efficacy of the responses.

### Findings

*Objective 1: To identify the types of responses firms adopt during economic crisis*

In choosing their responses to economic crises, studies reviewed suggest that firms tend to base on four objectives: survival, business viability, positive cash flow and continue operating. The most common objective stated was that of survival as shown in Table 2. The different objectives determine which type of response a firm may adopt.

**Table 2: Objectives of Firms' Choice of Response**

Objectives	Number of Studies
Survival	3
Business viability	2
Positive cash flow	1
Continue operating	1
<b>Total</b>	<b>7</b>

Source: reviewed studies

Out of the 83 studies, only four studies particularly identified how firms' respond to economic crises listing three types of response, namely: retrenchment, investment and ambidextrous responses. However, of the four, three suggested that there are only two types of response (retrenchment and investment) and the other listed three types of response (retrenchment, investment, and ambidextrous) indicated in Table 3.

Different studies reviewed used alternative terminologies to refer to retrenchment, investment and ambidextrous responses to economic crises. Retrenchment was referred to as either efficiency, decline or defensive strategies, and investment was



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considered variously as entrepreneurial, recovery, offensive, growth and proactive strategies, while ambidextrous response was also referred to as combination strategy (see Table 4).

**Table 3: Types of Firms’ Responses to Economic Crises**

Types of Responses	Number of Studies
<b>Two Responses</b>	3
<b>Retrenchment (cut costs) (efficiency)</b>	
<b>Investment (increase costs, innovate) (entrepreneurial-growth) (proactive)</b>	
<b>Three Responses</b>	1
<b>Retrenchment</b>	
<b>Investment</b>	
<b>Ambidextrous</b>	
<b>Total</b>	<b>4</b>

Source: reviewed studies

**Table 4: Alternate Terminologies of Firms’ Responses to Economic Crises**

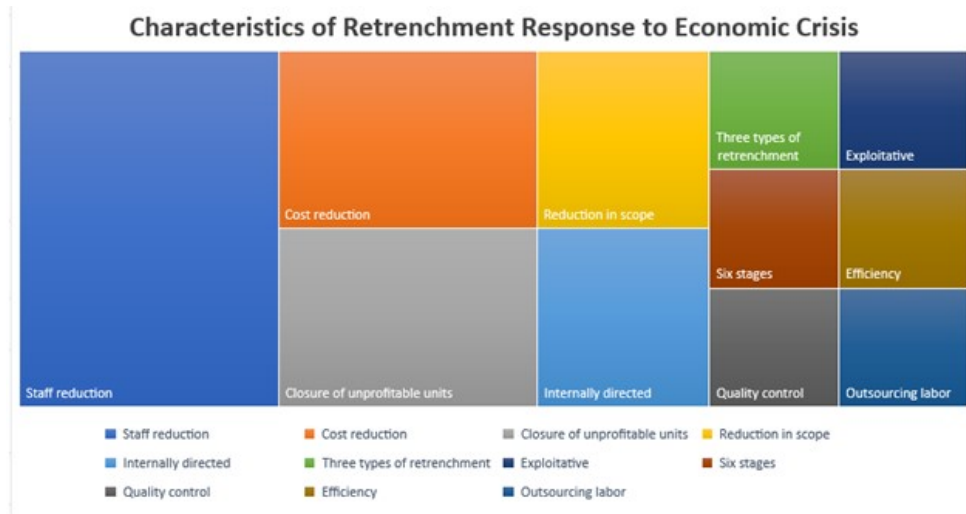
Retrenchment	Investment	Ambidextrous
<b>Efficiency Strategies</b>	Entrepreneurial Strategies	Combination Strategies
<b>Decline Strategies</b>	Recovery Strategies	
<b>Defensive Strategies</b>	Offensive Strategies	
	Growth Strategies	
	Proactive Strategies	

Source: reviewed studies

*Objective 2: To examine the characteristics of each response firms adopt during economic crises*

**Characteristics of retrenchment responses**

The characteristics of retrenchment responses to economic crises, captured in the studies reviewed were: staff reduction, cost reduction, closure of unprofitable units, reduction in scope, among others as shown in Fig. 1.



**Fig. 1. Characteristics of Retrenchment Responses**

Source: reviewed studies

**Table 5. Sub-characteristics of Retrenchment**

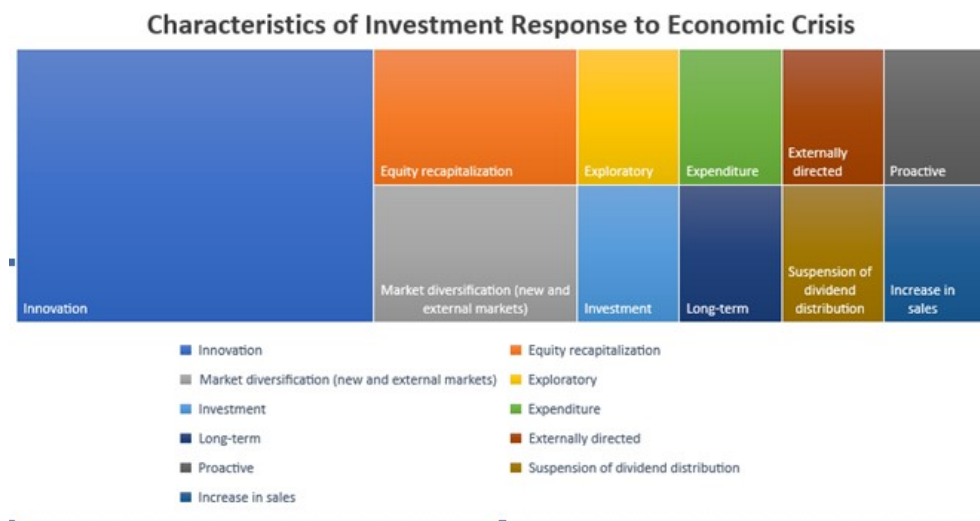
No.	Type	Characteristics
1.	Financial	<ul style="list-style-type: none"> <li>• Cost</li> <li>-Price</li> <li>-Assets</li> <li>-Liabilities</li> </ul>
2.	Operational	<ul style="list-style-type: none"> <li>• Production and Inventory</li> <li>• Branches</li> <li>• Departments</li> <li>• Staff</li> <li>-Layoffs</li> <li>-Outsourcing</li> <li>-Automation</li> <li>-Payroll</li> </ul>
3.	Strategic	<ul style="list-style-type: none"> <li>• Investment</li> <li>• Markets</li> </ul>

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Some of the studies subdivide the characteristics of retrenchment responses into three: financial restructuring, operational restructuring and strategic restructuring (see Table 5).

**Characteristics of investment responses**

The main characteristics of investment responses to economic crises, presented in the studies reviewed were: innovation, equity recapitalization, and market diversification (new and external markets) as reflected in Fig. 2.



**Fig. 2. Characteristics of Investment Responses**

Source: reviewed studies

To distinguish between retrenchment and proactive (investment) strategies, Sternad’s Classification of Retrenchment and Investment Strategies in Table 6 differentiates the two responses but also indicates that they both focus on internal and external aspects and environments of the firm. The main difference between the two is that retrenchment scales back on operations while proactive (investment) scales up on operations.

**Table 6. Sternad’s Classification of Retrenchment and Investment Strategies**

	External	Internal
Pro-active	<i>External pro-active strategies</i> Investment into new markets Diversification of the business Investment into sales Investment into marketing Customer acquisition Customer retention	<i>Internal pro-active strategies</i> Investment into technology Investment into quality Investment into HR Investment into R&D Investment into production Investment into logistics
Retrenchment	<i>External retrenchment strategies</i> Withdrawing from markets Divestment of products/product lines Rationalization in sales Rationalization in marketing Selling parts of the business Focus on the core business	<i>Internal retrenchment strategies</i> Rationalization in administration Rationalization in technology Rationalization in HR Rationalization in R&D Rationalization in production Rationalization logistics

Source: Sternad (2012)

**Table 7. The Process of Firms’ Responses to Economic Crises**

Process of Firms Response	Number of Studies
Crisis determines process of response	2
Impact of crisis shapes the process	2
Response is a process	2
Response is in 4 stages	1
CEOs determine response	1
Response is simultaneous or serial	1
Structure of the organization and its stakeholders shape response	1
Response is unsystematic and emotional	1
<b>Total</b>	<b>11</b>

Source: reviewed studies

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*Objective 3: To analyze the process through which firms select and implement their responses to economic crises*

The process through which firms select their responses to economic crisis is complex and diverse. The literature demonstrates that response to crisis is a process and the crisis tends to determine the course of action taken by a firm. The process of response may go through four stages and Chief Executive Officers (CEOs) may have a strong influence on the process. The process may be far from linear or systematic. These findings from the studies reviewed are presented in Table 7.

Fifteen of the studies reviewed noted that the process of firms' responses to economic crisis varies and the determinants of variability include in the characteristics of the firm, market forces, and impact of the crisis on the firm amongst others as given in Table 8.

**Table 8: Determinants of Variability in Firms' Responses to Economic Crises**

Determinants	Number of Studies
Characteristics of the firm	5
Market forces	3
Impact of crisis on the firm	2
Context of the firm and its strategy	1
Criteria of implementing responses	1
Scope of the firm and size of its markets	1
Numerous factors	1
Ownership	1
<b>Total</b>	<b>15</b>

Source: reviewed studies

### **Discussion**

This section discusses the findings, by drawing from the specific studies that were collated in the findings section. According to McKinley *et al.*, and Staw *et al.*, [cited in Hansen *et al.*, 2018], there are two options for firms facing economic crises. The firms may opt to cut back and reduce risks which they hope can get them out of the storm, or they may be more proactive. In being proactive, the firms may innovate, and confront the crisis with strategic responses. While firms readily adopt the two options, their study, however, does not recognize that some firms can



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combine both responses. Because all firms are affected by recessions, the primary concern of firms during recessionary periods is how to respond to the crisis [see also Tuller, 1991].

The capacity of firms to adapt to the crisis conditions, successfully and on time goes a long way in determining their survival and success in the harsh economic environment [see Nelson cited in Spremo & Lazarevic, 2018]. For most firms, the main goal of their response choices is to survive. The conditions of an economic crisis leave them with little choice. A recent study confirms that the overriding motivation for firms developing responses to the economic crisis is to survive the crisis [Ekşilia *et al.*, 2017].

Archibugi and Filippetti's (2012) book length study focusing on Europe during the global economic crisis of 2007 concludes that economic crises influence the behaviour of firms that seek to adapt to the economic downturn. In most cases, firms faced with market volatility in economic crises come under increasing pressure to adapt. Admittedly, failure to respond effectively to economic crises may negatively affect the firm. Samanta (2014) agrees that the viability of a business arises out of its ability to detect and adapt to trends and opportunities and threats of the crisis and other conditions of their external environment. For a firm to succeed, it must recognize potential threats and adjust to turn them into opportunities. Crises and their consequences create the conditions for actors, with their particular configuration of capabilities, to recalculate their preferences and strategies. These conditions even redefine their interests and push them to identify in potentially transformational ways [Kirton *et al.*, 2011].

To sustain their businesses during an economic downturn, firms should take appropriate measures to adapt to the current market situation [Hrastelj, 2013]. The institutional contexts of response to crisis vary, and these variations appear to have some bearing on the nature of the strategy [Hardy, 1996]. This view is consistent with Faulkner and Campbell's (2003) argument that firms will respond to crisis depending on how it causes a decline in their business performance. The cause of decline shapes response choice. Multiple causes need multiple solutions. In practice, the actual number of responses a firm needs to employ is considerably higher than the exact number of causes of decline.

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### **Objective 1: To identify the types of responses firms adopt during economic crisis**

Broadly, the literature shows that there are three types of responses firms may undertake during a period of economic crisis. The three are retrenchment responses, investment responses, and ambidextrous responses. Retrenchment responses involve cutting operating costs and disinvestment of non-core assets. Investment strategies, on the other hand, involve expenditure and sometimes increased expenditure on innovation and market diversification. In the third response, the ambidextrous response combines retrenchment and investment [Lowth *et al.*, 2010].

In some of the literature on firms' responses to the economic crisis, retrenchment responses are described as efficiency responses. Investment strategies, on the other hand, are described as entrepreneurial strategies and in some cases, recovery strategies. Ambidextrous responses, on the other hand, are referred to as combination strategy [see Khandwalla, 2001; Alkhafaji, 2003; Stadler *et al.*, 2010; Hiriyappa, 2013]. In other studies, retrenchment responses are described as decline strategies, whereas investment responses are referred to as growth strategies [Clow & Baack, 2011].

A series of studies also classify the form of response a firm could take during the economic crisis as defensive, to refer to retrenchment. Other studies use the term offensive to refer to investment responses [see Schermerhorn, 2000]. By defensive, different authors mean measures that cut down expenses, while offensive responses increase expenditure. Defensive responses are short-term, while offensive responses can be aimed at creating opportunities for long-term value creation [Deans *et al.*, 2009]. Retrenchment responses are internally directed, while investment responses are externally directed [Chattopadhyay *et al.*, 2001]. Internal responses focus on the internal structure and processes of the firm, while external responses focus on the market. The latter focuses on marketing strategies, pricing strategies, international orientation, and so on.

Retrenchment strategies involve cutting costs to improve efficiency. These strategies may include withdrawing from markets, disinvestment of products, product lines, selling some units of the business, and closure of plants or production sites [Latham, 2009]. By scaling down on operations, firms envisage that they can put to efficient use the scarce resources at their disposal.

Most of the literature accessed in this review shows that cost-cutting and retrenchment responses are the preferred form of response to economic crises



amongst firms across the world [see also Fabiani *et al.*, 2015; Lowth *et al.*, 2010; Woosley & Summer, 2015; Stat, 2014; Svetivick & Jaktic, 2012]. This preference is not surprising because when resources are few, firms have few options to pursue. However, the literature strongly favours ambidextrous responses to economic crises. A study by Smallbone, Kitching, and Xheneti (2012) found that many business owners adopt an ‘ambidextrous’ approach, combining revenue-generation and cost/asset-reduction activity. Firms should use that approach.

**Objective 2: To examine the characteristics of each response firms adopt during economic crises**

*Retrenchment responses to economic crises* are exploitative approaches involving the reduction of costs of operating the firm [Svetivick & Jaktic, 2012]. During a retrenchment process, the organization substantially reduces the scope of its activity [Kozami, 2002], intending to cut costs in the time of the crisis. Retrenchment could reduce fixed costs, have narrower product offerings, and reduce its staffing [Lowth *et al.*, 2010].

More specifically, Harrison and St. John (2008/2010) present some of the responses that fall under retrenchment. Notably, workforce reductions, closing unprofitable plants and outsourcing unprofitable activities. Retrenchment will also feature implementation of tighter costs or quality controls, or new policies that emphasize quality or efficiency (see also Forte Consultancy Group). In one publication from Chandan and Gupta (2011), retrenchment responses are known to comprise different stages. The stages include consolidating, harvesting, turning around, divestiture, bankruptcy, and finally, liquidation. The most common retrenchment strategies are workforce reductions, reduction of employment, early retirement of workers, freezing the intake of new workers, and downsizing [Cohen, 2012; Harrison & St. John, 2008/2010; Toporowski, 2000/2002, Fotinatos-Ventouratous & Cooper, 2015].

Although restructuring is associated with a reduction in cost, there are three main forms of restructuring – financial restructuring, operational restructuring, and strategic restructuring [Blatz & Haghani, 2006]. Financial restructuring focuses on the reduction of cost so that the firm can continue operating with manageable costs. Operational restructuring, on the other hand, focuses on rearranging the various areas of a firm’s operations, such as its staffing, its departments, its branches, and its production and inventory. Strategic restructuring is more concerned with



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evaluating the broader strategies of the firm, such as when to scale down on further investment, which market to exit, and which market to stay. Nonetheless, all three comprise a reduction in the activity scope.

*Operational restructuring* focuses on the operational aspects of firms. One example of retrenchment responses and which is the most common is retrenchment of human resources, where firms may lay off staff or reduce payroll costs through cuts in wages and bonuses [Curwen & Whalley, 2008; Lazonick, 2009; Bureau of National Affairs, 2003]. Roche, Teague, Couglan, and Fahy's (2013) study of human resource retrenchment practices during an economic crisis found different results. The study found that firms may adopt either 'hard' measures to control or reduce payroll costs with 'softer' measures focused on maintaining motivation and commitment. Some of the existing human resource retrenchment responses include furloughs [temporary leaves of absence until the crisis is over], wage cuts, and benefit cuts [Griffin & Moorhead, 2010/2012/2014]. Most firms prefer 'hard' measures in restructuring human resources during an economic crisis.

Some studies have also found that firms do not only retrench employees without a plan to substitute their labour. While letting go of staff, some firms may opt to outsource labour to cover the gap, as Sahay, Nicholson and Krishna (2003) rightly prescribe. In other cases, firms may use automation to replace employees with technology in a bid to reduce the costs incurred on paying employees [Cook & Billig, 2017].

Beyond retrenchment of the workforce, restructuring may also involve the control of inventory and production. Here, the output is either limited or undertaken to match with demand as and when demand occurs. Greenspan (2001) and Tanaka (2011) have variously shown how firms may control production and industry in line with lessening demand related to an economic crisis. In some cases, they could reduce production in terms of the quantities produced in response to sharp falls in demand, especially among risk-averse firms [Geroski & Gregg, 1997].

Operational restructuring may also include the introduction of new regulations such as tightening internal controls [see, for example, Kohler, 2011]. In some cases, operational restructuring could take on the path of the firm scaling down its investments [Banerjee *et al.*; and IMF (cited in Kuchler, 2015); Ridgway, 2008; the Socialist Party of Great Britain, 2016]. The scaling down of investments arises out of a lack of adequate finance to invest or the fear of uncertainty brought by the crisis. In the next section, we discuss financial restructuring as a form of retrenchment.

### *Financial restructuring*

The other form of restructuring that is evident in the empirical literature reviewed is financial restructuring. Financial restructuring focuses on adjustments of financial components of the firm to make it more efficient, productive, and survive economic crises. Some firms adopt financial restructuring through a revised price policy. A revised price policy could lead to lower or higher prices for a firm's product and services.

Notta and Vlachvei (2015) have explored how firms made decisions related to the price in response to economic crises. More specifically, Mahajan (2008) indicates that firms may retain, reduce or increase their prices. However, Geroski and Gregg (1997) suggest that, most of the time, firms may consider price reductions as a response to the crisis. Dillingham (2010), in one study, discusses price policies in airline firms during economic crises. He observes that there is a likelihood of most firms to introduce new fees or prices, to mitigate the effects of the crisis. Cencini (2005) endorses the view and implies that new fees or prices are measures firms may adopt to compensate for losses brought about by a decrease in demand.

In conducting financial restructuring, some firms restructure assets (by selling them or closing them) or restructuring liabilities, which comprises restructuring of debt [Brown *et al.*, 1994; Shleifer & Vishny, 1992]. Haas (1985) and the University of Texas (1983) have extensively reviewed plant closures as one of the main forms of asset restructuring during economic crises, especially in the United States. In the restructuring of liabilities, firms could also shift their priorities from profit maximization to debt minimization [Koo, 2011]. This shift is because the debt management is key to the survival of firms in environments of economic crises.

Some researches explain how debt restructuring is conducted. Debt restructuring (sometimes referred to as work out) involves an agreement firms make with creditors, to modify any terms of an outstanding financial claim currently held against the firm. It could consist of mobilization of reserves, self-financing, and factoring [selling of debts or assets] [Centre for Entrepreneurship, SMEs and Local Development, 2009]. Most firms take financial restructuring seriously because an economic crisis depletes their resources. In the next section, we examine investment responses to economic crises.



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### *Investment responses to economic crises*

As opposed to retrenchment responses that emphasize the cutting down of costs, investment responses are exploratory and forward-looking and take a different course from retrenchment. Capitalization or recapitalization is an investment approach that firms take to make up for liquidity shortage for operations due to crisis. In the process of recapitalization, Ingves and Hoelscher (2005) argue that “shareholders can recapitalize by injecting more capital, suspension of dividend distribution until the required level of capital has been restored or seek other private owners.” In Thailand, recapitalization was taken by banks to weather the economic crisis. Banks issued new shares to existing shareholders to raise capital [Santiprabho, 2003]. A study of firms during economic crises in Mauritius indicates that shareholders opted for equity recapitalization to respond to the economic crisis when it emerged [Velde *et al.*, 2010].

Svetivick and Jaktic (2012) have discussed the characteristics of investment responses to economic crises. Their research shows that investment strategies involve changing strategies to increase sales. Investment strategies tend to look for new markets and redefine the implementation of firm strategies. They also include developing new capabilities (products and services and business models) that will help the firm to improve its current and future performance. The search for new and external markets in investment approaches is further expounded upon by Lladós-Masllorens (2013), who uses the example from Spain states that as stagnation of demand and incomes persists during the crisis, the external markets are becoming the main source of growth and business opportunities for firms.

Further research shows that innovation is a type of investment response in which firms introduce new products on the market. Innovation can be in the form of ‘just-in-time’ technologies that enable firms to adjust production levels to a rapid change in demand [Greenspan, 2001]. As a result of such innovations, prices can adjust quickly to equate supply and demand [Antonioni & Flynn, 2010]. Nunes and Lopes (2013) have presented evidence that firms that prioritize innovation are less affected by the economic crisis than the firms that do not.

Some firms can innovatively respond to economic crises. A study on the construction sector’s response to economic crises in the United Kingdom identified the innovative approaches to the crisis within the sector [Cannon *et al.*, 1995]. Construction firms preferred to bid for more projects, put in lower bid prices, took on smaller contracts, developed special expertise in markets, developed overseas

markets, got involved in earlier and later stages of projects, put equity into projects, acquired projects from defunct firms and acquired other firms.

Dombrowska (2014) discusses the need for innovation in attracting customers with more quality and valuable products in a study. As such, firms need to make improved products that will meet customers' expectations and values in crises situation. Notta and Vlachvei (2015) discuss how firms could innovatively respond to customers' new preferences when their consumption behaviour changes, and they develop new preferences. Firms make very important adaptations in their marketing mix and marketing policy [see also Ang *et al.* (cited in Hruzova, 2009)].

A study by Szmigin and Piacentini (2015) gives some examples of how department stores and supermarkets innovatively respond to economic crises. The stores' launch product lines focused on offering value to customers affected by recessionary times. As most of the literature suggests, investment responses differ from retrenchment responses. These types of responses call for expenditure on innovation and strategies that can assist the firm deal with the crisis. I concur with the findings of these studies that indicate that there are immediate and long-term benefits of investment responses. Our next section analyzes ambidextrous response, the third type of responses firms are believed to take when faced with an economic crisis.

*Ambidextrous responses to economic crises* are those in which the firms adopt retrenchment and investment strategies. Ambidextrous response also referred to as combination strategy refers to the combination of the stability, expansion and retrenchment strategy in different levels of the organization [Hiriyappa, 2013]. Another research done by Lowth, Prowle and Zhang found that whereas firms favoured retrenchment approaches more (e.g. reduced fixed costs, narrower product offerings, and reduced staffing), a good number of firms took up investment approaches to economic crises, because of the perceived long-term benefits of these approaches.

**Objective 3: To analyze the process through which firms select and implement their responses to economic crises**

Past research has explored, in a limited way, how the responses of firms to economic crises are constructed. Tennant (2011) has outlined four categories of firm response to economic crises using a sequential approach. He states that



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initially, there is unresponsiveness to the early warning signs of crisis. After this stage, there is a rationalization of production use. This stage precedes changing staff and managerial relations before diversification to seek alternative markets and financing. Tennant's trajectory is linear and does not underscore that some firms may skip some categories because responses to a crisis can be haphazard.

The role of management and particularly Chief Executive Officers (CEOs) in deciding how firms respond to an economic crisis is the key. Svetivick and Jaktic (2012) accurately argue that CEOs play a very critical role in determining how firms respond to a crisis. Their response depends on how they perceive the crisis. If they consider the crisis as a short-term situation or a long-term scenario, they may adopt specific responses that they think are suitable for each situation. Apart from CEOs, shareholders (or the owners of the firm) could actively shape how firms respond to economic crises.

I contend that the process of firms' response to the economic crisis also depends upon some salient variables. Such variables include the degree of revenue decline, the structure of administration, and the interest groups involved and so on. These groups are affected by the response [Muller & Ventriss, 1985]. According to Roche, Teague, Coughlan, and Fahy (2013), firms may introduce, simultaneously or serially, their responses to economic crises. The path the firms choose to respond depends on how they assess the gravity of the crisis. Firms could then constitute measures that they believe will address the severity of the crisis. The process of gauging the potency of the crisis is what makes most of the firms' responses to the economic crisis to be haphazard. Their view is similar to that of Hirschfeld, Helley, and Nadarajah (2010). They studied the responses of firms in the Americas and the European Union to economic crises. Their study found that most businesses look first to less drastic options than layoffs. These options include reducing overtime, hiring freezes, salary freezes, salary reductions, furloughs, temporary shutdowns, and work-sharing arrangements, shortened work weeks or workdays, eliminating training programs, boosting healthcare premiums, and creating incentives for employees to retire voluntarily.

The primary objective of the cost and asset reduction exercises is to stabilize the performance decline. The results of this stage should be readily available to internal management and external stakeholders through financial ratios [Mckiernan, 2006]. After such an evaluation, the firm crafts a new direction. Other researchers share this view. Bibeault cited in Mckiernan (2006) and Mckiernan (2006) suggest that



troubled firms initially try to survive and attain a positive cash flow. These aims lead them to the classic retrenchment activities of cost rationalization, liquidation, divestment, etc. It is after this position has been reached, that management has to decide how to continue. Management can make two choices for the firm. The firm can follow an efficiency response, which slims down operations or move forward with the growth (entrepreneurial) response. Such a logical process suggests that firms' responses to the economic crisis are in stages. In many cases, retrenchment precedes any consideration of strategic reorientation.

Some of the literature differs from the above held view that firms pursue a systematic process of crafting their responses to the crisis. During times of economic crises, some scholars have also indicated that emotions override reason in shaping the responses adopted by firms during the crisis. Grundey (2009), in one study, notes that the primary emotion, which overwhelms all firms during economic depressions is uncertainty. Managers and proprietors of firms cannot bear the thought of losing everything. I agree that such emotions determine the extent and type of risk which managers think they should take. Organizational perceptions of the crisis and the risks a particular response would pose for the business is critical in determining the type of response a specific firm adopts towards the crisis. The next section discusses the nature and process of retrenchment responses that firms adopt in the wake of an economic crisis.

#### *Variability of firms' response to economic crises*

Studies on firms' responses to economic crises correctly indicate that several background factors determine a firm's response in its context. These factors ensure that the responses by various firms are markedly different. The responses can vary because of the criteria the firm uses to implement its responses [see also Smallbone *et al.*, 2012].

Besides, Wernerfelt (2016) argues that all adaptations of the firm are not the same. The scope of the firm and the size of their markets shape how they adapt to different environmental circumstances. In line with this view, the nature of the response of the firm may depend on the characteristic of the organizations [Fabiani *et al.*, 2015]. The various other contexts of the firm that shape its response can range from size to sector, to market, to ownership, to country location, and several other factors.





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Olukoshi (cited in Tennant, 2011), in one study, has explored why firms differ in response to economic crises. The research shows that the choice of coping strategies by different types of entrepreneurs is a varied and complex process impacted by numerous factors. To demonstrate the variety of responses theory, Tsavdaridis (2014) presents empirical data of how firms responded, during the financial crises in Greece. Although workforce reduction was a dominant strategy in firms, some firms chose only one of the wide ranges of reduction measures while others adopted several measures. The measures comprised early retirement packages, reduced work hours, job rotation, and salary cuts.

In a study of firms' response to crises in Austria, Kwapil (2010) shows that while firms cut wages during the crisis, more firms preferred to reduce working hours and to dismiss employees. Firm-specific characteristics and characteristics of the workforce, shaped whether a firm dismissed or retained employees. Keen and Standish (2010) have also looked at firm's behaviour during economic crises as an outcome of complex interactions within the market in which the firms operate. In addition, Fabiani, Lamo, Messina, and Room (2015) note that the structural features of the product and labour markets where the firm operates shall determine the firms' response to crises.

Alfranseder and Dzhamalova (2014) describe the difference in investment priorities among firms during economic crises. They suggest that financially constrained firms invest comparatively more than non-constrained firms during a crisis. In another study, Archibugi, Filippetti, and Frenz (2012) contend that while in crisis, older and larger firms, described as incumbent enterprises are more likely to expand their investment on innovation. After the crisis a few, small enterprises and new entrants are ready to spend more on innovation.

In terms of price policy, Gilchrist, Schoenle Sim, and Zakrajsek (2015) argue that the type of firm determined price policy. Firms with limited internal liquidity could significantly increase prices, while their liquidity-unconstrained counterparts slash prices. But then differences in the firms' price-setting behaviour are also concentrated in sectors likely characterized by customer markets.

Whittington (1989) presents a case of how two major and rival British firms took different approaches to economic crises in the 1980s, with different results. 'Exemplar' and 'Rose' are pseudonyms of two rival British domestic appliance manufacturers. At the onset of the 1980s, both firms were industry leaders and household names. They were all subsidiaries of large general engineering firms;



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both were dependent on the home market, and both were direct competitors in key market segments. Though they were superficially so similar, these two firms adopted almost opposite strategies in response to the 1979-1981 recession. Rose responded to the recession by disinvesting, while Exemplar hung on and developed. These different strategies had widely different consequences for the firms' performances, both during the recession and, in the longer term, during recovery of 1982-1985. Despite these divergences in strategies and performances, the two firms survived all seven challenging years of recession and recovery. This contrast between the strategies of Rose and Exemplar points to an important fact. Those two firms that look outwardly similar can choose radically different strategy in response to the same economic crisis. And then, despite the difference in their choices, each of them survives the crisis.

One factor that influences how firms could respond to economic crises could be the variations in the nature of their labour markets. Karabegovic, Gainer, Palacios, and Veldhius (2010) see the speed at which a firm can respond to crisis conditions as determined by the labour market. As a result, firms may be able to restructure the human resource or fail to do so. This scenario largely depends on how the labour market is structured.

In another study of how Greek firms respond to the economic crisis of 2008, which was conducted by Notta and Vlachvei (2015), one group (consisting of 39 firms) opted for a price policy. The other group (comprising 40 firms) focused on innovative products, new markets, and innovation in markets while the third group of firms concentrated on cost management.

The extent to which the firm has been affected by the crisis could also determine its response. According to Fabiani, Lamo, Messina, and Room (2015), the way firms adjust to crises or shocks is likely to depend on the intensity and nature of the shock.

When speaking of how ownership as a variable that could shape how firms respond to economic crises, Peris-Ortiz, Fuster-Estruch, and Devece-Caranana (2014) give two positions. The first position is that some entrepreneurs could choose discovery and innovation opportunities during a crisis. Other entrepreneurs may decide not to pursue further investment.



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### *Conclusions*

The review concludes that firms' responses to economic crises fall into categories of retrenchment, investment and ambidextrous responses. Retrenchment responses consists of an array of measures aimed at cutting costs while investment response is the increase in expenditure on items or ventures that are designed to mitigate the effects of the crisis on the firm. Ambidextrous approaches are a hybrid of retrenchment and investment options.

Amongst firms, retrenchment is the preferred form of response to crisis. Retrenchment is seen by firms to be rational because of the fall in revenues and the perceptibility of uncertainty in the crisis period. Investment responses are desirable because they innovatively address challenges in the crisis period and helps firms to build competitiveness for the future.

Ambidextrous measures assist firms to realize the benefits of retrenchment and investment. Firms, which adopt ambidextrous responses to economic crises, can be able to confront immediate challenges of the crisis and at the same time manage the post-crisis period when the economy begins to recover.

It is recommended that studies on firms' responses to crises should examine firms on a case-to-case basis. This ensures that the specific contexts of each firm are analyzed to determine how they underpins the responses it selects in the period of an economic crisis.

Due to the evolutionary nature of firms' responses to economic crises, longitudinal studies that examine firms' responses to crisis, over a long period, preferably throughout the lifespan of the crisis are justifiable. This approach can lend insights into the changing character of the firm's response to crisis.

At a practical level, it is recommended that firms consider ambidextrous approaches to mitigating the effects of economic crises. Ambidextrous responses offer the opportunity for firms to tackle current challenges and simultaneously develop long-term competitiveness.

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## IMPACT OF AUDIT QUALITY ON TAX COMPLIANCE IN NIGERIA

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### Abstract

*The study examined the impact of audit quality on tax compliance proxy as tax revenue in Nigeria. Specifically, the study investigated the relationship that exists between auditor independence, engagement performance and tax revenue knowing that, many times, tax assessment is based on audited financial statement presented by the firms. Survey research design was adopted using primary data sourced from administering structured questionnaire on the respondents selected from amongst the staff of Federal Inland Revenue Service (FIRS), academia (Accountants) and practicing accountants/auditors within Ondo State. The*



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*ordinary least square (OLS) model was used to analyse data so collected. The  $R^2$  adjusted predictive power of the study was 0.623 (62.3%) and the  $F$ -statistic at the 0.01 and 0.05 level of significance which are 4.79 and 3.07 and is less than 6.047 which was a clear indication that auditor independence and engagement performance have a significant effect on audit quality with resultant effect on tax compliance (tax revenue) in Nigeria. The study therefore recommends that auditors should embrace independence and strictly adhere to established standards and procedures laid down by the government, professional bodies when reporting to enhance audit quality at all times; it is believed this will foster tax revenue generation to argument dwindling revenues.*

**Keywords:** *Audit Quality; Auditors' Independence; Tax Revenue; Audit Engagement.*

**JEL Classification:** H26

### ***Introduction***

Government at all times levy taxes to generate revenue to provide basic amenities that would improve the life and standard of living of citizenry. Ordinarily, a tax is a compulsory levy by government on its subject's income, consumption. Levies could be made on salaries, business profit, interest, dividend, discount or royalties purposely to generate revenue. Besides, tax is levied on the company profit, petroleum profit, capital gains and capital transfer [Bello, 2001]. In a similar view, taxes are compulsory transfers or payments of resources from private to public sector. It's levied principally on the basis of a determined criterion and with no expectation of specific benefits to be received but to attain some national economic and social objectives. Tactically, the essence of taxation is primarily to generate revenue for government in order to meet ever growing government expenditure [Bradford, 2013]. It is worthy of note that in order to be obliged to pay tax, individual or organization must fall within the above income groups, this therefore led to the process of filing returns and assessment at the end of tax year. As such, each taxpayer's income is subject to assessment in the assessment year; they are expected to submit their income tax returns and other relevant information to the tax authority to determine the tax. [Oyebanji, 2016].





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No taxpayer smiles when paying taxes. As such, he or she needs to be motivated, to be encouraged; therefore, he needs to be motivated seductively or by force into paying what is expected from him. The taxpayer is always unwilling to pay his tax liability. The use of tax audit has however helped in the generation of revenue to the government. The Audit unit of the Federal Inland revenue Service (FIRS) employed audit tools to identify tax evaders and to officially carry out enforcement on any company. One of such audit tools is the risk engine tool for identify tax evaders or non-compliant taxpayers. Companies flagged by such tools are either subject to tax audit or tax investigation. In line with its statutory mandate and the provisions of Sections 58 and 60 of the Companies' Income Tax Act (Cap. 21 LFN 2004) and Sections 26 and 27 of the Federal Inland Revenue Service (Establishment) Act 2007 [Iheanyi, 2014]. According to Onoja and Iwarere (2015), in an effort by the FIRS to increase government revenue through taxation, reforms have been put in place by creating the following departments: Process Operations Department (POD), which had five units, including (i) Information Communication and Technology Unit; (ii) Bank Collection Services Unit; (iii) The Return and Payment Processing Unit; (iv) Tax Refund Processing Unit; and, (v) Procurement and Due Process Unit. However, these new processes and units faced serious challenges in the light of the existence of fraud syndicates and the absence of a secured electronic system.

Yet another department was established. This was the Audit Department, because the new leadership realized that tax audit and investigation were core operational priorities of a modern system of administration. The existing units and processes in the pre-reform era lacked the requisite funding, training, independence and spread to function optimally. The Investigation and Intelligence Division was created at the same time. It was later merged with the Audit Department in February 2006 to take over the operations of the Special Investigation Branch and the Intelligence Branch. The mandate of the new unit includes (i) investigation of civil and criminal cases and violations of tax laws; (ii) installation of an effective database and efficient intelligence network; (iii) prosecution of violators of the tax laws to serve as deterrence; and (iv) fostering closer working relationships with other government agencies. Other divisions established included the Values and Doctrines Division – which was built on the whistleblower unit. This unit had earlier been established in August 2005 in the Office of the Executive Chairman of FIRS to serve as a window through which stakeholders and the public at large





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could reach the Chairman with reports of corrupt practices involving the FIRS and its staff [FIRS, 2012].

According to Amah and Nwaiwu (2018), no taxpayer is ready to open his/her books for examination by tax officers. Not minding the concept of *quid pro quo* (something for something), it is still the duty of taxpayers to declare their tax affairs in line with the available tax laws. Audit is said to be “an evaluation of a person, organization, system, process, enterprise, project or product. Audits are performed to ascertain the validity and reliability of information; also to provide an assessment of a system’s internal control”. The goal of an audit is to express an opinion of the person/organization/system etc. in question, under evaluation based on work done on a test basis [Zysman, 2004]. Audit is “a systematic approach that follows a structured, documented plan called audit plan”. In this, the auditors who use a variety of generally accepted techniques examine accounting records. Financial audits are thorough review of a company’s financial records conducted by external auditors to verify that their financial statements are accurate and reliable. Audits are also customarily conducted to assess the effectiveness of internal controls or compliance with regulations [Bradford, 2013].

### **Statement of the Problem**

Lack of adequate tax revenue has been the major problem facing most government authorities globally. The Nigeria tax system has failed on the area of tax compliance in Nigeria today and they do not measure to the appropriate standard. The self-employed persons earn more than those in paid employment do. The self-employed persons earn four times more than those in paid employment do, but the bulk of personal income yield comes from those in paid employment, whereas those who are self-employed earn most of the money and despite all these they do not comply with payment of tax. As a result of inadequacy in monitoring taxes paid, lots of those who are self-employed evade tax. These thus call for the need for a good and standard tax audit and investigation.

Secondly, due to moral decadence and general fall in respect for hard work, the society, general public, parents, friends and family care less how anyone makes money or acquired wealth. Because of abuse of power and privileged position, an average Nigerian has no faith in the government and will not want to entrust their resources to the government, as such payment of taxes will be ranked among the least obligation they owe to the government at all levels. Over the years, revenue



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derived from taxes has been very low and no physical development actually took place, hence the impact on the poor is not being felt. Inadequate tax personnel, fraudulent activities of tax collectors and lack of understanding of the importance to pay tax by taxpayers are some of the problems of this study. The study seeks to focus on audit quality and tax compliance in Nigeria against the frequency-violated assumption in the context of tax compliance. Specifically, the study determines if auditor independence could affect tax compliance in Nigeria and examine the relationship between the engagement performance and tax compliance in Nigeria.

### *Literature Review*

#### **Concept of Audit Quality (AUDQUL)**

According to the consultative council of accountancy body (CCAB), an appointed auditor defines audit as an independent examination of and expression of opinion on the financial statement of an enterprise in pursuance of that appointment and in compliance with any relevant statutory obligation. To this end, audit is expected to improve the value of information presented in the financial statements and, as a result of this, audit quality has to do with a display of professionalism, diligence and care by auditor in audit process which should lead to a true and fair view of financial statement [Arrunada, 2000]. Although audit quality does not have a universally accepted definition, different scholars in their studies explain the term audit quality. To mention but a few, Arens, Randal, Beasley, Shailer & Fielder (2011) define the quality of the audit as meaning how well an audit detects and reports material misstatements in financial statements, the detection aspects are a reflection of auditor competence, while reporting is a reflection of ethics or auditor integrity, particularly independence. Davidson and Neu (1993) define audit quality as the ability of auditors to discover and reveal light material misstatements and manipulations in net income reported. This is corroborated by findings from Salehi and Azary (2008) who stressed that the capability of an auditor in the protection of the interest of users of financial statement through the detection and reporting of material misstatements and diminution of information asymmetry between the users of financial statement and management explains audit quality. They further opined that the existence of audit quality is validated when a financial statement is free from information asymmetry. According to Onaolapo, Ajinlo and Onifade (2017), in defining audit quality, actual quality and perceived quality have been contended as essential issues. While actual quality is regarded as the likelihood of



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reducing the associated risk of reporting a material misstatement in financial statement, perceived quality has to do with what the users of financial statement believe about the ability of auditor to reduce material misstatement.

Moreover, there are certain fundamental characteristics to watch out for when audit quality is a subject of discussion. This, according to Yuniarti (2011), includes Reliability (which has to do with how dependable are the auditor's findings and to what extent do the findings reflect a true and fair view of audited entity's financial statement), Significance (what value is tied to the audit?), Scope (which has to do with whether the entire aspects of the audit is properly addressed), Objectivity (what level of independence was exhibited in the audit process?), Clarity (was the audit outcome well communicated and recommendations made?), Timeliness (was the duration of the audit work too long, too short or just normal before the audit report was submitted?), Effectiveness (does the audit actually achieved its objective?) and Efficiency (was the cost of the audit outweighed by the associated benefit?). According to him, the integration of these characteristics as a whole gives quality to the audit. This implies that audit quality is prominent where these characteristics can be identified.

### *Auditor Independence (AI)*

According to the consultative council of Accountancy bodies (CCAB), independence is an attitude of mind characterized by integrity and an objective approach to professional work. It is an attribute, which qualifies an auditor to expresses opinion on matters of financial reporting without bias or undue pressure. As a result, independence in assessing quality of financial reports dictates audit quality. Loveday (2017) affirmed that auditor's independence and auditing quality are important factors in auditor selection and thus indicate the confidence level in financial reports, confirms this assertion. In addition, Semiu, Okwu and Eyesan (2012), in asserting the essentiality of independence in financial reporting, suggested that auditor independence is at the centre of the integrity of the audit process. Professional accounting bodies consider independence attribute as a key factor in measuring the performance of their members. For instances, the AICPA to secure quality control in the practice of its members issued a statement on quality control standards which specifies five elements of quality control, amongst which is independence. The main purpose of maintaining independent quality is to ensure that personnel maintain independence (in fact and in appearance) in all required



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circumstance, perform all professional services with integrity and maintain objectivity in discharging professional responsibilities.

### *Engagement Performance (EGP)*

This dimension of audit quality is anchored on ensuring compliance with the established standard and procedures on every audit engagement. It is amongst the quality control procedures developed by AICPA. According to AICPA, the purpose is to provide assurance that work performed meets applicable professional standards, regulatory requirements and the audit firms' standards of quality. This is secured through extensive review of working papers and discussion of identified anomalies [Loveday, 2017]. Literature in this area is serenity; nonetheless, ensuring properly performance of every audit to the expectation of clients and the consuming public is an important aspect of audit quality and thus, improves financial reporting.

### **Concept of Tax Compliance**

This is defined as the magnitude to which the taxpayers ensure tax obligation through payment of tax promptly according to the appropriate tax laws or regulations. This means taxpayer's prompt response to tax payments by producing and submitting tax information to the relevant tax authority based on stipulated formats. Tax compliance is the willingness and ability on the taxpayer's part to obey the relevant tax laws, declare the actual income and pay the correct tax liability as assessed promptly [Sitardja & Dwimulyani, 2016]. In the modern-day context, tax compliance study is credited to Allingham and Sandmo (1972); they used economics of crime approach, which was developed by Becker (1968) to explain taxpayers' compliance and taxpayers' behaviour. Many researchers had defined tax compliance. Ahmed and Kadir (2015) defined tax compliance with the degree to which taxpayers comply with the tax rules and regulations established in a country. Thiga and Muturi (2015) also defined tax compliance as the ability to fulfil tax obligation payment as required by the relevant tax laws.

### *Tax Revenue (Tax Rev)*

It is often said that the customer is always right, this is however not the case in the relationship between the tax authority and the taxpayer. This is so because the major aim of tax audit and investigation is not to manage the taxpayer but a focus on generating revenue [Ojo, 1996]. Artificial Transaction, Global income, expatriates



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and Deemed income. Taxable incomes of expatriates in the oil industry are most often grossly understated. This emanates from the fact that the revenue accruing to oil companies are partly received offshore from which expatriates are also partly paid offshore. The part of an expatriate's income paid offshore is always hidden from the tax authorities. This is an illegal practice given that what is taxable in Nigeria as stipulated by section 3(1) of the PITA is the income "from a source inside or outside Nigeria." In other words, an expatriate is expected to pay tax on his global income here in Nigeria irrespective of how and where the income is received provided the work is performed here in Nigeria.

In order to ensure that government is not short-changed as a result of this, as a rule, the tax auditor has no choice but to invoke the provisions of section 17 (1) of the PITA, which provides that if a tax authority is of the opinion that any transaction that reduces or would reduce the amount of any debt is artificial or fictitious, the tax authority may disregard the provision or order that such adjustments be made to that individual's income in such a way as to offset the reduction in the tax liability affected. This is done by substituting the declared taxable income of the expatriate with reasonable deemed income which in most cases is computed by assigning the naira equivalent of the minimum wage or the average unemployment benefit in the country of origin of the expatriate concerned. This is based on the assumption that no rational expatriate (who might have come from a country more developed than Nigeria) will accept a job that will fetch him less than the minimum wage (or unemployment benefit) in his country. In some cases, where the tax auditor has reasons to believe that income of local staff in a company is understated, the concept of deemed income may also be applied, in the oil industry for example, there are many off-payroll benefits paid to local staff. Such benefits include furniture grants, trees allowances and housing grants that are not meant to be refunded. All these are always not included in the taxable income of the employees, hence the justification for applying the concept of deemed income in the instance. The application of deemed income is a recent development in tax audit which the private sector detest [Adediran *et al.*, 2013].

### ***Theoretical Framework***

This study is anchored on two theories – the benefit theory of Taxation and the Ability to pay theory of taxation.



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### **The Benefit Theory of Taxation**

The benefit of taxation theory presupposes that the state should levy taxes on individuals according to the benefits conferred on them. The more benefits a person derives from the activities of the state, the more he should pay to the government. The theory emphasizes that citizens should pay taxes proportionally to the benefits received from the state [Elimi *et al.*, 2015]. It assumes that there is an exchange relationship between the taxpayer and the government [Tutik, 2014]. Under the benefit theory, the levels of taxes are determined automatically since taxes are levies guide pro quo between or proportionately to the benefits the citizens receive from the state or the government. What it means is that the more the individuals or taxpayers benefit from government, the more tax they pay to the government, all things being equal. However, this may not be true in reality, thereby necessitating several criticisms levelled against theory thus; firstly, it is not possible to estimate the benefit enjoyed by a particular every year and again, most expenditure incurred by the state is usually for the general benefit of its citizens. Secondly, putting this theory into practice means the poor will have to pay the heaviest taxes, because they benefit more from the services of the state.

### **The Ability to Pay Theory of Taxation**

This is the most common accepted principle, which emphasizes equity or justice in taxation. The theory states that the citizens of a country should pay taxes to the government in accordance with their ability to pay. According to this theory, it is reasonable and just that taxes should be levied based on the taxable capacity of an individual. In other words, taxes should be based on the amount earned by the taxpayers [Enofe, 2013]. For instance, if the taxable capacity of a person A is greater than the person B, the former should be asked to pay more taxes than the later. According to Torgler (2003), the theory of ability to pay does not consider the amount of these services. For example, all taxpayers contribute to public schools even if their kids are there or not.

### ***Empirical Review***

Ilaboya and Ohiokha (2014) empirically examined the impact of audit firms' characteristics on audit quality. The study revealed that a negative relationship exists between auditors' independence, audit firm size, audit tenure and audit quality using multivariate regression technique with emphasis on logit and probit





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method. Yuniarti (2011) examined how the complexity of services provided, expertise, risk of assignment, and other professional considerations determine audit fee charged by auditor. The study further reveals that higher audit fee enhances a higher quality audit. Ghosh and Robert (2008) conducted a study on the positive relationship between audit fees and audit quality and discovered that several things among which are auditing time and the skilled of the staff cause it. They stated that the more the auditing time, the higher the audit fee. Moreover, audit fees will be high if the auditing procedures involve highly skilled and experienced audit staff. This implies that high quality audit is associated with higher audit fees.

Onaolapo, Ajulo and Onifade (2017) examined the effect of audit fees on audit quality: evidence from cement manufacturing companies in Nigeria. Ordinary least square model estimate technique was employed to analyze the relationship between the explanatory variables and the dependent variables. Secondary data derived from the published annual reports of the selected companies for a six (6) years period (2010–2015) was used for the study. The research finding shows that audit fee, audit tenure, client size and leverage ratio exhibit a joint significant relationship with audit quality.

Loveday (2017) investigated audit quality practices and financial reporting in Nigeria; drawing evidence from auditing firms. Data were collected through questionnaire. Univariate, bivariate and multivariate analyses were performed using descriptive statistics, Pearson product movement coefficient of correlation and stepwise multiple regression. The findings indicate a statistically significantly positive strong relationship between the measures of audit quality (auditor independence, technical training and proficiency and engagement performance) and financial reporting (measures in terms of reliability of financial report).

Semiu, Okwu and Eyesan (2020) examined factors affecting audit quality in Nigeria. The primary data were supplied by 430 respondents across several stakeholders in the field of financial reporting and auditing. The secondary data were generated from the financial statements of forty annual reports of companies quoted on the Nigeria stock exchange. The test of hypotheses and other, multiple directorships is the most significant in affecting audit quality in Nigeria.

Lawyer and Efecloo (2017) examined tax compliance barriers and internally generated revenue in Nigeria: empirical from small and medium enterprises in Port Harcourt metropolis. Primary data were collected using structured questionnaire, while formulated hypotheses were analyzed using SPSS software. The result of the





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study showed that problems such as lack of reliable tax base and the prevalence of cash transactions impede government’s internal revenue generation in Nigeria.

Amah and Nwaiwu (2018) conducted a study on tax audit practice and down south tax revenue generation in Nigeria. Both primary and secondary source of data was adopted and the data collected was analyzed using linear regression analysis and multiple regression analysis with the aid of special package for social science (SPSS) version 21.0 with 0.7190, the empirical results indicate that the predictor variable of tax audit practice has positive effect on criteria variable of tax revenue in Nigeria.

Adediran, Alade and Oshode (2013) investigated the impact of tax audit and investigation on revenue generation in Nigeria. Data were collected through the primary sources from 410 respondents who are staff of the Federal Inland Revenue Service and Edo State Board of Internal Revenue. Hypotheses formulated were tested with Pearson Correlation Coefficient using SPSS output data. The findings are that the tax audit and investigation can increase the revenue base of the government and can also stamp out the incidents of tax evasion in the country.

***Methodology***

**Research Design**

This study employed a survey research design using judgmental and random sampling techniques to elicit the opinion of selected respondents on the impact of audit quality on tax revenue generation in Ondo State. The population of this study comprises of all auditors, Federal Inland Revenue Services Staff and Academics (Accountants) in Ondo State. The random sampling technique was adopted in selecting the academics, FIRS staff and auditors in Ondo State. A random sample of 100 was targeted for the respondent groups. These were made up as follows:

<b>Group</b>		<i>No. Sample</i>	
Auditors	FIRS Staff	Academics (Accountants)	Total
40	30	<u>30</u>	<u>100</u>

The primary data collection was achieved through administration of copies of carefully structured Likert scale questionnaire to auditors, Federal Inland Revenue Service Staff and Academics (accountants). The data was analyzed using Ordinary Least Square Regression (OLS) technique.

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**Model Specification**

The model developed in this study by the researcher for the purpose of estimation as stated in the objective that tax compliance being proxied with tax revenue (Dependent Variable) is as follows:

$$Tax\ Rev = f(AUDQUR) = Audit\ Quality$$

$$Tax\ Rev = f(AI, EGP)$$

$$Tax\ Rev = a_0 + a_1AI + a_2EGP + u$$

Where:

*Tax-Rev* = Tax Revenue

*AI* = Auditor Independence

*EGP* = Engagement Performance

*U* = Stochastic Error Term

*a<sub>1</sub>, a<sub>2</sub>, a<sub>3</sub>* = Regression Coefficients.

**Table 1. Operationalization of Variable**

S/N	Variable	Definitions	Capacity	Measurement & Proxies	Apriori Expectation
1.	Tax-Rev	Tax Revenue	Dependent	Tax generated by the FIRS	NA
2.	AI	Auditor Independence	Independent	Approach to Professional Work	+
3.	EGP	Engagement Performance	Independent	Compliance with established standards and procedures	+

Source: Designed for the Study (2021)

**Analysis and Results**

The preliminary analysis of the data is first conducted (descriptive and correlation analysis). Thereafter, the ordinary least square (OLS) is conducted. The results are presented below:

**Table 2. Preliminary Analysis – Descriptive Statistics**

		Gender	Ages	Academic Qualification
N	Valid	100	100	100
	Missing	0	0	0
Mean		1.59	2.02	2.75
Median		2.00	2.00	3.00
Minimum		1	1	1
Maximum		2	3	4

Source: SPSS Version 20.0

The descriptive statistics is the normality test for the distribution of respondents' bio-data, this has shown the dispersion and central tendency in the variables from mean, median, standard deviation, minimum and maximum and sum of it, with the mean of **1.59, 2.02** and **2.75** in all the bio-data.

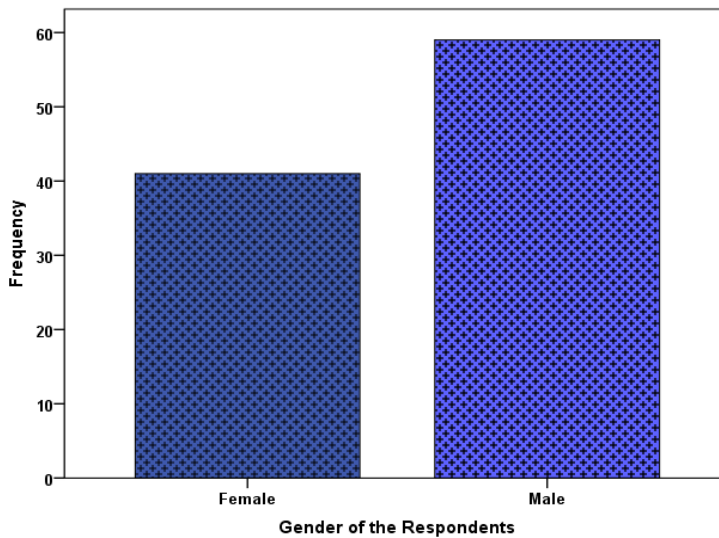
**Table 3. Gender of the Respondents**

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Female	41	41.0	41.0	41.0
	Male	59	59.0	59.0	100.0
	Total	100	100.0	100.0	

Source: SPSS Version 20.0

The table above showed the gender distribution of the respondents (Auditors, FIRS Staff and Academics (Accountants)) that were sampled for the research. 41 (41%) were female, while 59 (59%) were male at those Parastatal. The graphical structure was presented bellow:

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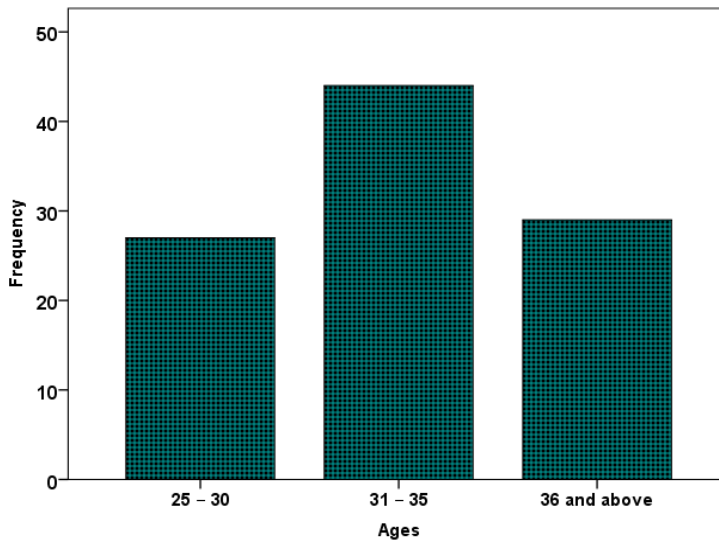


**Table 4. Ages of the Respondents**

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	25 – 30	27	27.0	27.0	27.0
	31 – 35	44	44.0	44.0	71.0
	36 and above	29	29.0	29.0	100.0
	Total	100	100.0	100.0	

Source: SPSS Version 20.0

According to the table above, which has shown the age structure of the Accountants and Auditors who respond to the questionnaire assigned, out of **100** respondents, **27** respondents fall below the age of (**25-30 years**) which was **27%**, **44 respondents** were within the age of (**31-35**) which was **44%** and **29** respondents were within the age of (**36 and above**) with **29%**, this shown that more experience Accountant and Auditors were employed in the three selected areas. Below is the graphical structure of respondents' age.



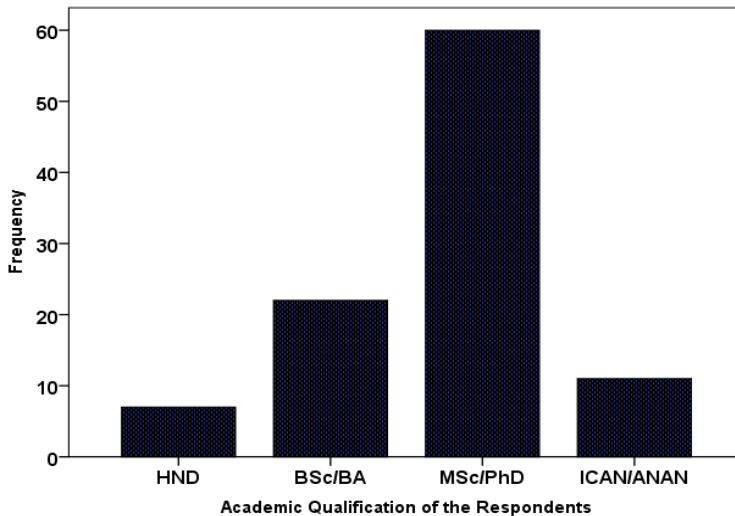
**Table 5. Academic Qualification**

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	HND	7	7.0	7.0	7.0
	BSc/BA	22	22.0	22.0	29.0
	MSc/PhD	60	60.0	60.0	89.0
	ICAN/ANAN	11	11.0	11.0	100.0
	Total	100	100.0	100.0	

Source: SPSS Version 20.0

From the table 5 above on the Academic qualification showed that **22%** of the staff are Degree Holders, **7%** are National Diploma Holders, **60%** are Master and Professional Accountants Holders, while **11%** are Doctorate Holders as compare. According to the analysis it has been shown therefore that more Master and Professional Accountants Holders were employed in the institutions responded in the questionnaire. The graphical structure is as shown below:

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**Interpretation of Results**

The test is aimed at determining whether the **signs** and **sizes** of the results are in line with the theoretical postulation of the study. Thus, theoretical postulation tells us that the coefficients are positively related to the dependent variable, if an increase in any of the explanatory variables leads to an increase in the dependent variable, vice visa.

**Table 6. Ordinary Least Square (OLS) results**

Variable	Coefficient	Standard Err	T-statistic	Probabilities
Intercept	3.898	0.350	11.131	0.000
AI	0.250	0.110	2.281	0.003
EP	0.239	0.082	2.923	0.038
R <sup>2</sup> = 0.647, R <sup>2</sup> bar = 0.623, F-stats(2, 97) = 6.047, D.W-stats., 1.737				

**A-priori Expectation Criteria**

The test is aimed at determining whether the signs and **sizes** of the results are in line with what theory postulates. Thus, theory tells us that the coefficients are

positively related to the dependent variable, if an increase in any of the explanatory variables leads to an increase in the dependent variable. Therefore, the variable under consideration and their parameter exhibition of A-priori signs have been summarized in the table below. This table will be guarded by these criteria.

When  $\beta > 0$ , Positive relationship.

When  $\beta < 0$ , Negative relationship.

Table 7. A-priori Expectation Table

Variable(s)	Expected Sign	Estimate	Remarks
AI	(+)	$\beta_1 > 0$	Conform
EP	(+)	$B_2 > 0$	Conform

Source: Author's Computation

$$Tax-Rev = 3.898 + 0.250EB + 0.239EP + Ut$$

$$S.e \quad (0.350) \quad (0.110) \quad (0.082)$$

$$T-Stat \quad \{11.131\} \{2.281\} \{2.923\}$$

The intercept value shown was **3.898** which means, Tax Revenue (**Tax-Rev**) has **3.898** units when other variables are held constant. This means that generated revenue can be sourced outside the independent variables in this study and as a result of others factor in the economy.

Auditor Independence (**AI**) shows that **1 unit** increases in Auditor Independence brought **0.250 unit** increases in Tax Revenue (**Tax-Rev**), which was significant and substantial enough to justifies the impact of auditor independence in any organization both private and public sector in Nigeria and also to boost government generated revenue because **t-calculated** value is greater than **t-critical 2.281 > 1.662**, thus, it can be used for policy-making by way of improving government generated revenue through auditor independent.

Engagement Performance (**EGP**) shows that **1 unit** increases in Engagement Performance brought **0.239** units increase in Tax Revenue (**Tax-Rev**) with it is a statistically significant using rule of thumb and T-test statistic respectively, thus, Engagement Performance (**EGP**) improve way of workers dealing in Compliance with established standards and procedures for more revenue generation.





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### Statistical Criteria {first order test}

#### *Coefficient of Multiple Determinants {R<sup>2</sup>}*

The **R<sup>2</sup>** shows the **explanatory power** of the model which can be seen as **0.647 (64.7%)**, means, **64.7%** of changes in Tax Revenue (**Tax-Rev**) can be explained by all explanatory/exogenous variables or are due to exogenous variables changed, while the **R<sup>2</sup>** adjusted is the **predictive power** to shows the predictive ability of the model and this can be seen as **0.623 (62.3%)**, means, **62.3%** of change in Tax Revenue (**Tax-Rev**) can be predicted by explanatory variables in the model.

Lastly, the F-statistic shows the robustness of the model for goodness of fit by comparing **F-calculated** to **F-critical** in the table, in order to explain the impact of whole explanatory variables on dependent/explained variable, and this was shown by looking at it from the angle of **0.01** and **0.05** level of significance which are **4.79** and **3.07** and is less than **6.047**, (**4.79** and **3.07 < 6.047**) calculated respectively.

### Hypotheses Testing

#### *Hypothesis one: (H<sub>01</sub>) null hypothesis*

**(H<sub>01</sub>):** Auditor independence does not have significant effect on tax revenue in Nigeria.

From the hypothesis result above, it is cleared that there was significant relationship between code of auditor independence and tax revenue of government in Nigeria with a positive relationship. Based on the analysis, auditors' independence will enhance and boost revenue tax generated by the government and also improve the status of auditor professional. The result of the analysis has shown that auditor independence contributes towards government tax revenue increment as impact on the reducing financial crime in Nigeria, we therefore reject null hypothesis (**H<sub>01</sub>**) of auditor independence does not have significant effect on tax revenue in Nigeria. Hence, the objective of determining the effects of auditor independence on tax revenue in Nigeria as being achieved.

#### *Hypothesis two: (H<sub>02</sub>) null hypothesis*

**(H<sub>02</sub>):** Engagement performance has no relationship with the tax revenue in Nigeria.

From the hypothesis above, it is cleared that there is significant relationship between engagement performance of compliance with established standards and procedures in public sector in Nigeria for tax generation. Based on the result of

analysis done above, compliance with established standards and procedures in both internal and external control system in FIRS in Nigeria will boost tax revenue generated by board in charge of it (i.e. FIRS) in Nigeria. Therefore, we reject the null hypothesis ( $H_{02}$ ) and accept alternative hypothesis that engagement performance has relationship with/on the tax revenue in Nigeria.

Unsuccessful tax administration by tax authorities in Nigeria is an essential factor accountable for the low level of government tax revenue. The result of the analysis has shown that Auditor Independence is a critical factor to be considered by government and others stockholders concerned in the financial firms, which has shown integral part through the analysis done above that Auditor Independence as impact on the tax revenue generated as much as expected base on the analysis done above and captured with Auditor Independence(AI) and with ability to reject null hypothesis ( $H_{01}$ ) of auditor independence does not have significant effect on tax revenue in Nigeria. Therefore, the objective of determining the effects of auditor independence on tax revenue in Nigeria as being achieved. Also, it is cleared that there relationship between engagement performance of compliance with established standards and procedures in public sector in both internal and external control system in public sector in Nigeria can bring more revenue to government's coffer. Based on the result of analysis done above, compliance with established standards and procedures in both internal and external control system in public sector in Nigeria will boost tax revenue generated by board in charge of it (i.e. FIRS) in Nigeria. Therefore, we reject the null hypothesis ( $H_{02}$ ) and accept alternative hypothesis that engagement performance has relationship with/on the tax revenue in Nigeria.

### Discussion

It is clear indication that there was significant relationship between code of auditor independence and tax revenue of government in Nigeria with a positive relationship. Based on the analysis, independent auditors will enhance and boost revenue tax generated by the government and also improve the status of auditor professional and the result of the analysis has shown that auditor independence contributes towards government tax revenue increment as impact on the reducing financial crime in Nigeria. This conform to the *apriori* expectation and in tandem with the findings of Semiu, Okwu and Eyesan (2020).

Furthermore, there is significant relationship between engagement performance of compliance with established standards and procedures in public sector in Nigeria



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for tax generation. This conforms to the *apriori* expectation and in tandem with the findings of Adediran, Alade and Oshode (2013).

Based on the result of analysis done above, the result of the analysis has shown that Auditor Independence is a critical factor to be considered by government and others stockholders concerned in the financial firms, which has shown integral part through the analysis done above that Auditor Independence as impact on the tax revenue generated as much as expected base on Auditor Independence

### **Conclusion**

The study empirically examined the relationship between audit quality and tax revenue in Nigeria. The research survey design was used for the study. Specifically, the study examines the effects of auditor independence and engagement performance as a fact of audit quality on tax revenue. The study adopted the ordinary least square (OLS) model that follows a coefficient of multiple determinants ( $R^2$ ) as the data analysis method. The study findings revealed that auditor independence (A1) has a positive effect on tax revenue generation and is significant at 5%. Also, engagement performance (EGP) has a positive effect on tax revenue generation and is significant at 5%. This result implies that auditors' independence (A1) and engagement performance (EGP) would influence the tax revenue generation in Nigeria if properly enhanced.

### **Recommendations**

Based on the findings of this study, which is in tandem with the objective as well, and the conclusion drawn thereof, the study recommends that:

- i. In order to increase government tax revenue generation in Nigeria, auditors should embrace independence as a factor of audit quality (i.e. auditors independence should be seen in mind and in appearance and they should not allow anything to influence their decisions).
- ii. Also, the auditors should strictly adhere to the established standards and procedures laid down by the government in respect of tax revenue generation.

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## FACTORS AFFECTING FINANCIAL SUSTAINABILITY OF WATER AND SEWERAGE PROVISION IN CAPE TOWN, SOUTH AFRICA

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### Abstract

*Financial sustainability of water and sewerage provision is undermined by consumers' inability and reluctance to pay service fees. South African municipalities are providing water and sewerage services at high maintenance and operational costs, households and businesses that are unable and/or committing to pay their full accounts timeously. This study examines the provision of water and sewage service and presents strategic framework to manage revenue collection to achieve financial sustainability of water and sewerage provision. The study applied the interpretive research method to collect and analysed data for improved understanding of service provision and revenue collection mantra. The main objective of this study was to investigate factors affecting financial sustainability of water and sewerage provision in Cape Town. In this study an interpretive research method was embraced and qualitative research design was used to collect qualitative data by means of interviewing the senior officials using semi structured interviews. Narrative methods of analysis were applied in analysing data collected from randomly*





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*selected Cape Town officials including observations and secondary data. The results showed that although Cape Town is making efforts of generating revenue by means of enforcing water and sanitation services payments, there is still a percentage of residents that refuses to pay for services resulting in revenue loss. The other reason for loss of revenue was unaccounted water which was the focus of Water and Sanitation. The reasons advanced for unwillingness to pay for water and sanitation services by consumers were unemployment, poverty, unequal distribution of services and general ignorance.*

**Keywords:** *cost recovery; financial sustainability; maintenance and operational costs; revenue management.*

**JEL Classification:** G38

### Introduction

The South African constitutional structure formed a multi-sphere system of government, with separately sphere of government, each sphere has legislative and executive self-government powers embedded by the Constitution. These government spheres form a unitary decentralised system which is interdependent and inter-related to each other with political power, administrative accountability and fiscal responsibility (USAID, 2009). Bestowing to the Constitution of Republic of South Africa (1996), each municipality has a prerogative to govern its own local government affairs together, come up with its own initiatives which must be in line with national and provincial legislation. Thus, the above point of argument demonstrates that local government should provide unbiased and accountable community base to its local citizens. Municipality should also ensure the provision of community based services is guarantee and its sustainability is not compromised and further ensure social and economic development. Municipality should uphold a conducive and healthy environment and lastly inspire community and organisational involvement in the matters of local government.

Consumers are unable and/or not willing to pay for water and sewerage provision which results into financial unsustainability. According to Alence (2002), the lack and willingness to pay municipal bills generates financial difficulties and jettison and/or weakens financial sustainability of water and sewerage provision. Some of





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the studies on the service delivery objective for all with utility financial sustainability, have recommended that communities have to be involved in deliberations on service provisions and the maintenance of infrastructures [Godfrey & Obika, 2004; Kyessi, 2005]. The intensification in financial revenue is in line with the prevailing international practice used by developmental agencies rising funding to reimburse for shortfall in project financing [Booyesen, 2001a]. The success of the practice of recovery of cost would make provision for budgetary resources constraints on capital expenditure, allowing the extension of water and sewerage services to all South African households [DWAF, 1994b].

## **LITERATURE REVIEW**

### **The Model of Sustainable Service Delivery in Local Municipalities**

Municipalities have the duty to develop for the municipality to accomplish its administrative, budget and planning processes to ensure that basic requirements of the society is prioritized and community is developed socially and economically, and partaking in national and provincial development platforms is improved. The above objective will be accomplished through the execution of an Integrated Development Plan (IDP) and Strategy of the municipality, together leveraging of development capital and related resources [Pretorius & Schurink, 2007]. Furthermore, municipalities should vigorously advance public and private sector co-ordination of resources and investment to meet developmental objectives and be financially sustainable.

### **Benefits of Meeting Water and Sewerage Millennium Development Goals**

According to OECD (2011), water and sewerage provision produce considerable achievements for human wellbeing, economic development and to the environment as a whole. The report further advised that affording clean drinking water and sewerage reduces health risks and allow time for education and other fruitful activities together with labour force increase productivity. Quality sewerage removal assists in quality surface waters with benefits for the environment together with economic sectors that depend on water resources like fishing, agriculture and tourism. Likewise, the World Health Organisation (WHO) has anticipated that almost 10% of the global burden of diseases could be forbidden in emerging nations through water, cleanliness and sanitation interventions.



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WHO estimated that USD 84 billion per annum in benefits could be generated if water and sanitation development goals are to be met. Amongst the benefits that could be achieved include time gains of three quarters and the rest driven by lessening diseases relating to water [OECD, 2011]. According to Gadgil, 1998; Kuylenstierna *et al.*, 1998; United Nations, 2002; Hamdy *et al.*, 2003 by the year 2050 around 40% of the population around the world will experience water scarcity. Great amount of time, income and other resources is devoted by under-privileged people to safeguard water to meet their basic needs. If water scarcity and competition for water increases in quality and quantity together with location that would threaten advancements made in eradicating poverty, public health and food production, more especially in developing countries like South Africa. Water allocation can be judged among users from the economic efficiency view point, where allocation of water are part of investment project series [Cai *et al.*, 2003].

### **Economic Impact of Water and Sewerage Service Provision**

In the past couple of years and up to now, water and sewerage provision has been one of the points of focus in the local government in South Africa and critical alterations are progressively happening. The manifestation of these changes in South African municipalities is the introduction of new oversight national department of Water and Sanitation under Minister Nomvula Mokonyane and the introduction of new technologies to combat challenges facing water and sewerage provision, for example, dry sanitation and desalination of sea water as an alternative to clean water toilet flushing system. This new technology system has been introduced by Minister Mokonyane to the public in a nationwide campaign by her department on 22 May 2015. With the budget of R16 billion, with more than R800 million going towards water planning and R12.5 billion going towards water infrastructure development in 2015/2016 financial year alone [SABC, 2015]. Provision of clean satisfactory water and sewerage services becomes vitally important in the countries' economic development. If inhabitants' access cleans water, this improves their health, which in turn provides them the opportunity to channel their energy towards economic undertakings. Most economies in Africa are sustained by agricultural production and activities which in turn is sustained by water. Statistics SA, (2016) quoted in the Agriculture Market Intelligence report (2017), pointed out primary



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agriculture in South Africa contributes about R66.7 billion (2%) Gross Domestic Product of South Africa at the end of the second Quarter in 2016.

### **Factors Affecting Financial Sustainability of Water and Sewerage Provision**

To achieve financial sustainability it is important to identify and address some of the key financial constraints that could affect and impact on financial sustainability of water and sewerage provision. These key financial constraints were acknowledged by PwC, in their National Financial Sustainability report Study of Local Government commissioned by the Australian Local Government Association. They acknowledged the following shared features of municipalities characteristically facing financial sustainability limitations which fairly often include:

- Revenue growth insignificant
- Cumulative non-core involvement delivery due to pressure from community demands, with some municipalities inclined to step outside the provision of non-traditional service.
- Cost growth that far exceeds revenue generation. Cost and revenue growth deviation leads to municipalities operating on a shortfall which results in postponing infrastructure renewal expenditure.
- Some municipalities have a tendency or they are inclined to run on operating deficits which results in postponing and under spending on the renewal of infrastructure, more especially on community groundwork resulting in annually recurring crafting backlog.
- Some municipalities lack robust financial and asset management ability which are crucial to recognising sustainability glitches, resulting in renewal elevation expenditure.
- In some municipalities forming a small proportion have limited access to rate revenue due to small annual rate increase and initial low rating base.

### **RESEARCH METHODOLOGY**

#### **Data and Sample method**

An interpretive research method was implemented for this study. The interpretive research method aims to offer understanding into how a specified occurrence is interpreted and understood [Saunders *et al.*, 2012a]. Dissimilar to the other technique such as the exploratory research method that provides an explanation of the experimental phenomenon. Usually phenomena like factors affecting financial sustainability of water and sewerage provision recourses to



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experiences of factor importance – such as economic recession, or the development of an understanding of impact of the recession and inflation cost of services and increase in service charge. Interpretive method is compatible with qualitative research design that has been used to gather qualitative data using convenience sampling method to selected respondents within water and sanitation division of the municipality [Denzin & Lincoln, 2005].

I consider this research method to be appropriate for the study because it required a report on factors affecting financial sustainability of water and sewerage provision. The study adopted a convenience sampling method.

### **Collection of observation data**

According to Saunders (2009), primary observations involve the researcher writing down what was said at that particular time. In this research, the researcher was a primary observer since he was present when the action happened. The researcher kept a diary of what was happening. The researcher wrote down discussions that would have happened on a particular day so as not to forget. Designed and Administered semi-structured questionnaires were used for the interviews to gather primary data needed to attain the aims of the research from the Water and Sanitation department's executive management. The interviews were recorded and later transcribed.

### **Semi structured Interviews**

Primary data was collected my means of interviewing senior official of water and sanitation department using designed and administered structured interviews. Structured interviews allowed the researcher to ask open-ended questions to get in-depth knowledge about the factors affecting financial sustainability of water and sewerage provision as a research subject. The researcher took notes, use transcriptions and audio recordings to capture data throughout interviews. The data collection instrument was open questions by means of recorded interviews with selected municipal officials. Yin, (2003a) argues that collecting data in case study interview becomes an essential method to employ. This is due to the fact that case studies research is about human affairs that should be reported and interpreted through the eyes of specific interviewees and respondents that are well informed providing important insights about the phenomenon [Yin, 2003a].

### Water and Sanitation Executive Management Sample Profile

There are 14 Executive management officials in water and sanitation department who are selected as respondents for this research and an interview request letter was sent to each official to ask for the date specified on the letter for an interview. This request letter for an interview was followed up by numerous telephone calls to each respondent to ascertain the availability for the interview to be conducted. Below is a profile of respondents as per the sampled population,

#### Water and Sanitation Executive Management Officials Profile of Respondents

Population	Sample Total Number	Respondents Total Number	Respondents Percentage
Water and Sanitation Executive officials	14	8	57%

Source: Beda's Respondents profile, 2015

As explained in the sample consisted of 14 executive management official of Water and Sanitation and because of non-availability and tight schedule of some of the respondents, out of the 14 official 8 officials were interviewed for this study. The processes of interviewing were semi structured and all 8 respondents were asked the same questions and given an opportunity to respond to each question.

### Interviews

According to Blaxter *et al.*, (2006) cited in Alshengeeti (2014), choosing to do interviews is important for researchers as it gives them the chance to access information which is not necessarily accessible using questionnaires and observations. Before I Conducted interviews I sought permission from the respondents to audio-record the interviews. I provided reasons to the respondents as to why I preferred the interviews to be audio-recorded. This concurs with Saunders (2009) assertion that permission must be granted to audio record an interview and that the interviewer must provide reasons for that [Healey & Rawlinson, 1994, cited in Saunders, 2009]. I held number of separate interviews with management of City of Cape Town, water department. Saunders (2009) explains that in order to produce data which is reliable as well as reducing biasness, interviews can be recorded.

Theron and Wetmore (2005) cited in Matibane (2010), postulates that in participatory observation, variations of conversation and observation are used. Theron



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and Wetmore (2005), as cited in Matibane (2010), suggest that under participatory observation, the researcher has to be a resident of the community for a period of time, in which he/she wishes to observe. At the time of the research, the researcher was an employee of the city of Cape Town, so was able to attend some of the staff meetings where issues regarding water and sewerage provision were discussed. These meetings were attended by shop floor workers, middle managers as well as top management.

### **Importance of observations**

Observations help researchers understand participants' nonverbal communication which might help to understand how they feel. According to Schmuck (1997) cited in Kawulich (2005), observations help researchers understand the nature of relationship between participants and the people they interact with and how much time do they spend doing different activities. According to Marshall and Rossman (1995), cited in Kawulich (2005) participant observation provides researchers with an opportunity to understand meaning of words that are used by participants in interviews. Participant observations also make observers aware of the behaviour that participants would not want to portray if they knew that they were being observed [Kawulich, 2005].

### **Presentation of Results**

Below is a presentation of the results from the gathered data.

### **Interviews**

Factors, challenges and initiatives that the researcher gathered from interviews are going to be presented in this section.

### **Factors affecting financial sustainability**

From the interviews conducted, interviewees mentioned the following factors that are having an impact on financial unsustainability of water and sanitation department. These are; ability to pay, unemployment, audit, budgeting, economy, payments of rates and taxes, internal processes, culture, employees' development, funding and resources like cars, instruments.

### **Challenges affecting financial sustainability**





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One of the challenges the interviewees mentioned is that the residents do not understand why they should pay rates as they believe that these kinds of services must be offered for free. Another challenge is culture of not paying rates. In South Africa, the behaviour of not paying for basic services has developed into a culture which is engrained particularly in low-income households. Another challenge is the high rate of unemployment. As the unemployment rate soars, majority of residents find themselves struggling to fend for food let alone basic services like water and sewerage provision.

### **Initiatives undertaken to address the challenges**

There are various initiatives which are being undertaken by the City of Cape Town Water and Sanitation department in order to address the issue of financial unsustainability. The initiatives being undertaken by the management include improving revenue collection. This is confirmed by the Department's Annual Report (2016/2017) which shows that revenue collection stands at 80%. There was an improvement in revenue collection of 3.82 % from the year 2015/2016 to 2016/2017 [Annual Report, 2016/2017].

### **Observations: Community interactions**

Below is a presentation of factors and initiatives that the researcher gathered from community observations.

### **Factors**

Through interactions with the community of Khayelitsha, the researcher identified various factors which define the willingness and ability of residents to pay for the services. The department's financial sustainability partially depends on the revenue it collects from the residents. One of the factors is information availability. Residents indicated that there is lack or no information on whom to contact if they need help, therefore, they end up not getting the information they need most. Also most residents said that they were not able to pay for the services as they were either unemployed or earned less. Most residents pointed to dilapidated facilities such as faulty metres and tapes as having an effect on financial sustainability of water and sewerage provision. Residents lamented that engagement and accessibility of other related services was at a record low.





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### **Challenges**

On the part of residents, lack of information as to who to contact when faced with water or sewerage related problems is one of the challenges that residents in Cape Town meet. Residents added that there is no call centre awareness and if one happens to call, he or she waits forever before the call is responded to. Residents also indicated that there is a lack of knowledge and no nearest walk in centres as they are not publicly known. Lack knowledge about sub council offices and trust in area councillors addressing their plight of the community was mentioned as another challenge. Residents living in informal settlement and surrounding areas feel that they are being created as secondary citizens.

### **Observations: Normal daily tasks and staff meetings**

Below is a presentation of factors and challenges the researcher gathered from observations in staff meetings and when doing normal daily tasks.

### **Factors**

As the researcher was an employee of the Department at the time of doing the research, he had the opportunity of attending staff meetings where issues relating to service delivery were discussed. Through observations during meetings and when doing normal daily activities, the searcher identified the following factors as affecting the financial sustainability of the Department. These are;

### **Challenges**

One of the challenges facing the department is long and frustrating procurement processes leading to slow service delivery. Top management lacks knowledge about Financial Municipal Management Act which is a necessary requirement in managing finances of municipalities. The researcher also noted that too much time was spent in meetings which hampered service delivery. The crucial stage of planning is implementation. The department is facing a challenge of lack of implementation and action orientated focus. Poor workmanship by private contractors affects the provision of services. There is also lack monitoring and evaluation with regards to poor workmanship by private contractors.

### **Challenges and strategies: Department records**



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Below is a presentation of challenges and strategies the researcher gathered from through document analysis. According to the WCWDM Strategy (2015/2016), the department faces critical challenges which need focus and these are: *‘financial viability challenges; ratio of collection and willingness to pay for services; metering and billing; ensuring full cost recovery and acceptability of the tariffs by the consumers; reduction in unaccounted for water; high financial requirements; high cost of doing business, and high debt due to non-payment.’* Challenges relating to customer satisfaction are; *“meeting Service Charter standards; improved provision in accordance with the City’s own set desired target levels of basic services to informal settlements and backyarders; availability of services for infrastructure expansion; appropriate service standards and level of service; providing a targeted improved level of service, and provision of affordable service”* [WCWDM Strategy, 2015/2016].

### **Strategies**

Below are initiatives which the Department of Water and Sewerage Provision in Cape Town is undertaking in order to enhance financial sustainability of water and sewerage provision;

### **Creation of jobs**

According to its Annual Report (2016-2017), the Department surpassed its job creation target by 17% when it created 5971 job opportunities against a target of 5100. Most authors allude struggling of municipalities to non-payment of services by consumers. The job opportunities created by the department will go a long way in empowering communities which will then enhance their payment capability for the services the department is providing.

### **Development of employees**

The department exceeded its targets. The Department, in its Annual report (2016-2017) admits that to reach an optimal level of staff is difficult with only using the available resources due to the prevailing economic conditions.

### **Equipment**

The report says that a total of 24 433 of water meters have been replaced against a target of 22000. Also, a total of 24866 sewerage meters have also been replaced



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against a total of 11450 [Annual report, 2016-2017]. This shows that the department is doing all it can to address the issue of dilapidated equipment.

### **Customer service**

The Department created a new website where stakeholders would find useful information regarding water services. In order to provide flexibility and easy of the process involved in service provision, development and implementation of an electronic portal whereby customers can capture their own meter reading. This is has been introduced as part of initiative for meter-reading campaign which the water and sanitation department initiated whereby rate payers are required to SMS or send their reading thorough e-portal [Annual Report, 2016-2017].

### **Adherence to legislations**

Adherence to legislations is important for municipalities since it reduces the vulnerability to fines and penalties. This reduces financial constraint which in turn increases financial sustainability. The Department's Annual Report, (2016-2017) shows that it has been adhering to legislations as evidenced by the ISO certification which was awarded many branches which fall under Department. These branches include the Finance and Commercial Branch and Support Services.

### **Financial Support**

The interviewees emphasised the need for the local government to help departments since their resources are not adequate. Furthermore, the City of Cape Town and The Nature Conservancy, an international conservation organization, have agreed to set up a water fund which aims to safeguard water supplies and biodiversity while supporting local livelihoods [Annual report, 2016-2017]. The Department initiated a project whereby The Brakkof Reservoir, which supplies the city with water, was to be repaired. The main aim was to prevent water loss, natural disasters, vandalism and contamination which have effects of increasing costs if not addressed. Other reservoirs were to be repaired the same purpose as well.

### **Revenue collections**



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Water and sewerage collection did improve by 3.82 % from the year 2015/2016 to 2016/2017. Although water and sewerage collection stands at 80 % respectively, the improvement from the previous year to the current one is not a significant one.

## **FINDINGS AND RECOMMENDATIONS**

### **Findings**

The study shows similarities between the findings of this study (factors) with those of other studies done by different researchers on the related topic. These factors are; accessibility [Statistics South Africa, 2016], resources [Statistics South Africa, 2016], culture [Morudu, 2017], human capacity [Westhuizen & Dollery, 2009; Vhonani, 2010], monitoring and evaluation [Kanyane, 2014], planning [Kanyane, 2014], communication [Kanyane, 2014], affordability [Bekink, 2006]. As the author is a resident of Khayelitsha, a township in Western Cape, he has been interacting with the communities at meetings or at social events. One of the factors affecting financial sustainability of water and sewerage provision in Cape Town as suggested by the community members is engagement.

According to Bekink (2006), many South African residents are not able to pay for basic services. Fjeldstad (2004) emphasized the fact that a relationship exists between ability and willingness to pay. Most people, who are willing to pay, have the ability to pay as well. However, there are other residents who are able to pay but not willing to due to the frustration they endure because poor service delivery. Kumar (2013) cited in Pieters (2015) mentions non-payment by consumers as one of the challenges that affects municipalities' capability in improving their revenue base. Another difficult mentioned by the interviewees is lack of sound financial management models to use in running municipalities. Pieters (2015) alludes the success of service delivery in local governments to a sound revenue system as the provision of goods or services is mainly dependent on the availability of funds.

Kanyane (2011) cited in Mantzaris (2014) suggests that a municipal budget is the basic mechanism that can be used for financial municipal management. Kanyane (2011) further says that municipal stakeholders such as mayors must have a concrete understanding of the Municipal Financial Management Act and other legislations, and how they can be applied. The Act enhances effective municipal



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finance management in local government by creating treasury norms as well as guiding standards for performance.

### Recommendations

- Cape Town municipality must ensure that its employees are developed through continuous training.
- Cape Town municipality must ensure effective revenue control system is put in place as well as keeping the cost of capital at a minimum.
- Cape Town municipality must ensure that communities in Cape Town benefit through its projects, in terms of employment and business opportunities.
- Water and Sanitation department must promote public participation in determining water tariffs and preparedness of the underprivileged to pay for services.
- Water and Sanitation department must ensure effective communication for revenue enhancement by designing an effective communication strategy
- Water and Sanitation department must achieve political commitment and alignment of goal in the institution by continuous community engagement and capacity building.
- Water and Sanitation department must establish community platforms whereby residents are given roles to play in the debate of issues regarding water and sewerage provision.
- Improve the long and frustrating procurement processes leading to slow service delivery through reducing the number of steps involved in procurement.
- Management must be well acquainted with the Municipal Financial Management as to be effective in decision making regarding the management of finances of municipalities.

### CONCLUSION

The results of the study indicate that the Department is facing challenges in developing as well as motivating its employees. This is partly due to lack of adequate funds. The Department must mobilizes sufficient financial resources so as to develop and retain the staff. Mdlongwa (2014) stresses that paralysis in service provision by municipalities is partly due to a lack of adequately skilled workforce. The Department must ensure that its revenue collection mechanism is effective and also



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that all other charges levied against users recover the costs involved in water and sewerage provision. The department must also ensure that the cost of capital is kept at a minimum. While the department is doing a lot to maintain some of its assets like taps, there is still a lot which need to be done to take care of the rest of the assets. The timely maintenance of the assets will eliminate unnecessary costs and time lost in attending to frequent breakdown of machinery and equipment. The Department must also reduce irregular spending.

The Auditor General Report (2018) indicates that most municipalities put themselves under financial distress due to unreasonable spending. The Department must ensure that any investment in projects relating to water and sewerage provision leads to job creation for the communities of Cape Town. This will go a long way in enhancing the income of the residents and improve their ability to pay for the services provided by the Department. Any waste products from the Department's operations must not compromise the health of the community as this will have an effect on their ability to pay for the water and sewerage services as they will be channelling all their resources towards their health. The Department must establish community platforms whereby influential leaders of the communities are identified and given roles to play in the debate of issues regarding water and sewerage provision. This will improve participation and understanding by community members since they would feel included in decisions that affect them. The platform can be used to attract divergent views about how to improve service provision as well as gaining trust from the residents. Since the financial resources of the Department are constrained, it would be wise to engage the Provincial Government for additional funding of some projects.

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## RICE PRODUCTION, CONSUMPTION AND ECONOMIC DEVELOPMENT IN NIGERIA

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### Abstract

*In recent times, rice production has become a topical issue in national discourse in Nigeria. Rice is a major staple food in all the regions of Nigeria. Over the years, Nigeria has imported rice from different countries to supplement local production, thereby putting pressure on the Nigeria foreign exchange. Since 2018, the Central Bank of Nigeria made policies aimed at curtailing the importation of some agricultural products including rice, by ordering the closure of land borders till further notice. The aim of the policy was to restrict the dumping of products such as rice into the country, which could generate an unfair competition with local rice producers. It is against this backdrop that this work investigated the effect of rice production and consumption on economic development in Nigeria, from 1986 to 2018. The data were sourced from the Central Bank of Nigeria Statistical Bulletin. To establish the empirical nexus between rice production, consumption and economic development in Nigeria, the work used the following econometrics*



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*tools of data analysis OLS, Unit root test, Johansen Cointegration and Vector Error Correction Model (VECM). The findings of the study prove that there is a significant relationship between rice production, consumption and economic development in Nigeria. In addition, the OLS result established that the relationship between rice import and the gross domestic product in Nigeria is statistically significant. The unit root test results justifies that all the model variables were non-stable at levels but gained stationarity after first difference. The Johansen Cointegration test empirically established that there is a long run convergence between the variables in the model, while the VECM result attested that the model variables are jointly instrumental in eliciting long-run equilibrium. From the foregoing, government is encouraged to support the mechanization and modernisation of rice production in Nigeria, including the introduction of modern equipment, pesticides and improved seedlings needed by rice farmers to increase rice production. This may be achieved through the provision of cheap credits to rice farmers.*

**Keywords:** *real gross domestic product; rice production; consumption; economic development.*

**JEL Classification:** Q1

### **Introduction**

Rice has become a topical issue in recent times in Nigeria. The Federal Government of Nigeria has recently placed embargo on its land borders with a view to restricting imports of rice through neighbouring West African countries. The belief is that restricting imports of rice will minimize unfair competition against the locally produced rice in Nigeria, encourage local producers to increase production of rice and improve their production skills among other reasons. The policy effect will ultimately enhance the welfare of Nigerians through the consumption of more healthy local rice, which is believed to be relatively fresh from the farms. It was also believed that the income of farmers will rise, consumption habits would change from foreign to local consumption and the overall effect would be an enhanced economic growth and improved welfare as well as impact on its citizens, which may technically be defined as economic development. This work attempts to see how the situation in Nigeria had been *ex-ante*. The result will provide a better basis



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to advise policy makers on the desirability of closure of the border or otherwise. For instance, if the country was already doing well in terms of production, marketing and consumption of the product, there would be no need for a new policy that may involve costs. Besides, there is already a debate on the desirability of the policy now given the fact that Nigeria has signed the African Continental Free Trade Area (AFCTA) agreement which encourages the free flow of goods, services and persons across Africa.

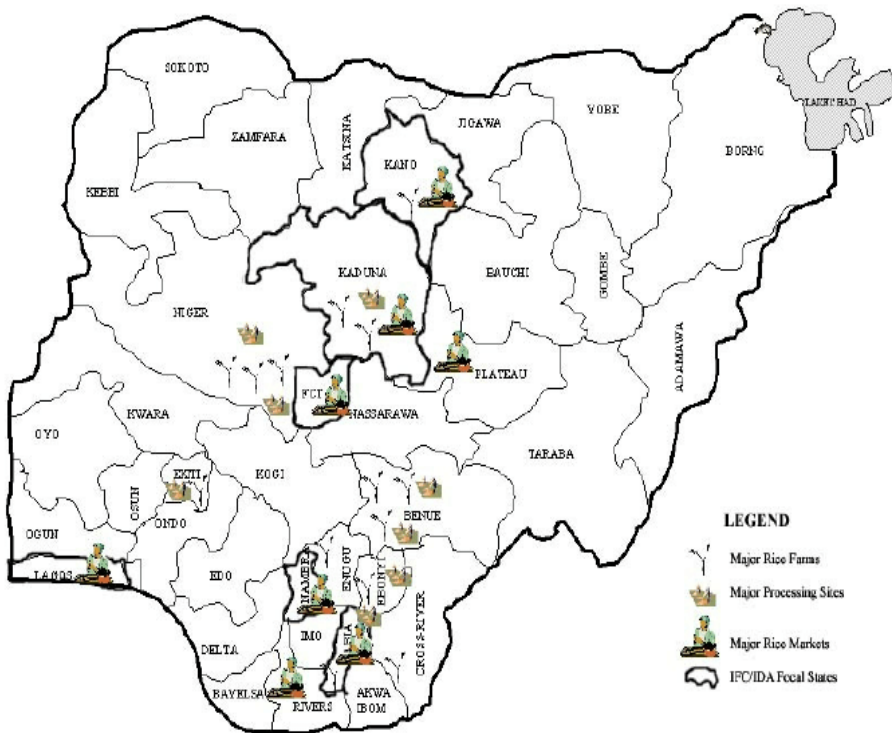
### Literature Review

Rice is an agricultural cereal with the botanical name, *oryza sativa*. Rice is a staple food in Nigeria and the most widely consumed staple across the different regions in Nigeria. According to the United Nations Foods and Agriculture Organisation (FAO) data in 2017, rice was the third highest product in demand globally, behind sugarcane and maize. Nigeria is also known to be the third highest importer of rice globally. About 800 thousand metric tonnes of rice are smuggled into the country annually in addition to about 5 million metric tonnes officially imported. Local demand for rice is about 7 million tonnes annually [Russon, 2019]. Rice imports to Nigeria flow from countries as India, Thailand, Republic of Benin, Brazil and China among others.

The Food and Agricultural Organization (2017) deposed that Nigeria is the second largest producer of rice in Africa. Current production of rice in Nigeria is 3.7 million tonnes of rice annually. According to the report, 1 hectare produces 2-3 tonnes of rice. This is below the global average of about 4 tonnes and by far much lower than the average output in Egypt. Rice may be grown three times a year in Nigeria and production is largely in the hands of small holder farmers. The few large organised rice farmers that constitute about twenty per cent of the total output in Nigeria include Coscharis Group, Olam, Quarra, and Dangote among others. For instance, Coscharis as at 2019 could produce 8 metric tonnes per hectare with its hybrid variety. According to the former honourable minister of Agriculture, Chief Audu Ogbeh (2019), rice production in Nigeria between 2014 and 2018 rose by 19 per cent. He also noted that the market value of local (Nigerian) rice was 684 billion naira, making Nigeria the sixteenth largest producer of rice in the world [Odotun, 2019]. This position was corroborated by the Governor of the Central Bank of Nigeria, who described as 'remarkable success' that has been achieved in stimulating the production of local goods such as rice [Emefiele, 2018]. In fact,

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George (2020) has noted that production of rice in Nigeria has risen to 4.9 metric tonnes, which is an increase of about sixty per cent from the situation in 2013.



**Figure 1. Map of Nigeria Showing Rice Production and Markets**

Source: Phillip, Nkonya, John & Oni (2009).

Nigeria has a land mass of about 923,968 square kilometres. Out of which a total of 71.2 million hectares are available for farming. How much of this has been farmed and how has the availability and consumption of rice generated a rise in the real gross domestic product, which is the proxy for development in this discourse. The demand for rice is high among the different regions in Nigeria and has been





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rising with the years. In fact, Terwase and Madu (2014) noted that while the demand for rice in the local economy was high, its production was low. These scholars also observed that the import demand for rice is inelastic. The paper therefore recommended that deliberate attempts should be made by government to improve local rice production. The former Federal Minister of Agriculture, Ogbeh (cited in Russon 2019) noted that Nigeria expends about one billion naira daily in importing rice into the country. This huge sum simply creates employment in countries that export rice to Nigeria. Nigeria is the third largest importer of rice in the world [Russon 2019]. Rice is also in high demand across the world. It is the third most important staple food. About half of the population of the world eat rice as a primary source of caloric intake.

Rice is currently food for the masses in Nigeria; it is in almost every ceremony and consumed in almost every home at least once a week. Rice has a consumption rate of 32 kilogram per capita per annum [Businessday, 2018]. In many places in Southern Nigeria before the 1980s, this was not the situation. It was then eaten as a ceremonial food. Rice was eaten occasionally either at Easter, Christmas or on some special events. Even then, it was largely the local brand of rice until post-Nigerian civil war and the oil boom era, when importation of food became so pronounced. The demand for rice is high among the different regions in Nigeria and has been rising with the years. In fact, Terwase and Madu (2014) noted that while the demand for rice in the local economy was high, its production was low. These scholars also observed that the import demand for rice is inelastic. The paper therefore recommended that deliberate attempts should be made by government to improve local rice production. According to PriceWaterhouse Coopers (PWC) (2017), current mechanisation of agriculture in Nigeria is about 0.3 horse power (hp) per hectare (ha) and this could improve to 0.8 hp/ha in the next five years. Rice is relatively easy to produce and to grow.

Economic development may simply be defined as a fundamental rise of human welfare in an economy. According to Bentham (1917), it is the greatest good to the greatest number in society and to Nnoli (1981), it has to do with the inherent capacity of a people to interact with nature and their inter-human environment with a view to optimizing the use of scarce resources. To be more precise, development is a dialectical occurrence which enables men and society to relate with their biological, physical and inter-human environments, through transformation for better human conditions. In other words development in Nigeria could be defined



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as the increasing capacity to interact with nature. In this case, labour, land and rice towards enhancing human satisfaction, which is indexed in this work by rising real gross domestic product. This theory relates to the capacity to understand nature, which revolves around the study of natural science and how to transform nature for the betterment human lives (technology). According to Ake (1981), development is the ability to create and recreate out of nature for the sake of human satisfaction. This is what may be referred to as capacity model [Okowa, 1994].

### **Theoretical and empirical foundations of the study**

The place of agriculture and food specifically to enhance human welfare has long been acknowledged. Malthus had long posited that food had great impact on development, stating explicitly that where food is insufficient to meet the population needs, the outcome could impact on development negatively. Food insufficiency could lead to ailments, wars and other situations that will reduce population size to equilibrate with the level of food supply. This is usually referred to as the Malthusian trap [Okowa 1994]. Malthus had noted that population had tendency to grow at geometric progression while food supplies grow at arithmetic progression. Otto (2008) empirically confirmed that population growth in Nigeria has been high especially in urban areas. Food supply has a nexus with human welfare or development. Lewis (1954) in his Dual Sector Model reinforced the Malthusian theory by showing that agriculture was a major source of food and raw materials for the industrial sector. A viable agricultural sector and food supply was a major key to viable industrial sector. In fact, a hungry society cannot be said to be a happy or developed society. This explains why hunger and food has always been an instrument for peace and war between societies. Nigeria will enjoy greater welfare if the production and consumption of rice increases. If local output is insufficient, rice could be imported to supplement local output. However, as more of the product is imported, unemployment will rise, so development or welfare is inversely related to importation of rice theoretically while local production is positively related to development or welfare.

Several studies had been done on the impact of agriculture on economic development and growth. There are also studies done specifically on the production or consumption of rice on economic growth and economic development. For instance, Nkoro and Otto (2018) examined the impact of Agriculture on Economic growth in Nigeria between 1980 and 2017. The study noted that agriculture exacts a positive



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and significant impact on economic growth in Nigeria. Similarly, Osabuohien, Okorie and Osabuohien (2018) examined rice production and processing in Ogun State, Nigeria. This paper used a conceptual framework built on the theory of New Institutional Economics, where Institutions, significantly influence outcomes of economic and social activities. The paper noted that in general terms institutions may be formal or informal. These institutions could include moral codes, values, norms and conducts that influence individuals and group activities. New institutional economics attempts to broaden economics to include roles that neo-classical economics might ignore [Coarse 1998]. The concept 'New Institutional Economics' was introduced by Williamson (1975). Polycarp, Yakubu, Salishu, Joshua and Ibrahim (2019) analysed producer price of rice in Nigeria. The objectives of the paper were among others to examine the behaviour of producer's price of rice and government policies in order to forecast the price of rice in Nigeria. The analytical tools were based on a three years moving average with ordinary least squares regression analysis technique. The projected price of rice from the study in 2020 was put at N1290.75 per tonne of rice. Using the Ordinary least squares technique, Afeez (2019) examined the impact of rice production on economic growth in Nigeria. The study covered the period between 1999 and 2018. The results of the study showed that local rice production had positive and significant relationship with economic growth. This study builds on Afeez (2019), by increasing the explanatory variables as well as the time span. Adedeji, Jayeola and Owolabi (2016) investigated the growth trends of rice productivity in Nigeria. The study used the Data Envelop Analysis (DEA) and attempted to identify the impact of economic reforms on efficiency in the productivity of rice at the different regions in Nigeria. The outcome of the study suggested a negative growth impact during the reform period in Nigeria as whole but increased total factor productivity in some ecological zones. The study covered 1995 to 2010. Ajala and Gana (2015) did an analysis of challenges facing rice processing in Nigeria. The study noted that rice is economically important to developing countries. The study also noted that there is growing demand for the product across the globe.

### **Methodology**

This section of the work presented an empirical framework for data analysis of this study, which includes the model specification, scope of the data set and method of data analysis. In sum, Time series data of rice production, rice import and exchange rate from 1986-2018 were used as the explanatory variables, while the



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real gross domestic product as proxy for economic development for the same period was used as the dependent variable. The time series data were obtained from Central Bank of Nigeria Statistical Bulletin (2018). The data set covers thirty-three year period

**Model Specification**

The model for this study is deduced from capacity theory and modelled after Nkoro & Otto (2018) and Afeez (2019). Rice consumption in Nigeria is simply Nigerian produced rice and imported rice. A key influencing factor is exchange rate of the naira. From the foregoing the model for this paper is built as follows:

$$RGDP = f (RPN, RIM, EXR) \dots\dots\dots 1$$

Where:

RGDP= Real gross domestic product

RPN = Rice production in Nigeria

RIN= Rice Importation in Nigeria

Equation (1) can be reproduced in a linear function as follows

$$RGDP= \beta_0 + \beta_1 RPN + \beta_2 RIM + \beta_3 EXR + U_t \dots\dots\dots 2$$

While the Log-Linear model adopted for this study in other to unify the data is given below:

$$LOGRGDP= \beta_0 + \beta_1 LOGRPN + \beta_2 LOGRIM + \beta_3 LOGEXR + U_t$$

Where

$\beta_0$  =Intercept

$U_t$  + Stochastic variable

$\beta_1 - \beta_3$  = coefficient estimates of the independent variables

The Theoretical assertions underlying the relationship between the variables in the model are as stated below.  $\beta_1 > 0$ ,  $\beta_2$  and  $\beta_3 < 0$

**Results and Discussion**

**Table 1. Descriptive Statistics**

	RGDP	RPN	RIM	EXR
Mean	36646129	2281.485	1366.818	101.9097
Median	28957710	1979.000	1448.000	118.5400
Maximum	69799942	3941.000	3200.000	306.0800
Minimum	15237987	630.0000	164.0000	3.760000
Std. Dev.	19449574	850.8508	900.6854	85.89983
Skewness	0.568655	0.587722	0.238456	0.664939
Kurtosis	1.764113	2.546979	1.877726	2.906650
Jarque-Bera Probability	3.878723 0.143796	2.181982 0.335884	2.044546 0.359776	2.443773 0.294674
Sum	1.21E+09	75289.00	45105.00	3363.020
Sum Sq. Dev.	1.21E+16	23166306	25959493	236121.0
Observations	33	33	33	33

A probe into the descriptive statistics of the time series data show the mean values of 36646129, 2281.485, 1366.818 and 101.9097 for the variables. The median values of the variables are 28957710, 1979.00, 1448.000 and 118.5400 for RGDP, RPN, RIM and EXR respectively. The range of the individual variables following the above order, which is simply define by the difference between the maximum and the minimum values are 54561755, 3311, 3036 and 302.32. In measuring the skewness of the variables, the result shows that the four variables are normally skewed. An evaluation of the series kurtosis, which explores the flatness or peakness of the data set, portrays that EXR and RPN most of the values of the individual variables lay around their mean values. Comparably, most of the series of RGDP and RIM fall below the mean value and are said to have a flat curve implying that the series is platycurtic. Finally, the Jarque-Bera statistics and their individual probability values depicts that the model data set are normally distributed.

**OLS Regression Test Result**

The OLS regression test result is presented below.



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$$\text{LOGRGDP} = 9.928931 + 0.6969445\text{LOGRPN} + 0.273829\text{LOGRIM} + 0.029198\text{LOGEXR}$$

$$\text{P-Values} = 0.0000; 0.0000; 0.0008; 0.6217$$

$$R^2 = 0.906681; \text{F-Stat} = 93.92121; \text{Prob (F-Stat)} = 0.000000$$

The OLS result above indicates that the coefficient of determination ( $R^2$ ) of the model is 0.906 implying that the natural logarithm of the model variables; rice production in Nigeria (RPN), rice importation (RIM) and Exchange rate (EXR) jointly accounts for over 90% of the overall variations in the annual growth of the real GDP of Nigeria and the error term account for the remainder of about 9% of other variables not inputted into the model. A further review of the result of the estimated parameters to validate the significant of the coefficient of the individual variables whether they aligned with their a-priori and statistical assertions shows that the estimated coefficient of the LOGRPN is both a-priori and statistically significant at 5% probability level, indicating that 1% change in rice production in Nigeria will elicit about 61% change in the Real GDP of Nigeria. However, the coefficient of the LOGRIM is rather not theoretically significant but is statistically significant. Finally, the estimated coefficient of the LOGEXR is neither statistically nor theoretically significant. The model F-Statistic of 93.92121 with the corresponding P-value of 0.000000 portrays that the overall model is systematically well fitted and specified.

### Unit Root Test.

This study adopted the Augmented Dickey-Fuller test in evaluating the stationarity of the model variables given that time series variables are non-stable in nature.

The result of the unit root test above indicates that all the variables in the model were non-stationary at levels however they became at stationary at first difference, when their critical values became greater than the ADF- statistics at 5% probability level. Therefore, the study went on to evaluate the long-run relationship among the model variables deploying the Johansen cointegration test.



**Table 1. Result of Unit Root Test**

Variables	Level			First Difference			
	Critical-V	ADF-Stat	P-value	Critical -V	ADF-Stat	p-Value	Order
LOGRGPD	-2.960411	-0.691648	0.8345	-2.960411	-3.158482	0.0325*	I(1)
LOGRPN	-2.960411	-1.765488	0.3899	-2.960411	-9.798263	0.0000*	I(1)
LOGRIM	-2.957110	-1.014697	0.7360	-2.960411	-4.497341	0.0012*	I(1)
LOGEXR	-2.957110	-1.672568	0.4351	-2.960411	-5.316318	0.0001*	I(1)

\*indicate 5% prob Level

### Johansen Cointegration Test

Following justification by ADF-Fuller unit root test that the variables in the model are all integrated of order one, thus, the need to assess the long-run relationship among the variables is expected.

Empirical evidence from the Johansen cointegration test results in table 2 above as encapsulated by Trace statistics and their corresponding P-Values indicate that there are at least three (3) cointegrating equations at 5% probability level. Similarly, the Max-Eigen Statistics and their P-Values clearly corroborate and unequivocally aligned with that. Indeed there are at least three (3) cointegrating equations among the variables in the model. The justification by both Trace statistics and Max-Eigen Statistics show that there are at least three cointegrating equations among the variables is an overt verification that the short run divergences among the variables are incidentally converged in the long run. In other words, there is an association, relationship and equilibrium in the long run between the variables in the model. Having validated the long run relationship among the variables, the Vector Error Correction Model was employed to explore the short and the long run dynamics of the model.



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**Table 2. Result of Johansen Cointegration Test**

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.758847	87.19296	47.85613	0.0000
At most 1 *	0.549397	43.10087	29.79707	0.0009
At most 2 *	0.413215	18.38863	15.49471	0.0178
At most 3	0.058315	1.862635	3.841466	0.1723

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.758847	44.09209	27.58434	0.0002
At most 1 *	0.549397	24.71224	21.13162	0.0150
At most 2 *	0.413215	16.52600	14.26460	0.0216
At most 3	0.058315	1.862635	3.841466	0.1723

**Result of Vector Error Correction Model Test (ECM)**

A critical appraisal of VECM test result of the study show an  $R^2$  of 0.716435; meaning that about 72% of the total variation in the GDP of Nigeria is accredited to RPN, RIM and EXR. And 29% of the remainder is explained by other factors not included in the model but have been accounted for by the error term. Furthermore, the VECM test result infers an error correction term (ECT) of -0.035753; which attest that there is a long run causality running from the independent variables to the GDP, although the causality is however not statistically significant. More importantly, the ECT indicates that the short run disequilibrium in the model is corrected by an annually adjustment speed of 3.6% in the long run, thereby necessitating equilibrium in the long run. And the Durbin-Watson statistics of 2.020828 prove that the entire model is free from autocorrelation problem.



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### Conclusion and Recommendations

This study assessed the effect of rice production on economic development using the real domestic product as proxy in Nigeria. The data covered the period 1986-2018. To establish the empirical nexus between rice production and economic development in Nigeria, the work used the following econometrics tools of data analysis: OLS, Unit root test, Johansen co integration and Vector Error Correction Model (VECM). The findings of the study prove that there is a significant link between rice production and economic development in Nigeria. In addition, the OLS result established that the relationship between rice import and economic development in Nigeria is statistically significant but did not align with economic theory. The unit root test results justifies that all the model variables were non-stable at levels but gained stationarity after first difference. The Johansen co integration test empirically established that there is a long run convergence between the variables in the model. However, the VECM result attested that the model variables are jointly instrumental in eliciting long-run equilibrium. From the foregoing, the government should support the mechanization of rice production in Nigeria, through policies that support the ease of access to capital equipment, pesticides and improved seedlings needed by rice farmers to increase production. Government should also encourage and persuade financial institutions to provide credit facilities to rice farmers.

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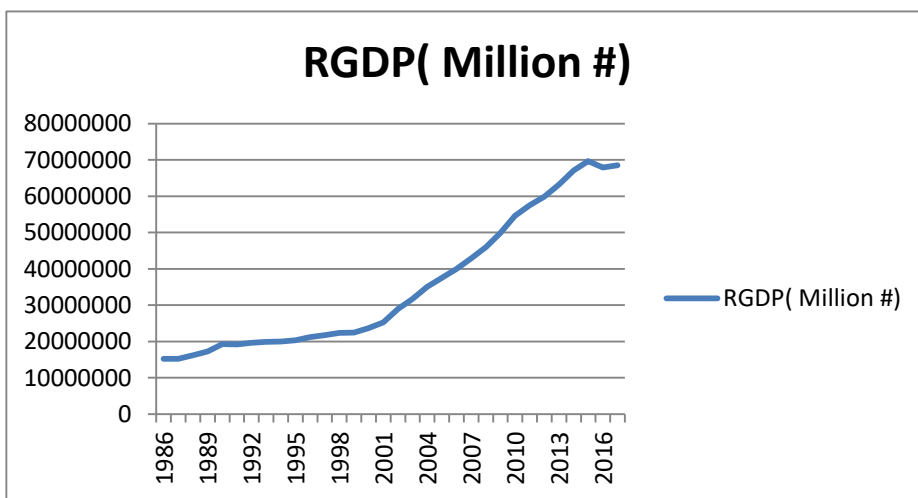
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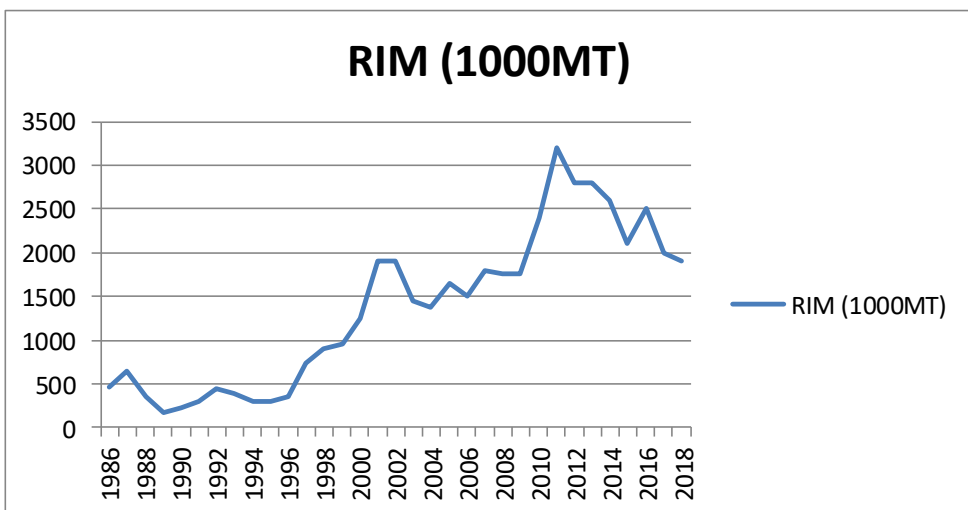
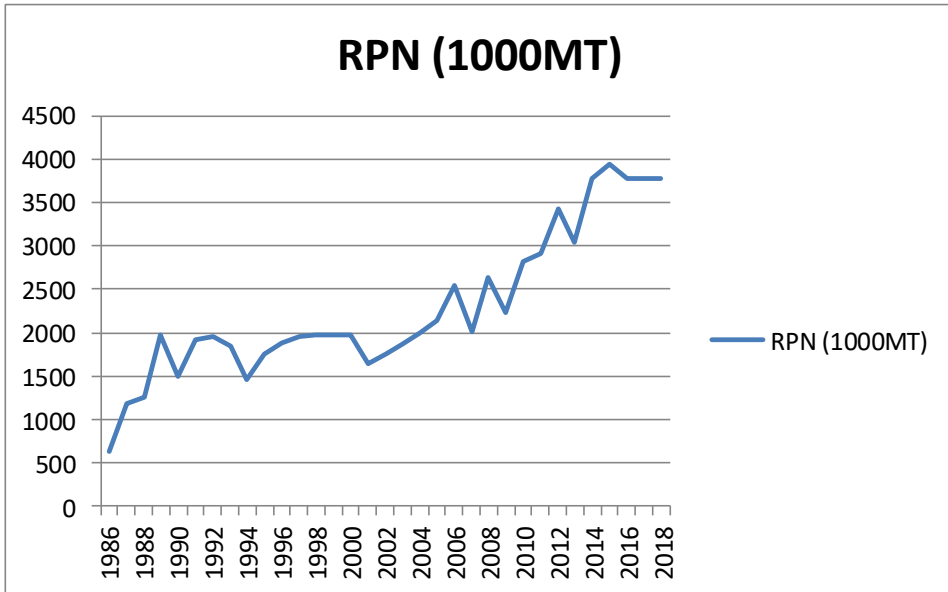
## APPENDICES

year	RGDP( Million #)	RPN (1000MT)	RIM (1000MT)	EXR (N;USD)
1986	15237987.29	630	462	3.76
1987	15263929.11	1184	642	4.08
1988	16215370.93	1249	344	4.59
1989	17294675.94	1982	164	7.39
1990	19305633.16	1500	224	8.04
1991	19199060.32	1911	296	9.91
1992	19620190.34	1956	440	17.29
1993	19927993.25	1839	382	22.06
1994	19979123.44	1456	300	21.99
1995	20353202.25	1752	300	21.89
1996	21177920.91	1873	350	21.88
1997	21789097.84	1961	731	21.88
1998	22332866.9	1965	900	21.88
1999	22449409.72	1966	950	92.33
2000	23688280.33	1979	1250	101.69
2001	25267542.02	1651	1906	111.23
2002	28957710.24	1757	1897	120.57
2003	31709447.39	1870	1448	129.22
2004	35020549.16	2000	1369	132.88
2005	37474949.16	2140	1650	131.27
2006	39995504.55	2546	1500	128.65
2007	42922407.93	2008	1800	125.8
2008	46012515.31	2632	1750	118.54
2009	49856099.08	2234	1750	148.9
2010	54612264.18	2818	2400	150.29
2011	57511041.77	2906	3200	153.86

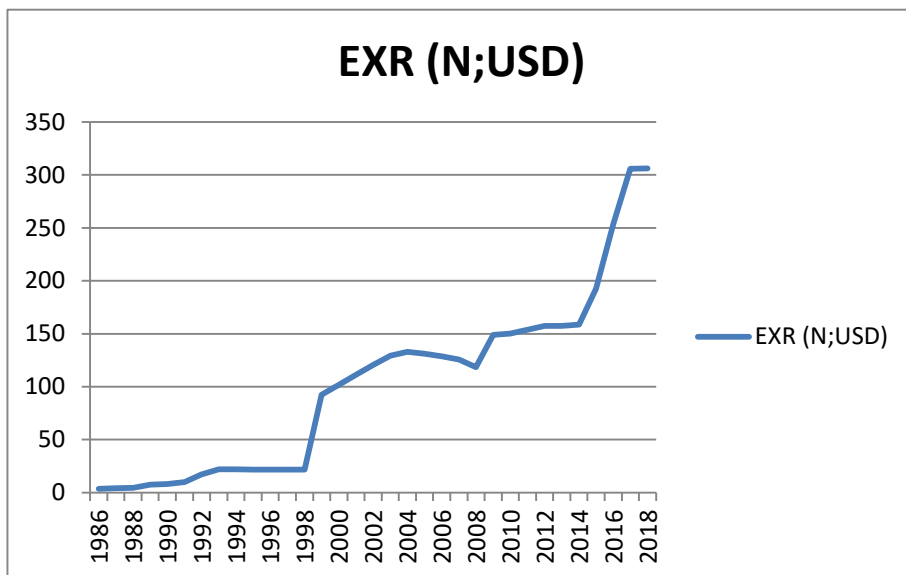
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2012	59929893.04	3423	2800	157.49
2013	63218721.73	3038	2800	157.31
2014	67152785.84	3782	2600	158.55
2015	69623929.94	3941	2100	192.44
2016	67931235.93	3780	2500	253.49
2017	68490980.34	3780	2000	305.79
2018	69799941.95	3780	1900	306.08





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## Descriptive Statistics

	RGDP	RPN	RIM	EXR
Mean	36646129	2281.485	1366.818	101.9097
Median	28957710	1979.000	1448.000	118.5400
Maximum	69799942	3941.000	3200.000	306.0800
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Std. Dev.	19449574	850.8508	900.6854	85.89983
Skewness	0.568655	0.587722	0.238456	0.664939
Kurtosis	1.764113	2.546979	1.877726	2.906650
Jarque-Bera Probability	3.878723 0.143796	2.181982 0.335884	2.044546 0.359776	2.443773 0.294674
Sum	1.21E+09	75289.00	45105.00	3363.020
Sum Sq. Dev.	1.21E+16	23166306	25959493	236121.0
Observations	33	33	33	33





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**Dependent Variable: LOGRGDP**

**Method: Least Squares**

Date: 04/17/20 Time: 08:58

Sample: 1986 2018

Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.928931	0.975382	10.17953	0.0000
LOGRPN	0.696945	0.127212	5.478596	0.0000
LOGRIM	0.273829	0.073281	3.736720	0.0008
LOGEXR	0.029198	0.058542	0.498742	0.6217
R-squared	0.906681	Mean dependent var		17.28051
Adjusted R-squared	0.897028	S.D. dependent var		0.529360
S.E. of regression	0.169868	Akaike info criterion		-0.594382
Sum squared resid	0.836796	Schwarz criterion		-0.412987
Log likelihood	13.80730	Hannan-Quinn criter.		-0.533348
F-statistic	93.92121	Durbin-Watson stat		0.899683
Prob(F-statistic)	0.000000			



## Issue 2/2021

### Null Hypothesis: LOGRGDP has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.691648	0.8345
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

\*MacKinnon (1996) one-sided p-values.

### Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LOGRGDP)

Method: Least Squares

Date: 04/12/20 Time: 11:39

Sample (adjusted): 1988 2018

Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGRGDP(-1)	-0.008013	0.011585	-0.691648	0.4949
D(LOGRGDP(-1))	0.519212	0.159612	3.252971	0.0030
C	0.162324	0.199404	0.814048	0.4225
R-squared	0.275612	Mean dependent var		0.049037
Adjusted R-squared	0.223870	S.D. dependent var		0.036430
S.E. of regression	0.032094	Akaike info criterion		-3.948532
Sum squared resid	0.028841	Schwarz criterion		-3.809759
Log likelihood	64.20224	Hannan-Quinn criter.		-3.903295
F-statistic	5.326665	Durbin-Watson stat		2.026173
Prob(F-statistic)	0.010955			



Issue 2/2021

**Null Hypothesis: D(LOGRGDP) has a unit root**

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.158482	0.0325
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LOGRGDP,2)

Method: Least Squares

Date: 04/12/20 Time: 11:40

Sample (adjusted): 1988 2018

Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGRGDP(-1))	-0.495263	0.156804	-3.158482	0.0037
C	0.024567	0.009509	2.583537	0.0151
R-squared	0.255953	Mean dependent var		0.000556
Adjusted R-squared	0.230296	S.D. dependent var		0.036251
S.E. of regression	0.031804	Akaike info criterion		-3.996107
Sum squared resid	0.029333	Schwarz criterion		-3.903592
Log likelihood	63.93966	Hannan-Quinn criter.		-3.965949
F-statistic	9.976011	Durbin-Watson stat		1.976619
Prob(F-statistic)	0.003689			



## Issue 2/2021

### Null Hypothesis: LOGRPN has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.765488	0.3899
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

\*MacKinnon (1996) one-sided p-values.

### Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LOGRPN)

Method: Least Squares

Date: 04/12/20 Time: 11:41

Sample (adjusted): 1988 2018

Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGRPN(-1)	-0.143492	0.081276	-1.765488	0.0884
D(LOGRPN(-1))	-0.367514	0.134801	-2.726351	0.0109
C	1.161143	0.625005	1.857813	0.0737
R-squared	0.274169	Mean dependent var		0.037446
Adjusted R-squared	0.222324	S.D. dependent var		0.162513
S.E. of regression	0.143314	Akaike info criterion		-0.955797
Sum squared resid	0.575086	Schwarz criterion		-0.817024
Log likelihood	17.81485	Hannan-Quinn criter.		-0.910560
F-statistic	5.288232	Durbin-Watson stat		1.833336
Prob(F-statistic)	0.011264			



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**Null Hypothesis: D(LOGRPN) has a unit root**

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-9.798263	0.0000
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LOGRPN,2)

Method: Least Squares

Date: 04/12/20 Time: 11:42

Sample (adjusted): 1988 2018

Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGRPN(-1))	-1.368168	0.139634	-9.798263	0.0000
C	0.058726	0.027858	2.108070	0.0438
R-squared	0.768011	Mean dependent var		-0.020353
Adjusted R-squared	0.760011	S.D. dependent var		0.303034
S.E. of regression	0.148452	Akaike info criterion		-0.914765
Sum squared resid	0.639105	Schwarz criterion		-0.822250
Log likelihood	16.17886	Hannan-Quinn criter.		-0.884607
F-statistic	96.00596	Durbin-Watson stat		1.972192
Prob(F-statistic)	0.000000			



**Issue 2/2021**

**Null Hypothesis: LOGRIM has a unit root**

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.014697	0.7360
Test critical values:		
1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LOGRIM)

Method: Least Squares

Date: 04/17/20 Time: 09:04

Sample (adjusted): 1987 2018

Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGRIM(-1)	-0.061446	0.060556	-1.014697	0.3184
C	0.468062	0.421033	1.111698	0.2751
R-squared	0.033182	Mean dependent var		0.044189
Adjusted R-squared	0.000954	S.D. dependent var		0.297746
S.E. of regression	0.297604	Akaike info criterion		0.474356
Sum squared resid	2.657046	Schwarz criterion		0.565965
Log likelihood	-5.589700	Hannan-Quinn criter.		0.504722
F-statistic	1.029610	Durbin-Watson stat		1.540244
Prob(F-statistic)	0.318364			



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**Null Hypothesis: D(LOGRIM) has a unit root**

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.497341	0.0012
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LOGRIM,2)

Method: Least Squares

Date: 04/17/20 Time: 09:05

Sample (adjusted): 1988 2018

Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGRIM(-1))	-0.807960	0.179653	-4.497341	0.0001
C	0.025923	0.054070	0.479434	0.6352
R-squared	0.410881	Mean dependent var		-0.012268
Adjusted R-squared	0.390567	S.D. dependent var		0.380849
S.E. of regression	0.297315	Akaike info criterion		0.474289
Sum squared resid	2.563483	Schwarz criterion		0.566804
Log likelihood	-5.351478	Hannan-Quinn criter.		0.504447
F-statistic	20.22607	Durbin-Watson stat		1.507778
Prob(F-statistic)	0.000102			





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### Null Hypothesis: LOGEXR has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.672568	0.4351
Test critical values:		
1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

\*MacKinnon (1996) one-sided p-values.

### Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LOGEXR)

Method: Least Squares

Date: 04/17/20 Time: 09:06

Sample (adjusted): 1987 2018

Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGEXR(-1)	-0.059901	0.035814	-1.672568	0.1048
C	0.374298	0.149354	2.506106	0.0179
R-squared	0.085296	Mean dependent var		0.137482
Adjusted R-squared	0.054806	S.D. dependent var		0.276583
S.E. of regression	0.268897	Akaike info criterion		0.271487
Sum squared resid	2.169173	Schwarz criterion		0.363096
Log likelihood	-2.343794	Hannan-Quinn criter.		0.301853
F-statistic	2.797485	Durbin-Watson stat		2.031313
Prob(F-statistic)	0.104811			



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**Null Hypothesis: D(LOGEXR) has a unit root**

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.316318	0.0001
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LOGEXR,2)

Method: Least Squares

Date: 04/17/20 Time: 09:06

Sample (adjusted): 1988 2018

Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGEXR(-1))	-0.990529	0.186319	-5.316318	0.0000
C	0.137938	0.057732	2.389309	0.0236
R-squared	0.493567	Mean dependent var		-0.002604
Adjusted R-squared	0.476104	S.D. dependent var		0.394795
S.E. of regression	0.285755	Akaike info criterion		0.394977
Sum squared resid	2.368022	Schwarz criterion		0.487492
Log likelihood	-4.122144	Hannan-Quinn criter.		0.425135
F-statistic	28.26324	Durbin-Watson stat		1.991403
Prob(F-statistic)	0.000011			

## Issue 2/2021

### Johansen Cointegration Test Result

Date: 04/17/20 Time: 09:09

Sample (adjusted): 1988 2018

Included observations: 31 after adjustments

Trend assumption: Linear deterministic trend

Series: LOGRGDP LOGRPN LOGRIM LOGEXR

Lags interval (in first differences): 1 to 1

#### Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.758847	87.19296	47.85613	0.0000
At most 1 *	0.549397	43.10087	29.79707	0.0009
At most 2 *	0.413215	18.38863	15.49471	0.0178
At most 3	0.058315	1.862635	3.841466	0.1723

Trace test indicates 3 cointegratingeqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

#### Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.758847	44.09209	27.58434	0.0002
At most 1 *	0.549397	24.71224	21.13162	0.0150
At most 2 *	0.413215	16.52600	14.26460	0.0216
At most 3	0.058315	1.862635	3.841466	0.1723

Max-eigenvalue test indicates 3 cointegratingeqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'\*S11\*b=I):

LOGRGDP	LOGRPN	LOGRIM	LOGEXR
2.366469	-4.770845	1.989376	-1.264009
9.119961	-8.035232	-2.946044	0.203742
-0.995813	5.601407	1.209930	-2.029010
1.463379	0.687043	0.704379	-0.419271

Unrestricted Adjustment Coefficients (alpha):

D(LOGRGDP)	0.009397	-0.005603	-0.015647	-0.002053
D(LOGRPN)	0.091250	0.061389	0.015249	-0.008163
D(LOGRIM)	-0.202987	0.037669	-0.022186	-0.034890
D(LOGEXR)	0.041144	-0.095803	0.123088	-0.031851

1 Cointegrating Equation(s):                      Log likelihood                      101.1846

Normalized cointegrating coefficients (standard error in parentheses)

LOGRGDP	LOGRPN	LOGRIM	LOGEXR
1.000000	-2.016018	0.840651	-0.534133
	(0.27248)	(0.14427)	(0.11603)

Adjustment coefficients (standard error in parentheses)

D(LOGRGDP)	0.022237
	(0.01296)
D(LOGRPN)	0.215941
	(0.05011)
D(LOGRIM)	-0.480363
	(0.09195)
D(LOGEXR)	0.097365
	(0.12638)

2 Cointegrating Equation(s):                      Log likelihood                      113.5407

Normalized cointegrating coefficients (standard error in parentheses)

LOGRGDP	LOGRPN	LOGRIM	LOGEXR
1.000000	0.000000	-1.226392	0.454326
		(0.15476)	(0.10764)

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0.000000	1.000000	-1.025310 (0.13770)	0.490303 (0.09578)
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Adjustment coefficients (standard error in parentheses)

D(LOGRGDP)	-0.028862 (0.05052)	0.000192 (0.05010)
D(LOGRPN)	0.775806 (0.16257)	-0.928615 (0.16123)
D(LOGRIM)	-0.136825 (0.35914)	0.665743 (0.35620)
D(LOGEXR)	-0.776357 (0.46969)	0.573512 (0.46585)

3 Cointegrating Equation(s):	Log likelihood	121.8037
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Normalized cointegrating coefficients (standard error in parentheses)

LOGRGDP	LOGRPN	LOGRIM	LOGEXR
1.000000	0.000000	0.000000	-0.470620 (0.04690)
0.000000	1.000000	0.000000	-0.282988 (0.03667)
0.000000	0.000000	1.000000	-0.754201 (0.04645)

Adjustment coefficients (standard error in parentheses)

D(LOGRGDP)	-0.013281 (0.04125)	-0.087455 (0.04743)	0.016268 (0.01635)
D(LOGRPN)	0.760622 (0.16090)	-0.843201 (0.18502)	0.019126 (0.06377)
D(LOGRIM)	-0.114732 (0.35869)	0.541472 (0.41247)	-0.541635 (0.14216)
D(LOGEXR)	-0.898930 (0.41070)	1.262979 (0.47228)	0.513019 (0.16278)

Vector Error Correction Estimates

Date: 04/17/20 Time: 09:11

Sample (adjusted): 1989 2018  
 Included observations: 30 after adjustments  
 Standard errors in ( ) & t-statistics in [ ]

CointegratingEq:	CointEq1	CointEq2	CointEq3	
LOGRGDP(-1)	1.000000	0.000000	0.000000	
LOGRPN(-1)	0.000000	1.000000	0.000000	
LOGRIM(-1)	0.000000	0.000000	1.000000	
LOGEXR(-1)	-0.476898 (0.05532) [-8.61999]	-0.283695 (0.03745) [-7.57603]	-0.797996 (0.05304) [-15.0442]	
C	-15.33618	-6.532738	-3.645619	
Error Correction:	D(LOGRGDP)	D(LOGRPN)	D(LOGRIM)	D(LOGEXR)
CointEq1	-0.035753 (0.06529) [-0.54759]	0.871644 (0.24000) [ 3.63178]	-0.297148 (0.65377) [-0.45452]	-0.610408 (0.67436) [-0.90516]
CointEq2	-0.119239 (0.07685) [-1.55154]	-1.214745 (0.28251) [-4.29990]	0.673133 (0.76954) [ 0.87472]	1.111716 (0.79378) [ 1.40054]
CointEq3	0.061121 (0.02723) [ 2.24462]	0.125865 (0.10010) [ 1.25744]	-0.451070 (0.27266) [-1.65433]	0.499313 (0.28125) [ 1.77534]
D(LOGRGDP(-1))	0.010119 (0.22285) [ 0.04541]	-1.331968 (0.81918) [-1.62598]	1.549203 (2.23142) [ 0.69427]	0.219214 (2.30172) [ 0.09524]
D(LOGRGDP(-2))	-0.069507 (0.17145) [-0.40541]	-0.705135 (0.63024) [-1.11884]	0.938891 (1.71675) [ 0.54690]	1.218483 (1.77083) [ 0.68809]

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D(LOGRPN(-1))	0.100211 (0.05808) [ 1.72534]	0.015687 (0.21351) [ 0.07347]	0.262017 (0.58159) [ 0.45052]	-0.829845 (0.59991) [-1.38328]
D(LOGRPN(-2))	-0.011689 (0.03867) [-0.30226]	0.059423 (0.14215) [ 0.41802]	0.183620 (0.38722) [ 0.47420]	-0.359656 (0.39942) [-0.90044]
D(LOGRIM(-1))	-0.032372 (0.02196) [-1.47442]	0.070358 (0.08071) [ 0.87174]	0.467866 (0.21985) [ 2.12810]	-0.258995 (0.22678) [-1.14207]
D(LOGRIM(-2))	-0.050654 (0.02580) [-1.96331]	-0.119059 (0.09484) [-1.25535]	-0.088455 (0.25835) [-0.34239]	0.196675 (0.26649) [ 0.73803]
D(LOGEXR(-1))	0.006957 (0.02209) [ 0.31491]	0.108230 (0.08121) [ 1.33274]	0.004061 (0.22121) [ 0.01836]	0.009721 (0.22818) [ 0.04260]
D(LOGEXR(-2))	-0.013814 (0.02070) [-0.66728]	-0.055483 (0.07610) [-0.72907]	0.017233 (0.20730) [ 0.08313]	-0.019459 (0.21383) [-0.09100]
C	0.053448 (0.01467) [ 3.64458]	0.130791 (0.05391) [ 2.42618]	-0.104187 (0.14685) [-0.70950]	0.121984 (0.15147) [ 0.80533]
R-squared	0.716435	0.808044	0.490868	0.493051
Adj. R-squared	0.543145	0.690737	0.179731	0.183249
Sum sq. resids	0.011252	0.152039	1.128137	1.200330
S.E. equation	0.025002	0.091905	0.250348	0.258234
F-statistic	4.134321	6.888313	1.577661	1.591505
Log likelihood	75.75859	36.70410	6.641287	5.710855
Akaike AIC	-4.250573	-1.646940	0.357248	0.419276
Schwarz SC	-3.690094	-1.086461	0.917726	0.979755
Mean dependent	0.048656	0.036913	0.056966	0.139999
S.D. dependent	0.036990	0.165264	0.276418	0.285739





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Determinant resid covariance (dof adj.)	1.42E-08
Determinant resid covariance	1.84E-09
Log likelihood	131.4088
Akaike information criterion	-4.760586
Schwarz criterion	-1.958192

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System: UNTITLED

Estimation Method: Least Squares

Date: 04/17/20 Time: 09:12

Sample: 1989 2018

Included observations: 30

Total system (balanced) observations 120

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	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.035753	0.065290	-0.547594	0.5857
C(2)	-0.119239	0.076852	-1.551544	0.1252
C(3)	0.061121	0.027230	2.244620	0.0279
C(4)	0.010119	0.222847	0.045410	0.9639
C(5)	-0.069507	0.171448	-0.405410	0.6864
C(6)	0.100211	0.058082	1.725337	0.0888
C(7)	-0.011689	0.038671	-0.302261	0.7633
C(8)	-0.032372	0.021956	-1.474420	0.1447
C(9)	-0.050654	0.025801	-1.963309	0.0535
C(10)	0.006957	0.022092	0.314911	0.7537
C(11)	-0.013814	0.020702	-0.667284	0.5067
C(12)	0.053448	0.014665	3.644584	0.0005
C(13)	0.871644	0.240005	3.631776	0.0005
C(14)	-1.214745	0.282505	-4.299903	0.0001
C(15)	0.125865	0.100096	1.257440	0.2127
C(16)	-1.331968	0.819178	-1.625981	0.1083
C(17)	-0.705135	0.630237	-1.118841	0.2669
C(18)	0.015687	0.213507	0.073471	0.9416
C(19)	0.059423	0.142154	0.418020	0.6772
C(20)	0.070358	0.080709	0.871744	0.3862
C(21)	-0.119059	0.094842	-1.255347	0.2134

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C(22)	0.108230	0.081209	1.332743	0.1868
C(23)	-0.055483	0.076101	-0.729071	0.4683
C(24)	0.130791	0.053908	2.426178	0.0178
C(25)	-0.297148	0.653768	-0.454516	0.6508
C(26)	0.673133	0.769538	0.874723	0.3846
C(27)	-0.451070	0.272660	-1.654331	0.1024
C(28)	1.549203	2.231425	0.694267	0.4897
C(29)	0.938891	1.716752	0.546900	0.5861
C(30)	0.262017	0.581590	0.450518	0.6537
C(31)	0.183620	0.387223	0.474196	0.6368
C(32)	0.467866	0.219851	2.128103	0.0368
C(33)	-0.088455	0.258347	-0.342389	0.7331
C(34)	0.004061	0.221211	0.018359	0.9854
C(35)	0.017233	0.207298	0.083133	0.9340
C(36)	-0.104187	0.146845	-0.709505	0.4803
C(37)	-0.610408	0.674362	-0.905163	0.3684
C(38)	1.111716	0.793779	1.400536	0.1656
C(39)	0.499313	0.281249	1.775341	0.0801
C(40)	0.219214	2.301715	0.095239	0.9244
C(41)	1.218483	1.770830	0.688086	0.4936
C(42)	-0.829845	0.599910	-1.383282	0.1709
C(43)	-0.359656	0.399421	-0.900442	0.3709
C(44)	-0.258995	0.226776	-1.142074	0.2572
C(45)	0.196675	0.266485	0.738035	0.4629
C(46)	0.009721	0.228179	0.042602	0.9661
C(47)	-0.019459	0.213828	-0.091001	0.9277
C(48)	0.121984	0.151471	0.805330	0.4233

Determinant residual covariance

1.84E-09

Equation:  $D(\text{LOGRGDP}) = C(1) * (\text{LOGRGDP}(-1) - 0.476897780174$

$*\text{LOGEXR}(-1) - 15.336176739) + C(2) * (\text{LOGRPN}(-1) -$

$0.283694509108 * \text{LOGEXR}(-1) - 6.53273767835) + C(3) * (\text{LOGRIM}(-1)$

$- 0.797995566772 * \text{LOGEXR}(-1) - 3.64561858053) + C(4)$

$*D(\text{LOGRGDP}(-1)) + C(5) * D(\text{LOGRGDP}(-2)) + C(6) * D(\text{LOGRPN}(-1)) +$

$C(7) * D(\text{LOGRPN}(-2)) + C(8) * D(\text{LOGRIM}(-1)) + C(9) * D(\text{LOGRIM}(-2)) +$

$C(10) * D(\text{LOGEXR}(-1)) + C(11) * D(\text{LOGEXR}(-2)) + C(12)$

Observations: 30

R-squared	0.716435	Mean dependent var	0.048656
Adjusted R-squared	0.543145	S.D. dependent var	0.036990
S.E. of regression	0.025002	Sum squared resid	0.011252
Durbin-Watson stat	2.020828		

Equation:  $D(\text{LOGRPN}) = C(13) * (\text{LOGRGDP}(-1) - 0.476897780174 * \text{LOGEXR}(-1) - 15.336176739) + C(14) * (\text{LOGRPN}(-1) - 0.283694509108 * \text{LOGEXR}(-1) - 6.53273767835) + C(15) * (\text{LOGRIM}(-1) - 0.797995566772 * \text{LOGEXR}(-1) - 3.64561858053) + C(16) * D(\text{LOGRGDP}(-1)) + C(17) * D(\text{LOGRGDP}(-2)) + C(18) * D(\text{LOGRPN}(-1)) + C(19) * D(\text{LOGRPN}(-2)) + C(20) * D(\text{LOGRIM}(-1)) + C(21) * D(\text{LOGRIM}(-2)) + C(22) * D(\text{LOGEXR}(-1)) + C(23) * D(\text{LOGEXR}(-2)) + C(24)$

Observations: 30

R-squared	0.808044	Mean dependent var	0.036913
Adjusted R-squared	0.690737	S.D. dependent var	0.165264
S.E. of regression	0.091905	Sum squared resid	0.152039
Durbin-Watson stat	1.764092		

Equation:  $D(\text{LOGRIM}) = C(25) * (\text{LOGRGDP}(-1) - 0.476897780174 * \text{LOGEXR}(-1) - 15.336176739) + C(26) * (\text{LOGRPN}(-1) - 0.283694509108 * \text{LOGEXR}(-1) - 6.53273767835) + C(27) * (\text{LOGRIM}(-1) - 0.797995566772 * \text{LOGEXR}(-1) - 3.64561858053) + C(28) * D(\text{LOGRGDP}(-1)) + C(29) * D(\text{LOGRGDP}(-2)) + C(30) * D(\text{LOGRPN}(-1)) + C(31) * D(\text{LOGRPN}(-2)) + C(32) * D(\text{LOGRIM}(-1)) + C(33) * D(\text{LOGRIM}(-2)) + C(34) * D(\text{LOGEXR}(-1)) + C(35) * D(\text{LOGEXR}(-2)) + C(36)$

Observations: 30

R-squared	0.490868	Mean dependent var	0.056966
Adjusted R-squared	0.179731	S.D. dependent var	0.276418
S.E. of regression	0.250348	Sum squared resid	1.128137
Durbin-Watson stat	1.891354		

Equation:  $D(\text{LOGEXR}) = C(37) * (\text{LOGRGDP}(-1) - 0.476897780174 * \text{LOGEXR}(-1) - 15.336176739) + C(38) * (\text{LOGRPN}(-1) - 0.283694509108 * \text{LOGEXR}(-1) - 6.53273767835) + C(39) * (\text{LOGRIM}(-1) - 0.797995566772 * \text{LOGEXR}(-1) - 3.64561858053) + C(40) * D(\text{LOGRGDP}(-1)) + C(41) * D(\text{LOGRGDP}(-2)) + C(42) * D(\text{LOGRPN}(-1)) + C(43) * D(\text{LOGRPN}(-2)) + C(44) * D(\text{LOGRIM}(-1)) + C(45) * D(\text{LOGRIM}(-2)) + C(46) * D(\text{LOGEXR}(-1)) + C(47) * D(\text{LOGEXR}(-2)) + C(48)$

Observations: 30



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R-squared	0.493051	Mean dependent var	0.139999
Adjusted R-squared	0.183249	S.D. dependent var	0.285739
S.E. of regression	0.258234	Sum squared resid	1.200330
Durbin-Watson stat	1.992362		

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## PECULIARITIES OF THE CONSUMPTION BEHAVIOUR ON THE REAL ESTATE MARKET IN ROMANIA IN THE CONTEXT OF THE COVID-19 PANDEMIC

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### Abstract

*For many of the developed or developing national economies, real estate markets are areas of activity capable of substantially contributing to the structural good functionality of that economy. Transactions carried out within real estate markets provide logistical support for the proper conduct of a multitude of production activities or services of economic operators, on various levels of the economy. From this point of view, any large-scale crisis that also affects real estate field is a major challenge for the proper revitalization of many sectors and for the re-entry into a normal phase of most trade within economy. The crisis caused by the COVID-19 pandemic is a very special crisis not only because of the world scale and large span, but also because of the many plans on which it acted, economically, socially, politically, biologically, etc. This article aims to delve into the picture of the evolution of the Romanian real estate market during the pandemic, providing the main coordinates of this development and assessments on the implications that these market trends have at both Romanian and European market levels.*

**Keywords:** *real estate market; customer behaviour; COVID-19.*



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**JEL Classification:** M31, R30, R31

### **Introduction**

An overview of the developments and transformations in the world's major real estate markets over the past 25 years gives us an interesting, if not complex and suggestive, picture for the overall development of specific activities mainly in the market economy. The importance of the proper functioning of the real estate market at the aggregate level of the national economy is obvious in the context of the current dynamics which implies a similar dynamic of successful real estate transactions designed to provide the natural framework for a multitude of other transactions between economic operators [Tanrıvermi, 2020]. Thus, the manifestation of a crisis which in one form or another affects the housing market mostly on a structural level, and not only on the surface, at conjunctural level, becomes a first-hand problem that must be examined, known and to the greatest extent predicted to be able to conceive a series of measures to mitigate the harmful effects of the crisis.

In the case of the COVID-19 pandemic, the pattern and specificity of the crisis produced is atypical as this kind of phenomenon has never been seen before in the recorded history of human civilization. We are not talking about the economic or biological effects, visible and extremely easy to detect by specialists, but we are talking about the psycho-social effects, which are harder to observe and measure with an appropriate scientific instrumentation, and which, on a deeper and subtle level, have affected to a large extent the very foundations and limits of our human nature, the typology and intimate structure of our relations with others and the values that define our lifestyle at some point. This category of effects also includes those that have affected consumer motivations, preferences and attitudes towards real estate products and services. Purchasing decision-making processes associated with homes or spaces in which we conduct our current activities are defining consumption models for our personality, for intimate mechanisms that govern the way we understand communication with others and even integration into society. Throughout the history of human civilization, architectural design, the principles of urbanism, the way people understood and developed the very concept of housing was an indicator of civilization and material and cultural progress.

The COVID-19 pandemic comes and questions today's urban solutions, the concrete way in which our homes express their functionality. Even the most



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modern, avant-garde and “green” residences have not been able to fully meet the requirements of strict isolation and biological hazard caused by the pandemic. Also, the way of organizing the housing space of the major metropolises is totally inadequate to insulate at home and ensure optimal flows of massive transport of food and medicines for all central areas [Pike, 2020].

This article explores the main transformations, challenges and ultimately trends that the real estate market, especially the Romanian market, experienced during the pandemic.

### **Brief literature review regarding real-estate marketing challenges under COVID-19 pandemic**

The effects of the pandemic crisis in the international real estate market are extremely nuanced due to specific local conditions. However, the specialists were able to individualize several stages after the start of the pandemic, each stage having specific effects. The first stage of the lock-down meant an effective blockage for most transactions, implicitly real estate ones. For some of the national or regional markets (including Romania), the following steps have resulted in a gradual “return” to the volume of transactions on the market, sometimes recording positive trends stable enough to “promise” a complete return to a not very distant future. The pandemic has requested the maximum urban management capacity of large cities, in the sense that their spatial configuration is not adequate to cope with changes due to COVID-19 [De Toro *et al.*, 2021]. The COVID-19 pandemic in general has forced a reformulation of urban studies in relation to several aspects, including, for example, those related to urban inequalities and mobility, the criticisms of which are inevitably brought to light with the state of health emergency.

A study in the UK highlights how COVID-19 has led to changes in housing demand. For example, the increased prevalence of work at home has led to an increasing emphasis on the comfort and quality of the indoor environment. Better thermal insulation, acoustic, visual insulation, comfort, indoor air quality and the use of natural light are some of the factors identified by the above study as buyers’ desires for improvement [De Toro *et al.*, 2021]. These elements will lead to greater investment in measures to improve house performance, such as temperature increase or acoustic insulation (which in turn would lead to a reduction in CO<sub>2</sub> emissions).

Global analyses show the efforts of governments in several countries trying to mitigate the negative effects of the crisis by adopting various measures, for





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example protection against dismissal for tenants, mortgage relief, rent freezes and even rent subsidies [JLL Research & Strategy, 2020; Balemi *et al.*, 2021].

Another trend to be highlighted concerns the important changes that have also arisen from the perspective of communication between real estate customers and industry providers. They relate to the special measures which have been adopted, on the one hand to comply with the specific legislation imposed by the authorities for periods of isolation and, on the other hand, to effectively protect the staff of the real estate agencies and their clients. Here we can list the use of working online tools such as Skype or Facetime platforms to perform live home tours, mixed with more intense online communication, virtual contract documentation and the use of electronic signatures [Jovanović-Milenković *et al.*, 2020]. Therefore, concrete efforts to “reallocate” the usual activities specific to traditional offline transactions in the online environment by “virtualizing” them can be remembered. Thus, various applications have been created that allow customers to search for real estate offers and update them in real time, platforms dedicated to the completion and transmission of electronic documents that are usually support for the completion of a real estate transaction – land registers, reports, land book, evaluations, etc. [Jovanović-Milenković *et al.*, 2020; Wisniewski, & Brzezicka, 2021].

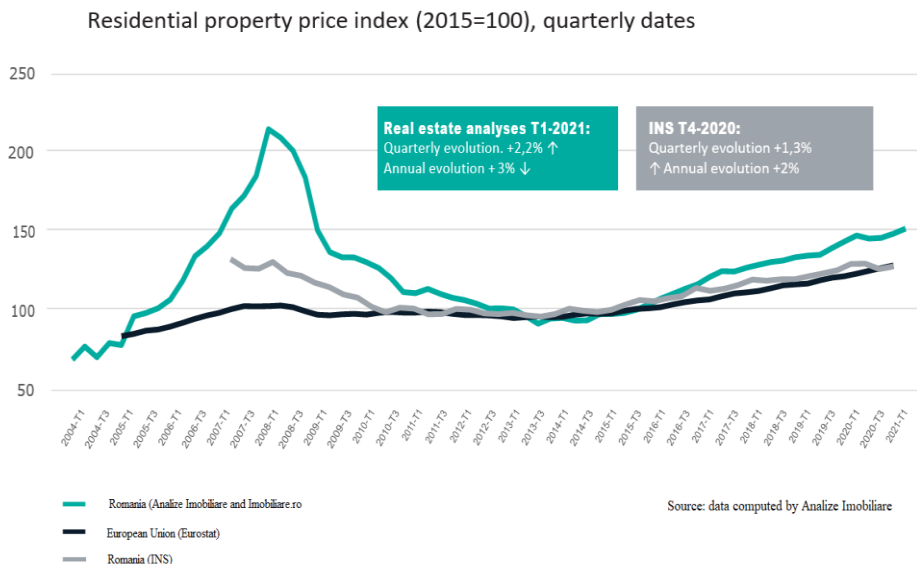
Another key dimension to highlighting developments related to the housing market because of the pandemic is the extent to which consumers of real estate services and products have access to the right financial products to become sources of financing necessary for the purchase of housing and/or land. From this perspective there is an important concern of financial-banking institutions for the identification of flexible solutions (deferral of credit rates, the practice of more attractive interest rates, financial education, etc.) and a greater emphasis placed during the pandemic period on actions and activities specific to social responsibility, in the interest of consumers and the community [Baicu *et al.*, 2020a; Lisi, 2019]. On the same level are also changes in the consumption behaviour of financial-banking products and the use mainly of mobile banking applications for various types of transactions performed by most real estate consumers [Baicu *et al.*, 2020b].

All these structural and behavioural changes related to the housing market, represent as many burdens as possible for the future, in an environment characterized by uncertainty and insecurity. However, at least for the domestic housing market, several trends indicate the existence of a real chance for the situation readjustment and supply/demand ratio recovery, which may provide some predictability of the

market in the medium and short term. These trends are investigated in the following sections of this paper.

**Specific trends and statistics on consumption within the real estate market in the context of the COVID-19 pandemic**

Real estate products and services belong to a category of goods which address specific needs and are thus the subject of special buying and consumption behaviour. In the context of the pandemic, consumer patterns have fundamentally changed, also affecting the structure of markets. As regards to the real estate market, it has also undergone substantial changes in most countries of the world, however no major negative effects are expected within the Romanian real estate sector.



**Figure 1. Residential Property Price Index (quarterly data)**

Source: <https://www.analizeimobiliare.ro/rapoarte/>

In the beginning of the crisis, the market was in a moment of cyclical expansion. The bottleneck of lucrative activities and the regulations specific to the states of



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emergency has caused a halt to this trend. Subsequently, the episodes of the crisis caused specific developments in this area, such as demand and the intention to buy housing, which initially decreased considerably, recovered with the second half of 2020, even reaching a higher level than in the same period of the previous year. For the case of Romania, there are specific factors that mitigated the initial negative effects – we can thus discuss the option given to most commercial banks that allowed borrowers to postpone payment of rates for a specified time. Also, the possibility of offering technical unemployment to employees, during the period of restrictions mattered in the case of companies that were in the specific situation of bankruptcy.

Overall, in a comparative analysis with data relating to the European Union, the real estate market in terms of the price index shows for the period 2004 to 2021 an upward trend with a peak in the case of Romania during 2007 – 2008.

During the last quarter of 2020, an advance of 1.3% compared to the previous 3 months and an increase of 5.7% compared to the same period in 2019 respectively can be seen for the European Union housing trading values. In the case of Romania, there is an advance of 1.3% compared to the previous quarter, with a price difference from the previous year of 2%. Data also indicate a decline of about 2.6% in trading prices for the Romanian market, towards the end of 2020.

Another market segment that is relevant to the overall evolution of real estate is the sales of apartments. For the Romanian market, the evolution of apartment prices is relevant for 11 large cities with more than 200,000 inhabitants and which accumulate much of the actual supply of apartments existing at national level. The beginning of 2021 confirms the trend of market recovery, with price growth margins of more than 2% for all cities considered (<https://www.analizeimobiliare.ro/rapoarte/>). Thus, Galati is noted with an increase in the first quarter of the year of +3.2%, followed by Brasov (+3.1%), Oradea (+2.8%), Braila (+2.5%), Ploiesti (+2.3%), Constanta (+2.1%).

In terms of the average price per useful square meter, in the segment of old and new apartments, Cluj-Napoca remains at the top of the ranking with € 1850 per useful square meter, second place following Bucharest with € 1480 per useful square meter and Timisoara with € 1290 per useful meter, Constanta with 1,280 Euro per square meter), Brasov (1,260 Euro per square meter), Craiova (€1,200 per square meter), Iasi and Oradea, each with €1,090 per square meter). Compared to the same reporting period of 2020, there are quite significant increases of about 7% for Galati, followed by Craiova with 6.2%, Brasov with 5.5%, Cluj-Napoca with 5.2%, Iasi with 4.9%, Oradea with 4.6% (<https://www.analizeimobiliare.ro/rapoarte/>).

Evolution of asking prices in big cities - apartments for sale

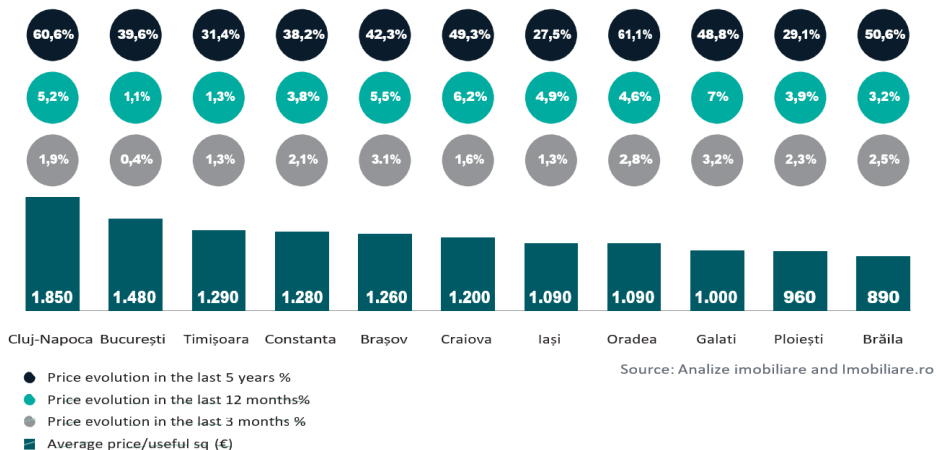


Figure 2. Evolution of Asking Prices in Big Cities – Apartments for Sale

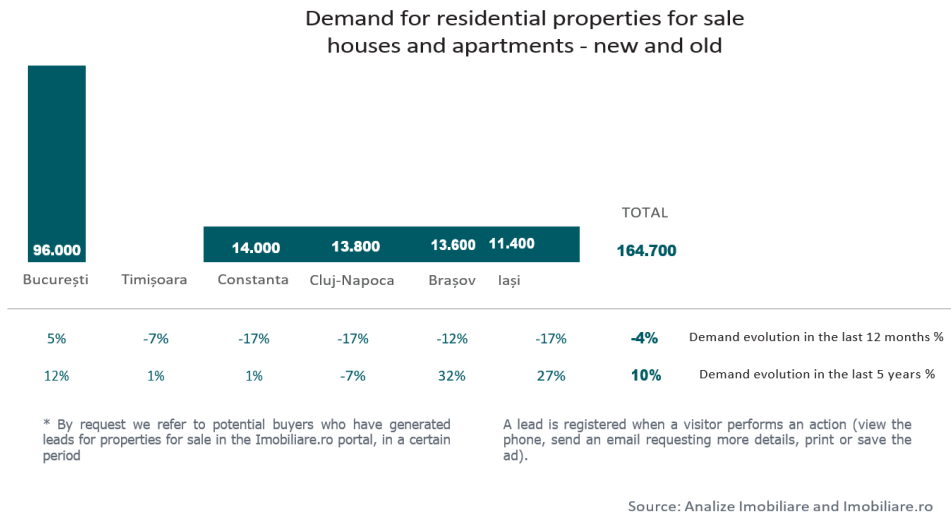
Source: <https://www.analizeimobiliare.ro/rapoarte/>

The demand segment relating to residential properties (houses and apartments for sale) experienced a slight setback against the backdrop of the pandemic compared to the period before the pandemic. The 164,700 potential buyers in the first quarter of 2021 represent a 4% lower figure than in the same period of 2020, i.e., immediately before the pandemic broke out. The only area where there has been an increase is Bucharest, where for the last 12 months there has been an increase of 5%, the other regions having decreases of 17% in Constanța, Cluj and Iași and 12% in Brasov (<https://www.analizeimobiliare.ro/rapoarte/>), as can also be seen in Figure 3.

Purchases of individual units, seen as transactions concluded on the real estate market, also show an increasing trend, with an increase of around 25% in January 2021 compared to the same time frame in 2020. In the next 2 months of the first quarter of 2021, the trend remained increasing, with about 13,000 purchases registered nationwide in February and more than 16,000 buildings in March 2021 (see Figure 4).

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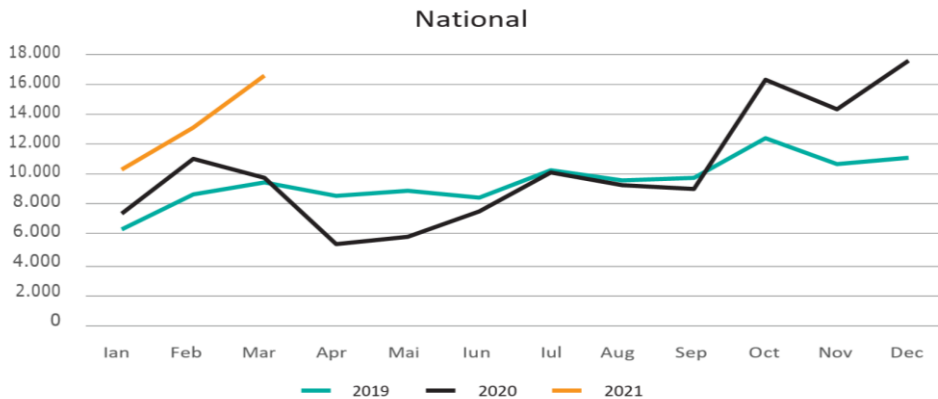
The expansion of the remote, online work model, which no longer required daily travel to work, as well as the foreshadowing of the same trend for the near future, positively influenced the demand for land that was no longer conditioned by the distance between work and housing. In this context, demand for land has increased in Ilfov and Cluj County respectively by about 100% in the last 12 months, while in Bucharest and Cluj-Napoca the increase was about 30%.



**Figure 3. Demand for Residential Properties for Sale Houses and Apartments – New and Old**

Source: <https://www.analizeimobiliare.ro/rapoarte/>

The rental segment in the domestic real estate market has also had a relatively optimistic development throughout this period. According to [analizeimobiliare.ro](http://www.analizeimobiliare.ro), the demand for apartment and house rental increased by about 12% in the first quarter of 2021, as compared to the same period in 2020. The average price decreased from the corresponding value of the first quarter of 2020 by 10.5% in Cluj, 7.7% in Bucharest, 7.4% in Timisoara.



**Figure 4. Sales of Individual Units/National**  
Source: <https://www.analizeimobiliare.ro/rapoarte/>

### Conclusions and future research directions

The data and information presented in this paper provide a complex picture of the current situation in the Romanian real estate market with relevant international implications. Thus, the trends of transaction growth and stabilization of demand on an upward trend for various segments of the domestic real estate market, provide the prerequisites for rather optimistic scenarios on a medium or short term. The aggregation of the entire national economy in terms of diverse trade, the readjustment of the production and service sectors, the relaxation of severe measures to control and limit the activity of tourism and hospitality economic operators, can contribute to a stabilization of the various factors with direct action on the real estate market. Both individual consumers and corporate consumers adapt to all these phenomena and processes by trying to maximize their long-term interests in the most judicious use of limited resources. If the main supply and demand mechanisms are stabilized throughout the national economy, the housing market will benefit from this stability, which is reflected in the ability of the market players to properly initiate and develop real estate projects, promotional efforts, and optimized intermediary services. To identify future trends, it is recommended to carry out both quantitative





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and qualitative research that can outline the complex picture of these processes, which are both related to market mechanisms and the behaviour of real estate services and products consumers. Quantitative research in the form of surveys, carried out on consumers and on real estate agencies or developers, may reveal sufficient quantitative data to enable statistical projections of major market trends. Qualitative research in the form of in-depth interviews among managers of companies involved in the market, and in the form of focus groups on consumers can extend the knowledge by providing qualitative data that reveals trends in consumer behaviour or managerial approaches and adapting mechanisms to changes initiated by the crisis. A favourable combination of the two types of research in the sense of supplementing qualitative and quantitative information can be an optimal solution to capture, in a realistic manner, as many of the possible connections that exist between the variables that characterize the dynamics of the real estate market and the buying and consumption behaviour of these services.

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## **APPRAISEMENT OF GATEWAY AND USAGE OF LIBRARY INFORMATION RESOURCES AMONG PUPILS IN OSOGBO LGEA, NIGERIA**

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Series*, 21(2), 229-246, doi: <https://doi.org/10.26458/21210>

### **Abstract**

*Regarding the vital role of school libraries in the educational system, there are issues around the qualified human resources, adequate facilities, and electricity supply among others. Another challenge is the proper attitudes towards the use of the available library information resources among library users. The trend which is not helpful to national development in any way if not curbed. To find out ways around the emerging attitudes, this study was motivated to investigate the appraisal of gateway and usage of library information resources among pupils in Osogbo Local Government Education Authority (LGEA), Osun State, Nigeria. The intentions of the study were to determine the level of satisfaction of pupils towards school library information resources including human resources, and other facilities; to investigate access and use of school library information resources, to find out the factors that pose problem to pupils in the use of school library and strategies to overcome such challenges. In a descriptive survey, simple random was habituated to select 40 respondents from each of the selected primary schools to make a sample size of 240 respondents in six primary schools purposively selected in the Osogbo Local Government Area of Osun State in Nigeria. The methods of*



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*data collection for the study were questionnaires, documentary review, personal observations and interview. Content analysis was espoused for qualitative data. Quantitative data were anatomised by using SPSS. The finding divulged that primary school pupils face many repressions in using the school library since there are no current library information resources but obsolete ones; inadequate of qualified and professional personnel. It was also found that books were the most frequently used library information resources. Furthermore, to effectively use the school's libraries by the primary school pupils, there is need to address the above-mentioned constraints faced by the pupils in using the school library. The study recommended that provision of fund is necessary to execute all the school library needs. The study further recommended continuous training and retraining for the library human resources.*

**Keywords:** *appraisement; human capital; information resources; library usage; primary schools; school libraries.*

**JEL Classification:** D83, L86, M12, M15, M54

## Introduction

The role of school library is to support the classroom teachers and curricular throughout the school. Keeping in mind how pupils learn, what pupils want to know and what is taught, the school librarian strives to adequately supply library information resources for the school community by developing a well-rounded collection of instructional. The significance of school libraries cannot be over-emphasised in this regard. The school library has major and important function to play in enhancing and supporting educational goals as authored in the school's mission and curriculum [Sote *et al.*, 2011]. This has made teaching and learning more meaningful and enriched for children. The inadequacy of teacher's note of lessons and learning by note was later dumped and people realised that learning can be enhanced and accelerated by the use of a wide variety of learning methodologies and resource. The modern school library has therefore become an integral part of the school system. The school library should have a balanced collection, which must include printed and non-printed materials, electronic materials and audio-visuals. The balanced collection should as well include



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materials for leisure purposes such as fiction books, music, computer games, video-cassettes, video-laser disc and magazines/newspapers, among other. These kinds of materials may be selected in cooperation with the pupils to ensure it reflects their interests and culture without crossing reasonable limits of ethical standards.

School libraries are really essential and necessary for the primary schools, since they constitute a big and rare treasure. A school library is a library within a school where pupils, staff, and often parents of a public or private school have access to a variety of resources. The goal of the school library is to ensure that all members of the school community have equitable access to books and reading, to information, and to information technology [Abdullhamid, 2016]. The library is able to equip pupils' imagination, thereby enabling them to live as responsible citizens (Federal Republic of Nigeria, [FRN], 2001). According to Merrill (1983), related library information resources to pupils' learning outcome and found that the use of school library resources was associated significantly with better learning outcome. Crossley and Murby (1994) opine that the inadequacy of relevant information resources in school libraries contributed to low levels of pupil(s) performance. The library equally involves in promoting the development of reading skills and encouraging long-term reading habits through listening to and viewing a variety of learning materials. Thus, the school library system is an integral part of the school and it must be run according to agreed standard. Effective school libraries provide additional reading opportunities for pupils, which in turn improve reading skills, knowledge, writing and clarity of expression, which at the same time support pupils performance in all other curriculum subjects [World Bank, 2008].

### **Statement of the problem**

Educational programme cannot achieve its goals and objectives fully in primary schools if the school library is left out in the implementation of the programme. The school library is a part and parcel of a school set-up. It exists to serve the objectives of its parent institution. The aim of a good school is to become a force for educational excellence. Education is a lifelong process. Pupils learn through formal education in the classroom but can learn for more by using the library [Shrestha, 2008]. Once student is able to form the habit of using the library, with effective and efficient service deliveries from qualified and well trained human resource, there is a high probability that the student would continue the same throughout the life time. A school library acts as an initiator for library habits and



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reading habits more than text books. Access to the resources of school library is clearly a pre-requisite to their use. This access to the resources in schools today gradually, but by no means always, requires access to the areas in which the materials, and in some cases the associated equipment, are organised and housed.

In a bid to increase the use of library in Nigeria and make pupils interact with both the human and information resources, several interventions had been deployed through governmental agencies such as TetFund, SUBEB, and others. Apart from budgetary allocations, some non-governmental agencies had also shown interests in helping the use of information and human resources through donations of library, computers, and books. Seminars, workshop, and debates options had been explored too.

However, with all the interventions, the results from the national examinations points towards another direction showing that the lack of standard school library with relevant information resources and human resources which pupils could use for their studies still exist and enormous. This with some others could be among the major causes of mass failure and poor performance in primary schools (Fakomogbon, Bada, & Omiola, 2012). This study therefore, sought to appraise the access and utilisation of school library information resources which is unprecedented in primary schools in Osogbo Local Government Education Authority, Osogbo, Nigeria.

### **Objective of the Study**

The objectives of the study are to:

1. Examine the access and utilisation of school library information resources by the primary school pupils;
2. Identify the challenges confronting pupils in the use of school library and ways to overcome these challenges;
3. Investigate the level of satisfaction of pupils towards school library information resources.

### **Literature Review**

The crux and function of information is to adequately equip the information seekers to make right decisions among the alternative choices. School libraries have undergone vast transformation in the past century, from schools relying on public library support in the early 1900s to excellent collections of print and digital



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materials within a school library today [Wiegand, 2007]. The goal of library was to bring the best of literature to the people in the early 1900s [Weihs, 2008]. This attitude changed in the 1950s and 1960s, with a more open approach to reading across all subjects [Weihs, 2008]. In 1918, the National Education Association set standards for school libraries [Roscello, 2004]. Popoola (2007) posited that adequate utilisation of information resources enhances job performance among high-ranking government officials. Also, Ajala (2004) as reported in Adekunmisi (2005) stated that for information to be valuable and meaningful, it should be: timely, verifiable, accurate, relevant, understandable, complete and reliable. Any item of information that meets these characteristics will surely be an asset to the staff and pupils of Osogbo Local Government Education Authority, Osogbo, Nigeria.

According to Petters and Ottong (2012) school library is a learning laboratory that provides opportunities for pupils to develop information skill. Moreso, Saka and Bitagi (2010) defined school library as the part of the school where collection of books, periodicals, magazines/newspapers, films, filmstrip, video-tapes, recording of all kinds etc are housed for use by the pupils. Mutula (2004) revealed that other school library resources include, Information Communication Technology (ICT) facilities such as computer, computer diskettes, computer programmes, multi-media collection, teleconferencing, video-conferencing, audio graphic communications, Broadcast TV/Radio + audio-teleconferencing and Interactive Multimedia. The author emphasised the need for annual financial provision for the replenishment of school library. Therefore, modern school library information resources should be made up of both print and non-print formats to enhance teaching and learning among the teachers and pupils.

IFLA (2012) reported in Biranvand and Khaseh Aliakbar (2012) that school library plays a very significant role in the educational development of a child, its goal includes: supporting and enhancing educational goals as outlined in the school's mission and curriculum, developing and sustaining in the children the habit and enjoyment of reading and learning, and the use of libraries throughout their lives offering them opportunities for experiences in creating and using information for knowledge, understanding, imagination and enjoyment. The school library also supports all pupils in learning and practicing skills for evaluating and using information, regardless of form, format or medium, including sensitivity to the modes of communication within the community. As the foundation of all other





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libraries, school library plays a major and significant role in the development of the basic education sector. Frye (2006) submitted that both librarians and educationists regard the school library as “the heart” of the school and indeed the apex upon which the entire sphere of the school’s intellectual life rests.

The basic purpose of establishing school library is to provide access to information to support school programmes. Salisu (1996) reported in Abdullhamid (2016) that, the extent at which children and young people of today will be creative, informed and knowledgeable will be shaped by the boundaries of the contents of the library resources available within the schools cum the effectiveness and efficiencies of the human resources – the librarians. Similarly, Ose and Okoedon (2012) reported in Abdullhamid (2016) surveyed the present state of school libraries in Benin City and revealed that all the schools visited are under stocked with library materials. Most of the schools visited in Benin City have outdated books, which are very dusty, where they existed. Aniebo (2006) opined that school libraries in Imo State are outdated, lack reference and audio-visual materials in their libraries. Eguavoen (2011) reported in Abdullhamid (2016) found that most services available in school libraries do not enjoy full usage owing to wrong perception of such services on the part of users.

However, Aramide and Elaturoti (2013) asserted that school libraries should provide the following information services to remain competitive and relevant in information profession. These are: Reference Service, Cataloguing Service, Inter-Library Loan Service, Indexing and Abstracting Services, Bibliographic Service, User Education (Orientation/Induction) Services and information Services. The library building is not what makes up a school library, but the information resources contained in it with the efficient and effective service deliveries of the human resources from the front desk to the backend. Provision of libraries is never a luxury, but a necessity in every school. According to Akpe (2005), all primary and post primary schools must, as a matter of urgency have functional libraries whose materials must include beginners’ books, encyclopaedias, books in the curriculum, journals, magazines, atlases, story books, picture of books and audio-visual materials.

World Bank (2008) in Benard (2014) enumerated the problems facing school libraries in Sub-Saharan African countries. These include the problem of untrained school librarians, poor training and overloading of teacher librarians. Also, where there is library collection, it is generally old and often irrelevant to current curricula



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and teacher/student interest. Likewise, the problem of inadequate funding with little or no government financial support was identified.

Other problems are: lack of enough library premises, poor library management system, heavy collection wear and tear, loss, theft and damage etc caused by poor security, pest and fungal damage etc., lack of money to undertake regular maintenance, and lack of understanding by both teachers and pupils of the role and function of a school library and thus an increasing inability to use libraries properly even if they are well established.

Despite all the above negative observations as challenges to school library in terms of access and utilisation, the use of library information resources in primary schools in Osogbo Local Government education Authority, Osogbo, Nigeria have not been adequately addressed empirically, which is a gap in the literature, hence this study intends to find out and fill the gap.

### **Methodology**

Cross-Sectional research design method was adopted for this study. This gives room for data collection at once in a single point. Six primary schools from Osogbo Local Government Education Authority in the capital city of Osogbo in Osun State. The Osogbo Local Government Education Authority was chosen based on the reason that the majority of the primary schools there have school libraries with reasonable institution/organisation that could be of benefit to all. The selected primary schools were: Union Baptist Primary School “A” Odi-Olowo; Union Baptist Primary School “B” Odi-Olowo; A.U.D Primary School “B”, Oke-Baale; Christ Africa Primary “B”, Gbodofon; L.A. Primary School “B”, Gbonmi; and Oba Iyiola Matanmi Primary School, Ogo-Oluwa, Osogbo. The population for the study comprised of all primary six pupils. They were chosen based on their familiarity and maturity in using the school library to some extent. Both random and non-random sampling techniques were used. While purposive sampling was used to select the schools. This sampling process necessitated the aftereffect of a sample frame, where the current list of all the primary six pupils contained in the pupils’ register list in the headmaster’s office in collaboration with the school class teacher in each of the school.

The study population comprised a total sample size of 244 respondents. Nevertheless, 40 respondents were simple randomly selected from each school making a total sample of 240 respondents. A simple random sampling was used



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because it gives each case in the population an equal chance of been included in the sample. The instruments used for data collection from the respondents were questionnaires administered to two hundred and forty using face-to-face interviews. Close and open-ended questions were included in the questionnaire. In addition, interview and personal observations were conducted to supplement the information. The quantitative data that were collected from the questionnaire was coded and summarised prior to analysis by using statistical package for Social Science (SPSS) version 16. The researcher utilised descriptive statistics. These were: frequencies, percentages in data analysis. While qualitative data was analysed using content analysis.

### Discussion of Findings

The analysis and presentation of data was based on the retrieved responses. 240 questionnaires were distributed to the respondents, while only 220 questionnaires were found useful and analysed by the researcher from the returned questionnaires. The response rate was 91.7%. This section contains the study, findings and discussion of results obtained from the study that investigate appraisalment of gateway and usage of school library Information resources by pupils of primary schools in Osogbo Local Government Education Authority, Osogbo, Osun State, Nigeria. Statistical package for Social Science (SPSS), version 16 was used to analyse data generated.

### The Result

The distribution of the respondents by gender reveal that 148 (67.3%) were male while 72 (32.7%) were female. Out of the 220 respondents, 266 (75.4%) were aged between 10 years and 14 years; while 54 (24.6%) were above 14 years. The age categories of the respondents give the impression that the majority of primary six pupils interviewed were in the active age group.

When the researcher conducted interview on possession of school library for the primary school pupils among the selected schools, 80.1% of the respondents agreed that their school had school library while 19.9% of the respondents indicated that their school had no school library. From the findings, implies that the majority of the schools had a school library as library is the key indicator for education development of any school/institution. Similarly, interview was conducted on the use of a school library by pupils. The findings show that 61.4% of the respondents

use school library while 38.6% of the respondents do not use school library. The outcome of this findings as proved that school libraries do exists in these schools.

**Table1. Demographic Characteristics of the Respondents (n=220)**

Characteristics		Frequency	Percentage (%)
Sex	Male	148	67.3
	Female	72	32.7
	<b>Total</b>	<b>220</b>	<b>100</b>
		Frequency	Percentage (%)
Age	Below 10 years	0	0
	10 – 14 years	266	75.4
	15years and above	54	24.6
	<b>Total</b>	<b>220</b>	<b>100</b>

**Table 2. Information Resources Used by Pupils in the Study Area (N = 220)**

S/N	Information Resources	No. of the respondents (N)	Percentage (%)
1	Textbooks	53	24.2
2	Fiction books	32	14.5
3	Journals	22	10
4	Magazines/Newspapers	11	5
5	Maps/Atlases	22	10
6	Dictionaries	28	12.7
7	Audio-visuals	19	8.6
8	Poetry	18	8.2
9	Encyclopaedia	10	4.5
10	Others	5	2.3

The results in Table 2 show that 24.2% of the respondents used textbooks as information resources in their school libraries. Fourteen and half percent (14.5%) used fiction books as information resources, 10% used journals, 5% used magazines/newspapers, while 10% of the respondents used maps/atlas, 12.7% used Dictionaries, 8.6% used audio-visuals, also, 8.2% of respondents used poetry, 4.5% used Encyclopaedia while 2.3% of respondents used others. These findings are consistent on the use of school libraries information resources. From the findings, it has shown that the majority of the respondents used textbooks to satisfy



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their information needs. Magnitude textbooks contain useful information, which are very relevant as supplement to their classroom teaching. On this note, the school libraries must be stocked with current and relevant textbooks covering different subjects relevant to primary schools' curriculum. However, few respondents use other information resources, Encyclopaedia and magazine/ newspapers as their information resources in the primary schools as investigated in the study. This might be because of its scarcity, few availability and lack of library orientation and current awareness service (CAS) of these information resources for the pupils.

**Table 3. Purposes for Use of School Library (N = 220)**

S/N	Purpose of using school library	No. of respondents	Percentage
1	To read for examination only	64	29.2
2	Leisure reading	42	19.1
3	Meeting friends	5	2.3
4	To read and borrow library books	38	17.3
5	To do assignment and home work	55	25
6	To read magazines/newspaper	10	4.4
7	To play game	6	2.7

Table 3 shows the purposes of use of school library as conceptualised by the respondents of this study. The results imply that 29.2% of the respondents visited the school library to read for examination only, 25% visited the school library to do assignments and home works, 19.1% visited the school library for leisure reading while 17.3% visited the school library to read and borrow library books. Also, 4.4% visited the school library to read magazines/newspapers, 2.7% visited the school library to play game and 2.3% visited the school library to meet friends. From all indication from the findings above, the majority of the pupils make use of the school library for the main purpose to read for examination only, to do assignment and homework and for leisure reading. Consequently, the school management, government and other responsible organisations should intensify the subsisting school libraries stock with different information resources that can meet pupils in information needs to boost their school achievement. Moreover, the school management should introduce library orientation to create awareness on how to effectively use the library information resources for their academic prowess.

Table 4 indicates the frequency of using the school library. The results show that 51.4% of respondents use the library occasionally, 37.2% of respondents use the

school library always while 11.4% of respondents never use the school library at all. From the outcome of the study, it is a fact that the majority of respondents use the school library occasionally. This shows that most of the pupils visited the school library irregularly. Thus, efforts should be made to improve the rate, regular and frequent use of the school library by providing recent, relevant of Information resources and at the same time create awareness for library users of the importance of the school library.

**Table 4. Frequency of Using School Library by Respondents (N = 220)**

<b>Response</b>	<b>No. of Respondents</b>	<b>Percentage (%)</b>
Always	82	37.2
Occasionally	113	51.4
Never	25	11.4

### **Pupils Opinion on Accessibility of School Library Information Resources**

As indicated in Table 5 above, the findings of this study show that information resources, which are highly accessible (42.7%) by pupils, were textbooks and fiction books (43.2%). However, the information resources that were not accessible are journals (40.5%), audio-visuals (44.5%) as well as other materials (44.5%). This portrayed that textbooks and fiction books are highly accessible in the school library when compared to other information resources. This is due to their availability. Similarly, the findings revealed that journal, audio-visual and other materials were not accessible by most of the pupils of primary schools under study. To this end, the primary school management, government and other education stakeholders should provide more funds to primary school libraries to improve high accessibility of these information resources to pupils.

Table 6 show the findings of the study about the information resource frequently used by pupils, the results indicated textbooks (43.6%) to be the frequently used and this was closely followed by fiction books (40%). The study also found that pupils occasionally consulted dictionaries (41.8%), while 42.3% of respondents indicated that they had never used the audio-visual materials, 41.4% revealed that they had never used encyclopaedia, 31.4% of the respondents indicated that they had never used journals. While 33.2% indicated that they had never used poetry. Also, 32.7% indicated that they had never used maps/atlasses, 35.5% claimed that they had never used other materials. These findings have revealed that textbooks





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and fiction books were materials that were adequately provided for the pupils in the primary schools. One way or the other, this will encourage the pupils to develop good reading habits, develop long-life learning, this will as well in no small measure improve their academic achievement.

**Table 5. Accessibility of School Library Information Resources (N = 220)**

Category	Highly Accessible		Accessible		Not Accessible	
	N	%	N	%	N	%
Textbooks	94	42.7	90	40.9	36	16.4
Fiction books	95	43.2	92	41.8	33	15
Journals	57	25.9	74	33.6	89	40.5
Magazines/Newspapers	48	21.8	85	38.6	87	39.5
Maps/Atlases	76	34.5	80	36.4	64	29.1
Dictionaries	87	39.5	92	41.8	85	38.6
Audio-visual	34	15.5	88	40	98	44.5
Poetry	60	27.3	90	40.9	70	31.8
Encyclopaedia	57	25.9	98	44.5	65	29.5
Others	27	12.3	95	43.2	98	44.5

**Table 6. Frequency of Use of Library Information Resources (N = 220)**

Category	Frequently		Occasionally		Never	
	N	%	N	%	N	%
Textbooks	96	43.6	64	29.1	60	27.3
Fiction books	88	40	75	34.1	57	25.9
Journals	73	33.2	78	35.5	69	31.4
Magazines/Newspapers	70	31.8	74	33.6	76	34.5
Maps/Atlases	74	33.6	74	33.6	72	32.7
Dictionaries	65	29.5	92	41.8	63	28.6
Audio-visual	40	18.2	87	39.5	93	42.3
Poetry	72	32.7	75	34.1	73	33.2
Encyclopaedia	65	29.5	64	29.1	91	41.4
Others	60	27.3	82	37.3	78	35.5

### Satisfaction of school library Information resources

From the findings of this study, table 7 unveiled that the information resources of the school library were not satisfactory as indicated by the respondents. Large





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number of the respondents (45%) revealed that they were not satisfied with audio-visual materials. While 41.4% revealed that they were not satisfied with encyclopaedia materials. Similarly, 39.5% indicated that they were not satisfied with map/atlas materials; 39.1 % said that they were not satisfied with other materials. While 38.6% revealed that they were not satisfied with journals. Also, 37.7% indicate that they were not satisfied with dictionary and magazine/newspaper materials; 32.3% said that they were not satisfied with poetry materials; 28.6% pointed out that they were not satisfied with fiction books. In addition; 25.9% pointed out that they were not satisfied with text books. From all evidence, it has revealed that most of the pupils were not satisfied with the school library information resources. In other words, many library information resources in the school libraries do not in any way satisfy pupils' academic needs/desires. This might be due to unavailability of current library information resources, lack of current and relevant reading materials and poor accessibility. From all indication, school libraries in primary schools should be improved in the provision of quality and quantity school library information materials to satisfy the learning outcome/desires of the primary school pupils.

**Table 7. Satisfaction of School Library Information Resources (N = 220)**

Category	Highly Satisfied		Satisfied		Not Satisfied	
	N	%	N	%	N	%
Textbooks	79	35.9	84	38.2	57	25.9
Fiction books	76	34.5	81	36.8	63	28.6
Journals	66	30	69	31.3	85	38.6
Magazines/Newspapers	67	30.5	70	31.8	83	37.7
Maps/Atlases	66	30	67	30.5	87	39.5
Dictionaries	67	30.5	70	31.8	83	37.7
Audio-visual	60	27.3	61	27.7	99	45
Poetry	73	33.2	76	34.5	71	32.3
Encyclopaedia	62	28.2	67	30.5	91	41.4
Others	65	29.5	69	31.3	86	39.1

### **Challenges Confronting Pupils in Using School Libraries**

Pupils were to express their opinion on what constraints they encounter in using school libraries as indicated in the checklist provided for them. Table 8 reveals that



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30.5% indicated that lack of informational professional school librarians – human resources for processing reading materials as a major constraint, 25.5% indicated lack of current reading materials, also, 22.2% said restricted library reading hours while 21.8% indicated lack of sitting facilities as consequential factors facing pupils in using the school libraries effectively.

**Table 8. Challenges Confronting Pupils in Using School Libraries in Primary Schools (N = 220)**

S/N	Challenges	No respondents	of Percentage (%)
1	Restricted library reading hours	49	22.2
2	Lack of current reading materials	56	25.5
3	Lack of Information professionals/school librarians (human resources) for processing reading materials	67	30.5
4	Lack of sitting facilities	48	21.8

Table 9 shows other library information resources pupils consult in meeting their information needs. The findings reveal that 31.8% of respondents use the public library as alternative sources to meet their information needs. 26.4% of respondents used internet sources, 23.6% of respondents consult special libraries while 18.2% use academic library as alternative Information resources. The findings shows that large number of pupils do consult Public libraries as their alternative information resources. This might be because Public library contains various information resources that meet their information need, which may not be available in their school libraries. Secondly, proximity of Public library to their school area and easy accessibility of these Information resources. The government, education stakeholders and organisations like NGOs should make more exertions in acquiring different Information resources in Public libraries that meet Information needs of pupils. This is because Public libraries across the country make all kinds of Information and knowledge available to its users. Apart from Public Library, other alternative resources used by pupils are internet sources and special libraries. Nevertheless, school libraries should be connected to internet facilities by the primary school management, government at local, state and federal level. This will enable the pupils and teachers access more current and relevant information resources.



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**Table 9. Other Resources Do Pupils Consult in Meeting Their Information Needs (N = 220)**

S/N	Alternative Sources	No of respondents (N)	Percentage (%)
1	Special Library	52	23.6
2	Internet Sources	58	26.4
3	Public Library	70	31.8
4	Academic Library	40	18.2

### Discussion

It was discovered from the findings that major challenges confronting pupils in using school libraries in primary schools are firstly, lack of Information professionals/school librarians for processing and organising reading materials. This is very common in almost all the primary schools in the areas of investigation. The information materials were not organised because the libraries were not man by professional staff. The majority of the books were not catalogued and classified, this makes it very difficult for pupils to access and utilise these library materials effectively to their satisfaction. The primary school management through the government should employ professional school librarian(s). Similarly, there is lack of current reading books. Most of the available books are old, tattered, dusty, outdated and inadequate in the study area. The above statements discourage pupils from using the school library. This could lead to poor performance in their academic performances. To solve this problem, the primary school management in conjunction with the government at all levels and other education stakeholders should strengthen the primary school library Information resources by providing more current, relevant reading materials through purchase, donation etc that will enhance their academic achievement.

Another major constraint towards the use of school library is restriction of library hour. The area of study surveyed shown that almost all the school libraries had no standard time table for library opening. All the school libraries were opened for only short period/time. This as in no small measure contributed to inadequate use of the school libraries in a negative way. Moreso, the school libraries are not properly funded either by the school management or government at all level. Lack of sitting facilities, tables and chairs are regarded as constraint in using the school libraries by pupils in most of the primary schools. On this note, there is needing to adequately provide furniture in the school library for pupils to have conducive and convenient good learning environment.



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### Conclusion

The school libraries, most especially in primary schools serve as the nerve centre of all educational institutions and crucial factor in the educational development of men at all levels especially in educational institutions. The library, which is the hub of any educational set up provides Information and idea that are fundamental to functioning successfully in the increasing information and knowledge-based society. Findings shown that most frequently used Information sources by primary school pupils are only books followed by fiction books. In addition, other library information resources are: journals, magazines/newspapers, maps/atlas, dictionaries, poetry, encyclopaedia, audio-visual and others were not accessible by pupils, in order words, they were not satisfactory to meet the pupils yearning for their Information needs. Many constraints were as well faced by the pupils in using the school library, such as, old, dusty and not up to date or current Information resources in the library, etc. To provide for effective use of the school libraries, there is every need to acquire current and adequate school library Information resources, provision of professional school librarians to man the school libraries as well as provision of Information Communication Technology (ICT) facilities.

All the above-mentioned solutions could be achieved with the assistance of the government at all levels (Local, State and Federal), education stakeholders, non-governmental organisations (NGOs).

### Recommendations

Based on the findings of this study, the following recommendations were made. This study recommend that school library management and government at all level should ensure the development of a modern school library-based collection. This will enable individual learning and makes learning interesting. School library collection will also attract the pupils to the use of the library resources and interact with the personnel. It also recommend that the government in collaboration with other stakeholders should build new school libraries in different primary school in the country and equipped them with all necessary library facilities. Also, that the Government and school library management should encourage pupils to use the libraries through the creation of library period on the time-table. The opening hour of the libraries should be extended beyond school hours to give pupils the opportunity of using the library.



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Furthermore, teachers should be motivated to encourage the pupil to use the library by giving them assignments that will take them to the library on a regular basis. The provision of computer-based/electronic learning resources should be taken seriously in order to enable teachers fit into the change in paradigm shift in education from teacher-centred to learner-centred. The study also recommend that the government at all levels should put more priority on adequate provision of fund necessary for the provision of current and up to date Information resources and more so the employment of qualified and trained teacher librarian(s).

There is need for regular maintenance and renovation of library facilities. Even though there are adequate facilities in the library. Observation as shown that some of the facilities are deteriorating, hence, there is need for repairs and renovation of the existing library structures, facilities, and resources. There is also the need for collective action by individuals, non-governmental organisations (NGOs), and government to rescue the development of school libraries in the Nigeria. It is also important that there should be proper evaluation of the activities of the school libraries on a regular basis to ensure that the purpose for which the libraries are established is not defeated. Finally, effort should be put in place ensure continuous training and retraining to library human resources and teachers alike for effective and efficient services deliveries to engender productivity.

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## PERFORMANCE ASSESSMENT OF THE BALKAN COUNTRIES IN THE INFORMATION AND COMMUNICATION TECHNOLOGIES SECTOR

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### Abstract

*The rapid technological development of the last decades has affected practically all areas of the economy, society, and culture. Almost every aspect of life and work in the modern world to a greater or lesser extent depend on the use of information and communication technologies (ICT). The aim of this paper is to analyze the ICT performance of ten Balkan countries and to highlight areas that need further improvement. The analysis is based on the data published by the International Telecommunication Union in annual Measuring the Information Society Report. The research is conducted through comparative analysis and benchmarking method. The ten best-positioned European countries in terms of ICT development represent the benchmark group. The analysis finds low level of national ICT performance of the Balkan countries compared to the*





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*selected European countries. The conclusions of this research may serve as guidelines for ICT policy makers in the observed economies.*

**Keywords:** *ICT performance; ICT development index; Balkan countries; European countries.*

**JEL Classification:** O33, O36, O57

### Introduction

Information and communication technologies (ICT) have transformed the modern society into an “information society”, but also the “old economy” into a digital economy. According to the European Commission [2019], 22% of the value of e-commerce is generated by businesses selling their products and services on online platforms; European e-commerce turnover increased by 15% to €530 billion in 2016; while for 2017, European Business-to-Consumer e-commerce turnover was forecast to reach around €602 billion, at an annual growth rate of nearly 14%.

It is difficult to imagine any interaction between people, companies, and public institutions without ICT as a tool for informing, correspondence, and paying. Briefly, ICT have significant role in designing the way of living, learning, working, and playing in the modern society [Wang *et al.*, 2021]. Considering the important role that ITC have in social development, ITC sector is one of the most vital industries and significant factor of economic growth in many countries. This sector provides key contribution to the development and performance of the new economy, and presents an engine of GDP growth, productivity, and competitiveness that characterize numerous economic sectors in all countries across the world [Radu, & Podasca, 2013]. These are the reasons why ICT development should be monitored and improved in each national economy that advocates an open development model.

The level of ICT development varies from region to region, i.e. from country to country. Europe is one of the leaders in the ICT development. According to Horizon 2020 [European Commission, 2017], the ICT sector represents 4.8% of the European economy, it generates 25% of total business expenditure in the field of research and development, while ICT investments produce about 50% of overall productivity growth in Europe. Also, investments in ICT in the European Union (EU) constantly increase. There are estimates in Horizon 2020 that such EU investment will support



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the whole chain from basic research to innovation that can deliver new business breakthroughs, often based on emerging technologies [European Commission, 2017].

Despite the significant treatment of ICT sector in the European economy, European countries are not at the same level of ICT performance. There are great differences of ICT performance between European countries, even within the EU. Greater differences exist between EU countries and other European countries that are not EU members. For instance, it is expected that the level of ICT performance of the majority of Balkan countries that are not EU members be far behind from EU members.

The ambition of this paper is benchmarking of performance factors within the ICT sector in Balkan countries with leading European countries. The purpose is to evaluate the extent to which Balkan countries lag behind the top European countries in terms of ICT performance. Furthermore, the aim is to find the factors that are critical for ICT competitiveness in the Balkan countries, i.e. factors that need a priority of development policy and urgent improvements to cut the gap with the top European destinations in the future. This analysis and its outcomes should give guidance to policy makers in defining development goals and improving critical factors of ICT performance.

The first part of the paper presents the theoretical background and literature review in the field of ICT performance. Research methodology and data basis are defined in the second section of this paper. The research results are presented and discussed in the third section. The last section summarizes the conclusions and recommendations for improving the ICT of the Balkan countries.

### **Theoretical Background and Literature Review**

The emergence and development of ICT have introduced significant changes in the social structure. As an important tool for social and economic development, ICT change the way of business and the manner of conducting business activities. Almost all modern operations require support or use of ICT [Asongu & Odhiambo, 2020; Đorić, 2020; Krstić *et al.*, 2016a; Popović, 2020].

The foundations of economic development of the contemporary world are based on highly developed technology, innovation, and knowledge [Đokić, 2018; Krstić *et al.*, 2016; Petrović-Randelović *et al.*, 2018]. These are the reasons because modern theory and practice talk about the “new economy” is based on the technology, information, and knowledge, which takes the place of the “old economy” based on physical factors of production such as labour, capital, and land.



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ICT are the basis of creating a “new economy”. The name “new economy” began to be used in the late nineties of the twentieth century, when the US economy achieved economic growth through the use of ICT. Addition to above, theorists use the phrases as digital economy, information economy, and in recent years, it is used the term Internet economy. All terms are related to the impact of ICT on the economy and society. The new way of business based on ICT implies important improvements such as reducing costs, increasing transparency and availability of information, and focusing on innovations and networking [Black & Lynch, 2004].

Considering that ICT permeate almost every aspect of social life, there are a large number of theoretical and empirical studies which evaluate the impact of ICT on various aspects of economic and social state and behaviour of people, companies, and national economies. Consequently, there is a large body of literature that examines the influence of ICT on business operations and firm performances, but also on productivity and competitiveness of national economies.

Most ICT studies have concentrated on analysing the determinants of its adoption [Lehr & Lichtenberg, 1999; Balamoune-Lutz, 2003; Bayo-Moriones & Lera-López, 2007]. Olló-López & Aramendía-Muneta [2012] claim that the factors analysed in such studies can be classified into three groups: factors related to the company staff that are going to use ICT, factors related to the characteristics of the company, and factors related to the environment in which the company operates. Alam & Noor [2009] and Lopez-Nicolas & Soto-Acosta [2010] found out that perceived benefits, ICT knowledge and skill, and government support are also important factors of ICT adoption.

Some papers [Ray *et al.*, 2004; Gursoy & Swanger, 2007; Spyros *et al.*, 2011] explore various elements of ICT that are important competitive advantage resources. Breznik [2012] considers that impact of ICT on competitiveness can be either direct or indirect, while Piccoli [2004] and McAfee & Brynjolfsson [2008] observe investment in ICT as a facility to enhance productivity and reduce costs. Mihalić, Praničević & Arnerić [2015] indicates that there are opposite attitudes that support the ICT paradox theory. Researchers from this school of thought argue that there is no significant impact from ICT investments on firms’ value, firm performance, and its competitive advantage [Willcocks & Lester, 1999; Carr, 2004; Aral *et al.*, 2006; Lee & Connolly, 2010].

Numerous studies examine the contribution of ICT to economic growth and competitiveness of national economies or certain industries and sectors of national



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economies [Gomez-Barroso & Marban-Flores, 2020; Myovella *et al.*, 2020; Vu *et al.*, 2020]. Kostoska & Mitrevski [2008] estimate the impact of ICT on the competitiveness of the Macedonian economy. Their research findings indicate a low level of ICT development in Macedonia in that period and propose preparing an appropriate policy for technological development aimed with the research and development activities as the main instigator of the new technologies and innovations. Some studies analyse the impact of the ICT on development and competitiveness of the hospitality sector [Siguaw *et al.*, 2000; Ham *et al.*, 2005; Mosleh & Shannak, 2009], tourism industry [Buhalis & Zoge, 2007], and hotel sector [Avcikurt *et al.*, 2011; Mihalič *et al.*, 2015]. The authors of these studies argue that ICT are one of the crucial factors for improving performances and competitiveness of companies, industries, and even the whole economy.

### Research Methodology and Data Basis

The purpose of this paper is to analyse ICT performance of Balkan countries as a focus group, but also in European countries as a benchmark group. The analysis of the ICT performance is based on the methodology of the *International Telecommunication Union*. Secondary data published in *Measuring the Information Society Report 2016* represent the information basis for the research. After the 2016 report, the International Telecommunication Union published the 2017 and 2018 (the last-published publication at the time of writing this paper) reports. However, the methodology of index calculation was changed in the 2017 publication. The authors of this paper decided to use the data from 2016 because they believe that the methodology and indicators used in the 2016 report better reflect the state of ICT performance in the countries that do not belong to the group of developed economies (such as most Balkan countries) than in the 2017 and 2018 reports.

The *International Telecommunication Union* (ITU) in its publication *Measuring the Information Society Report 2016* ranks countries according to the development of ICT. For this purpose, ITU uses *ICT Development Index* (IDI), which aggregates quantitative indicators for *ICT access*, *ICT use*, and *ICT skills* in most world economies. This index is designed to be global and to reflect changes taking place in countries at different levels of ICT development [International Telecommunication Union, 2016].

The IDI is a composite index that combines 11 indicators into one benchmark measure, which can be used to monitor and compare ICT development between

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countries and over time. The conceptual framework for measuring IDI is presented in Table no. 1.

**Table no. 1. The Conceptual Framework for Measuring IDI: Indicators, Reference Values, and Weights**

ICT access	Reference value	Weights of indicator inside of sub-index (%)	Weights of sub-index inside of IDI (%)
1. Fixed-telephone subscriptions per 100 inhabitants	60	20	40
2. Mobile-cellular telephone subscriptions per 100 inhabitants	120	20	
3. International Internet bandwidth (bit/s) per internet user	976,696*	20	
4. Percentage of households with computer	100	20	
5. Percentage of households with Internet access	100	20	
ICT use	Reference value	Weights of indicator inside of sub-index (%)	Weights of sub-index inside of IDI (%)
6. Percentage of individuals using the Internet	100	33	40
7. Fixed (wired)-broadband subscriptions per 100 inhabitants	60	33	
8. Active mobile-broadband subscriptions per 100 inhabitants	100	33	
ICT skills	Reference value	Weights of indicator inside of sub-index (%)	Weights of sub-index inside of IDI (%)
9. Mean years of schooling	15	33	20
10. Secondary gross enrolment ratio	100	33	
11. Tertiary gross enrolment ratio	100	33	

\* This corresponds to a log value of 5.99, which was used in the normalization step.

Source: International Telecommunication Union, 2016, p. 9

As it is presented in Table no. 1, the IDI is divided into the three sub-indexes, which are divided into their component indicators.

*Access sub-index* captures ICT readiness, and includes five infrastructure and access indicators: fixed-telephone subscriptions, mobile-cellular telephone subscriptions,



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international Internet bandwidth per Internet user, households with a computer, and households with Internet access.

*Use sub-index* captures ICT intensity, and includes three intensity and usage indicators: individuals using the Internet, fixed-broadband subscriptions, and mobile-broadband subscriptions.

*Skills sub-index* seeks to capture capabilities or skills, which are important for ICT. It includes three proxy indicators: mean years of schooling, gross secondary enrolment, and gross tertiary enrolment. As these are proxy indicators, rather than direct measures of ICT-related skills, the skills sub-index has less weight in the computation of the IDI than the other two sub-indexes [International Telecommunication Union, 2016].

The analysis of ICT competitiveness in this research does not pretend to specify and formulate a unified recommendation for ICT development policy of the Balkan countries. The purpose of this paper is to identify the critical determinants of competitiveness (indicators in the IDI methodology) for each country from the Balkan group. Benchmarking is used to determine the critical indicators as segments of the ICT development policy of Balkan countries in the future period. The following ten Balkan countries are in the focus of research: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, North Macedonia, Montenegro, Romania, Serbia, and Slovenia. Since the study covers ten Balkan countries, the authors define the group of top ten European countries as a benchmarking group: Denmark, France, Germany, Iceland, Luxembourg, Netherlands, Norway, Sweden, Switzerland, and United Kingdom.

## Research Results and Discussion

### *Analysis of Balkan Countries' ICT Competitiveness*

The analysis of the ICT competitiveness of Balkan countries is based on data about overall rank and value of the IDI. The ITU [2016] analysed and ranked total 175 countries. Table no. 2 shows the position of the Balkan countries, according to overall rank and value of the IDI. In the first half of the rankings in Table no. 2 are the following Balkan countries: Slovenia (the first place in the group, the 33rd place in the world), Greece (the second in the group, the 36th in the world), Croatia (the third in the group, the 41st place in the world), Bulgaria (the fourth place in the group and the 49th position in the world), and Serbia (the fifth place in the group, the 51st place in the world). The second half of the rankings consists of: Romania



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(the sixth place in the group, the 60th place in the world), Montenegro (the seventh place in the group, the 62nd place in the world), N. Macedonia (the eighth place in the group, the 65th place in the world), Bosnia and Herzegovina (the ninth place in the group, the 80th place in the world), and Albania (the tenth place in the group, the 91st place in the world). Slovenia records the highest value of the IDI among Balkan countries (7.23). The country with the lowest value of the IDI is Albania (4.92).

**Table no. 2. The Value and Rank of Balkan Countries According to IDI Sub-indexes (2016)**

Country	IDI value (0-10)	IDI overall rank (out of 175)	Rank on the list of isolated group of Balkan countries	Access sub-index value	Use sub-index value	Skills sub-index value
Slovenia	7.23	33	1	7.93	5.71	8.87
Greece	7.13	36	2	7.85	5.46	9.01
Croatia	7.04	41	3	7.58	6.13	7.79
Bulgaria	6.69	49	4	6.86	5.84	8.04
Serbia	6.58	51	5	7.22	5.50	7.48
Romania	6.26	60	6	6.90	5.08	7.37
Montenegro	6.05	62	7	6.85	4.61	7.34
N. Macedonia	5.97	65	8	6.68	5.17	6.13
Bosnia and Herzegovina	5.25	80	9	5.78	4.21	6.27
Albania	4.92	91	10	4.73	3.88	7.36
<i>Average</i>	<b>6.31</b>	-	-	<b>6.84</b>	<b>5.16</b>	<b>7.57</b>

Source: International Telecommunication Union, 2016

The best-placed Balkan country in the world rankings, Slovenia, is located at the 33rd place out of 175 analysed countries, while the weakest positioned Albania lags behind Slovenia by 58 positions, in the 91st place (Table no. 2). Balkan countries, which record a lower value of the IDI compared to the average value of the IDI (6.31), are the following: Romania, Montenegro, N. Macedonia, Bosnia





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and Herzegovina, and Albania. Considering 175 countries analysed by the ITU, with the exception of Albania, all Balkan countries are located in the first half of the world list according to the IDI. For Balkan countries, the average value of Access sub-index is 6.84, Use sub-index 5.16, and Skills sub-index 7.57.

### ***Analysis of Top 10 European Countries' Competitiveness as a Group for Benchmarking***

With the aim to analyse the ICT competitiveness of Balkan countries, it is relevant to find the competitive position of the top 10 European countries with the highest value of the IDI. The top 10 European countries are the benchmarking group of countries, which serves for comparison to 10 Balkan countries. Table no. 3 shows the values and ranks according to indicators within IDI.

Europe, with seven countries in the world top 10, continues to dominate the rankings (Table no. 3). Iceland records the highest value of the IDI among 175 countries (8.83), followed by second-ranked Denmark (8.74), and third-ranked Switzerland (8.68). The first three European countries are followed by United Kingdom, Sweden, Netherlands, Norway, Luxembourg, Germany, and France.

The average value of the IDI for top 10 European countries is 8.49. Compared to the Balkan countries, it means a big difference according to the average value of the IDI of Balkan countries (6.31). This leads to the view that Balkan countries lag much behind the top 10 European countries according to IDI value.

Table no. 3 shows very interesting facts about the competitiveness factors and performances of the top 10 European countries according to indicators within the IDI. France and Germany occupy the first and the second place when it comes to the Fixed-telephone subscriptions per 100 inhabitants indicator. The best countries according to Mobile-cellular telephone subscriptions per 100 inhabitants indicator are Luxembourg and Switzerland. From the above-mentioned of top 10 European countries, Luxembourg has the highest ranking in terms of International Internet bandwidth (bit/s) per internet user. When looking at the Percentage of households with computer indicator, Iceland is the first, and Norway and Netherlands are the second and third country in Europe. Luxembourg tops the ranking of Percentage of households with Internet access. Iceland and Luxembourg occupy the first and the second place when it comes to the Percentage of individuals using the Internet indicator. Switzerland and Denmark are the first two European countries according to Fixed (wired)-broadband subscriptions per 100 inhabitants. Sweden and Denmark lead in Europe in Active mobile-broadband subscriptions per 100 inhabitants. Switzerland dominates in Mean years of schooling. Netherlands, Denmark, and

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Sweden occupy top three scores in Secondary gross enrolment ratio. Iceland, Denmark, and Netherlands have recorded three best scores for Tertiary gross enrolment ratio.

**Table no. 3. Top 10 European Countries According to Value and Rank of the IDI (2016)**

Indicators	Iceland	Denmark	Switzerland	United Kingdom	Sweden	Netherlands	Norway	Luxembourg	Germany	France	Average value for the top 10 European countries
I <sub>1</sub> Fixed-telephone subscriptions per 100 inhabitants	49.94	29.92	50.25	52.65	36.67	41.27	20.02	50.97	54.93	59.91	44.65
I <sub>2</sub> Mobile-cellular telephone subscriptions per 100 inhabitants	114.01	128.34	142.01	125.75	130.38	123.54	113.58	148.51	116.71	102.61	124.54
I <sub>3</sub> International Internet bandwidth (bit/s) per internet user	725,806	328,018	275,957	374,553	421,237	242,326	220,937	7,186,378	117,540	129,973	1,002,273
I <sub>4</sub> Percentage of households with computer	98.50	92.28	88.44	89.90	88.25	96.20	96.47	95.34	90.99	81.55	91.79
I <sub>5</sub> Percentage of households with Internet access	96.55	91.74	84.70	91.25	91.03	95.97	96.60	96.78	90.29	82.62	91.75
I <sub>6</sub> Percentage of individuals using the Internet	98.20	96.33	87.97	92.00	90.61	93.10	96.81	97.33	87.59	84.69	92.46
I <sub>7</sub> Fixed (wired)-broadband subscriptions per 100 inhabitants	36.95	42.51	44.79	37.72	36.07	41.73	38.94	36.48	37.19	41.34	39.37
I <sub>8</sub> Active mobile-broadband subscriptions per 100 inhabitants	93.43	116.80	97.61	87.79	122.09	70.54	92.83	83.33	75.10	74.65	91.42
I <sub>9</sub> Mean years of schooling	10.59	12.73	13.77	13.28	12.27	11.91	12.75	11.71	13.46	11.41	12.39
I <sub>10</sub> Secondary gross enrollment ratio	111.99	129.78	96.31	124.43	128.46	130.69	113.01	102.42	102.48	110.94	115.05
I <sub>11</sub> Tertiary gross enrollment ratio	81.36	81.24	56.27	56.87	63.39	77.34	76.12	19.74	61.06	62.15	63.56
<i>IDI value</i>	<i>8.83</i>	<i>8.74</i>	<i>8.68</i>	<i>8.57</i>	<i>8.45</i>	<i>8.43</i>	<i>8.42</i>	<i>8.36</i>	<i>8.31</i>	<i>8.11</i>	<i>8.49</i>
<i>IDI global rank</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>11</i>	<i>12</i>	<i>16</i>	<i>-</i>

Source: International Telecommunication Union, Measuring the Information Society Report 2016

Table no. 4. The Values of Indicators within the IDI for Balkan Countries (2016)

Indicator	Slovenia	Greece	Croatia	Bulgaria	Serbia	Romania	Montenegro	N. Macedonia	Bosnia and Herzegovina	Albania	The highest value of Balkan countries	Average value of Balkan countries	The highest value of the top 10 European countries	Average value of the top 10 European countries
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
I1	36.22*	46.53 <sup>#</sup>	34.70*	23.26	36.47*	19.79	24.85	17.66	20.20	7.09	46.53 Greece	26.67	59.91 France	44.65
I2	113.22	113.98	103.77	129.27 <sup>#</sup>	120.52*	107.14	162.16 <sup>0</sup>	105.38	90.15	106.38	162.16 Montenegro	115.20	148.51 Luxembourg	124.54
I3	154,627*	100,861*	72,381	145,170*	20,478	146,012*	102,166*	53,890	56,331	30,660	154,627 Slovenia	88,258	7,186,378 Luxembourg	1,002,273
I4	77.75*	68.57*	76.78*	59.04	64.42*	68.69*	56.44	68.42*	47.11	25.72	77.75 Slovenia	61.29	98.50 Iceland	91.79
I5	77.64*	68.09*	76.71*	59.14	63.76*	67.71*	61.09	69.38*	53.60	35.47	77.64 Slovenia	63.26	96.78 Luxembourg	91.75
I6	73.10*	66.84*	69.80*	56.66	65.32*	55.76	64.56	70.38*	65.07	63.25	73.10 Slovenia	65.07	98.20 Iceland	92.46
I7	27.63*	30.73*	23.18*	22.41*	16.75	19.77	18.08	17.19	16.62	7.60	30.73 Greece	20.00	44.79 Switzerland	39.37
I8	52.03	45.65	75.42*	81.29*	71.75*	63.53*	43.65	56.19	33.48	40.58	81.29 Bulgaria	56.36	122.09 Sweden	91.42
I9	12.12*	10.54*	11.03*	10.57*	10.82*	10.64*	11.16*	9.26	9.16	9.26	12.12 Slovenia	10.46	13.77 Switzerland	12.39
I10	110.95*	108.20*	98.43*	100.88*	94.34	97.89*	90.34	82.83	89.30	96.43	110.95 Slovenia	96.96	130.69 Netherlands	115.05
I11	85.22 <sup>0</sup>	110.16 <sup>0</sup>	61.63	70.79 <sup>#</sup>	58.05	52.17	55.53	39.35	37.74	62.71	110.16 Greece	63.36	81.36 Iceland	63.56

Source: International Telecommunication Union, Measuring the Information Society Report 2016

Legend:

- Indicates that the value is below the average value of Balkan countries.
- \* Indicates that the value is above the average value of Balkan countries.
- # Indicates that the value is above the average value of top 10 European countries.
- <sup>0</sup> Indicates that the value is above the value of the best country in the group of top 10 European countries.

### Comparative Analysis of ICT Competitiveness Factors within the Balkan Countries

To assess the achievements of Balkan countries in each indicator treated as ICT competitiveness factors, the values of 11 indicators within the IDI [2016] are presented in Table no. 4. The information serves to understand the relative positions of countries according to each indicator compared to the highest value and the

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average value of Balkan countries, as well as the highest value and the average value of the top 10 European countries.

Table no. 4 shows that the average value of almost every IDI indicator of Balkan countries, except Tertiary gross enrolment ratio ( $I_{11}$ ), lag much behind the average value of IDI indicators of top 10 European countries (see column 13 and 15). Therefore, Balkan countries have many possibilities for improvement of almost all their performances that determine the ICT competitiveness.

Based on the above stated analysis, the list of critical indicators in Balkan countries, that need to be priority in development policies and improvements as soon as possible to reach the average value of the group, can be determined (Table no. 5).

**Table no. 5. Indicators within the IDI which Require Improvements and Priority of ICT Development Policy by Balkan Countries (2016)**

Country	The critical indicators which show the deviations from the average value of the group of Balkan countries	Number of critical indicators
Slovenia	$I_2, I_8$	2
Greece	$I_2, I_8$	2
Croatia	$I_2, I_3, I_{11}$	3
Bulgaria	$I_1, I_4, I_5, I_6$	4
Serbia	$I_3, I_7, I_{10}, I_{11}$	4
Romania	$I_1, I_2, I_6, I_7, I_{11}$	5
Montenegro	$I_1, I_4, I_5, I_6, I_7, I_8, I_{10}, I_{11}$	8
N. Macedonia	$I_1, I_2, I_3, I_7, I_8, I_9, I_{10}, I_{11}$	8
Bosnia and Herzegovina	$I_1, I_2, I_3, I_4, I_5, I_6, I_7, I_8, I_9, I_{10}, I_{11}$	11
Albania	$I_1, I_2, I_3, I_4, I_5, I_6, I_7, I_8, I_9, I_{10}, I_{11}$	11

The total number of deviations below the average value of the IDI (observed by indicators) shows that the worst positioned countries are Bosnia and Herzegovina and Albania with 11 critical indicators. Montenegro and N. Macedonia has 8 critical indicators. Romania has 5 critical indicators. Bulgaria and Serbia show deviations in 4 critical indicators. Croatia has 3 critical indicators, while Slovenia and Greece have poorer performances in 2 critical indicators of IDI. All of these countries must necessarily make many efforts to make improvements that bring them closer to the average value of the Balkan countries.

It is important to identify the indicators in which most Balkan countries record a deviation. The Mobile-cellular telephone subscriptions per 100 inhabitants ( $I_2$ ) and the Tertiary gross enrolment ratio ( $I_{11}$ ) indicators require intervention and improvement by the majority of countries in the analysed group of Balkan countries (7 from 10 countries) (Table no. 5).

The urgent actions for improving the values of Fixed-telephone subscriptions per 100 inhabitants ( $I_1$ ), Fixed (wired)-broadband subscriptions per 100 inhabitants ( $I_7$ ), and Active mobile-broadband subscriptions per 100 inhabitants ( $I_8$ ) indicators are necessary in six Balkan countries. The International Internet bandwidth (bit/s) per internet user ( $I_3$ ), Percentage of individuals using the Internet ( $I_6$ ), and Secondary gross enrolment ratio ( $I_{10}$ ) indicators are problematic and need corrective action in five Balkan countries. Four Balkan countries have to improve initiatives in the case of Percentage of households with computer ( $I_4$ ) and Percentage of households with Internet access ( $I_5$ ) indicators. The Mean years of schooling ( $I_9$ ) indicator requires improvement in three Balkan countries.

### ***Benchmarking of ICT Competitiveness of Balkan Countries in Relation to the Top 10 European Countries***

The aim of this research segment is to show and analyse critical indicators of IDI of Balkan countries. Problematic indicators, according to their performances, need the priority of policy makers in Balkan countries. In order to determine the critical indicators, it is necessary to perform the comparison of the average value of the indicators (1 to 11) for the Balkan group of countries and the group of top 10 European countries.

Balkan countries achieved worse performances than top 10 European countries in all 11 indicators of IDI. The biggest gaps between the average values of the top 10 European countries and Balkan countries are in the following indicators (Table no. 4): International Internet bandwidth (bit/s) per internet user ( $I_3$ ), Fixed (wired)-broadband subscriptions per 100 inhabitants ( $I_7$ ), Fixed-telephone subscriptions per 100 inhabitants ( $I_1$ ), Active mobile-broadband subscriptions per 100 inhabitants ( $I_8$ ), Percentage of households with computer ( $I_4$ ), Percentage of households with Internet access ( $I_5$ ), and Percentage of individuals using the Internet ( $I_6$ ). These indicators are priority areas for the Balkan countries to improve performances and achieve a better place in the ranking list.



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Smaller difference is achieved in the following indicators: Secondary gross enrolment ratio ( $I_{10}$ ), Mean years of schooling ( $I_9$ ), and Mobile-cellular telephone subscriptions per 100 inhabitants ( $I_2$ ). Balkan countries lag at least when it comes to Tertiary gross enrolment ratio ( $I_{11}$ ) indicator.

However, some Balkan countries exceed the average of the top 10 European countries in some indicators (Table 4). Greece achieved better result than the top 10 European countries in Fixed-telephone subscriptions per 100 inhabitants ( $I_1$ ) indicator. The France result in this indicator (59.91) may serve as a benchmark standard for Greece in the following period. Bulgaria exceeds the average of the top 10 European countries in Mobile-cellular telephone subscriptions per 100 inhabitants ( $I_2$ ) and Tertiary gross enrolment ratio ( $I_{11}$ ) indicators. Therefore, Bulgaria can use the Luxembourg result in the Mobile-cellular telephone subscriptions per 100 inhabitants indicator (148.51) and Iceland result in the Tertiary gross enrolment ratio indicator (81.36) as a target, i.e. benchmark value in the ICT development policy.

Analysis of the indicators shows that all Balkan countries deviate from the average value of the top 10 European countries in the following indicators: International Internet bandwidth (bit/s) per internet user ( $I_3$ ), Percentage of households with computer ( $I_4$ ), Percentage of households with Internet access ( $I_5$ ), Percentage of individuals using the Internet ( $I_6$ ), Fixed (wired)-broadband subscriptions per 100 inhabitants ( $I_7$ ), Active mobile-broadband subscriptions per 100 inhabitants ( $I_8$ ), Mean years of schooling ( $I_9$ ), and Secondary gross enrolment ratio ( $I_{10}$ ) (Table 4). When it comes to Fixed-telephone subscriptions per 100 inhabitants ( $I_1$ ) indicator, nine Balkan countries lag behind the average score of the top 10 European countries. According to Mobile-cellular telephone subscriptions per 100 inhabitants ( $I_2$ ) indicator, eight Balkan countries have a lower average score than the average score of top 10 European countries. Seven Balkan countries lag behind the average score of the top 10 European countries in Tertiary gross enrolment ratio ( $I_{11}$ ) indicator. The purpose of this benchmarking is to find benchmark standards for the Balkan countries, which are relevant to guiding and defining development goals in the ICT. Benchmark standards are target levels that each country can set in the ICT development strategy.

Based on the earlier analysis, a certain observations can be specified about the priorities in development policy for each country from the Balkan group. The criteria are based on the urgency or time priority. Firstly, Balkan countries should improve indicators in which deviate from the average value of the Balkan



countries. When they meet that, the aim should be the average value of the top 10 European countries. After reaching that value, Balkan countries could set a higher goal – the level of performance of the best countries in the group of top 10 European countries. Systematization of indicators is given in Table no. 6.

**Table no. 6. Specification of Indicators within the IDI According to Priority and Urgency of Their Necessary Improvement by the Balkan Countries**

Country	The first level priority of indicators – the benchmark is the average of Balkan countries	The second level priority of indicators - the benchmark is the average of top 10 European countries	The third level priority of indicators - the benchmark is the best country among top 10 European countries
Slovenia	I <sub>2</sub> , I <sub>8</sub>	I <sub>1</sub> , I <sub>3</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub> , I <sub>7</sub> , I <sub>9</sub> , I <sub>10</sub>	-
Greece	I <sub>2</sub> , I <sub>8</sub>	I <sub>3</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub> , I <sub>7</sub> , I <sub>9</sub> , I <sub>10</sub>	I <sub>1</sub>
Croatia	I <sub>2</sub> , I <sub>3</sub> , I <sub>11</sub>	I <sub>1</sub> , I <sub>2</sub> , I <sub>3</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub> , I <sub>7</sub> , I <sub>8</sub> , I <sub>9</sub> , I <sub>10</sub> , I <sub>11</sub>	-
Bulgaria	I <sub>1</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub>	I <sub>3</sub> , I <sub>7</sub> , I <sub>8</sub> , I <sub>9</sub> , I <sub>10</sub>	I <sub>2</sub> , I <sub>11</sub>
Serbia	I <sub>3</sub> , I <sub>7</sub> , I <sub>10</sub> , I <sub>11</sub>	I <sub>1</sub> , I <sub>2</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub> , I <sub>8</sub> , I <sub>9</sub>	-
Romania	I <sub>1</sub> , I <sub>2</sub> , I <sub>6</sub> , I <sub>7</sub> , I <sub>11</sub>	I <sub>3</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>8</sub> , I <sub>9</sub> , I <sub>10</sub>	-
Montenegro	I <sub>1</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub> , I <sub>7</sub> , I <sub>8</sub> , I <sub>10</sub> , I <sub>11</sub>	I <sub>3</sub> , I <sub>9</sub>	-
N. Macedonia	I <sub>1</sub> , I <sub>2</sub> , I <sub>3</sub> , I <sub>7</sub> , I <sub>8</sub> , I <sub>9</sub> , I <sub>10</sub> , I <sub>11</sub>	I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub>	-
Bosnia and Herzegovina	I <sub>1</sub> , I <sub>2</sub> , I <sub>3</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub> , I <sub>7</sub> , I <sub>8</sub> , I <sub>9</sub> , I <sub>10</sub> , I <sub>11</sub>	-	-
Albania	I <sub>1</sub> , I <sub>2</sub> , I <sub>3</sub> , I <sub>4</sub> , I <sub>5</sub> , I <sub>6</sub> , I <sub>7</sub> , I <sub>8</sub> , I <sub>9</sub> , I <sub>10</sub> , I <sub>11</sub>	-	-

The specification of the indicators shown in Table no. 6 gives guidance in defining priorities into ICT development strategy, i.e. the priorities for indicators improvement as determinants of their competitiveness. The authors found that Bosnia and Herzegovina and Albania have all 11 critical indicators in the first level priority of indicators.

It is important to emphasize that above research findings and identification of ICT competitiveness determinants, obtained by using the benchmarking method, will not meet its purpose if it is not used for further in-depth analysis of the factors within the indicators. For one country, the value of each indicator depends on the real values of the numerous factors within that indicator. Consequently, formulating





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national strategies for improving the ICT competitiveness in Balkan countries is not possible without concentrating on the precise setting the target level of factors within each indicator. By applying this approach, benchmarking can, in a more correct and detailed way, show all critical factors of ICT competitiveness. This step can be performed by calculating the volume of negative (problematic) deviation in the value of each factor within the indicator [Krstić *et al.*, 2016b]. The identified critical deviations from benchmark standard require improvement actions, and direct the policy makers in Balkan countries to define the right goals. In the future period, each country should make efforts to achieving determined goals in order to improve the competitive value and rank on both the European and the world list.

### Conclusion

This paper has attempted to provide a review of the current state and development potential of ICT sector in Balkan countries. Results of benchmarking method that is applied in the research point out the competitive factors (indicators) that need to be improved by Balkan countries and indicate the priority of its improving. Factors such as International Internet bandwidth, Fixed (wired)-broadband subscriptions, Fixed-telephone subscriptions, Active mobile-broadband subscriptions, Percentage of households with computer, Percentage of households with Internet access, and Percentage of individuals using the Internet are priority areas for improvement in Balkan countries to get a better place in Europe.

However, some Balkan countries reached better competitiveness level than the top 10 European countries in terms of Fixed-telephone subscriptions (Greece); Mobile-cellular telephone subscriptions and Tertiary gross enrolment ratio indicators (Bulgaria). Furthermore, some Balkan countries exceed the higher value of the IDI than the top European country in Mobile-cellular telephone subscriptions (Montenegro) and Tertiary gross enrolment ratio indicators (Slovenia and Greece).

Nevertheless, Balkan countries achieved worse performances than top 10 European countries in all 11 indicators of IDI, measured by average value. The worst ranked countries in the Balkans are Bosnia and Herzegovina and Albania with all 11 critical indicators in the first level priority for development. Also, some Balkan countries, in case of competitiveness of some indicators, do not reach the average score of the Balkan group, so in the future, their ICT development policy, strategies and national action plans should focus on these factors of competitiveness. After achieving improvements in such factors, Balkan countries



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should strive to advance the indicators, which should reach the average of the top 10 European countries.

The limitations of this study arise from the weakness of the IDI methodology. However, this methodology provides a solid starting framework for the analysis of ICT competitiveness. Using the benchmarking method at the ICT level, sub-indexes/indicators within the IDI, and, especially, at the level of indicators within each of IDI indicators, every Balkan country can identify the guidelines for defining future strategy of ICT development.

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## ESTIMATION OF COST MINIMIZATION OF GARMENTS SECTOR BY COBB-DOUGLAS PRODUCTION FUNCTION: BANGLADESH PERSPECTIVE

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### Abstract

*The Cobb-Douglas production function in the field of economics has a long history. In mathematical economics, it is used to find the functional relationship between the economic inputs and potential outputs. This study applies the Cobb-Douglas production function to predict the cost minimization policies of a running garments industry of Bangladesh. In the study, the effects of the variation rate of capital, labour and other inputs with returns to scale in the garments industry of Bangladesh are examined. In multivariable calculus, the method of Lagrange multiplier is a very useful and powerful technique. In this study, interpretation of Lagrange multiplier is given to predict the cost minimization policy using Cobb-Douglas production function. An attempt has been taken here to show the production of garments in minimum by cost using statistical analysis.*

**Keywords:** *production function; Cobb-Douglas model; cost minimization; returns to scale.*





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**JEL Classification:** C1, C6, H7, I3, O1, O4

### 1. *Introduction*

In economics, productivity is defined as a relation between the production and the necessary inputs for the production. Cobb-Douglas production function is one of the most widely used production function in economics. It is named after two American scholars – mathematician and *economist* Charles W. Cobb and economist Paul H. Douglas. In 1928, it is described for the first time to measure the level of physical output in the US manufacturing sector [Cobb & Douglas, 1928]. It not only satisfies the basic economic law, but also it is easy in its computation and interpretation of the estimated parameters. It estimates the coefficient of inputs, their marginal productivities, factor shares in total output and degree of returns to scale [Khatun & Afroze, 2016]. It describes the law of productions that is the transformation of factor inputs into outputs at any particular time period, and represents the technology of an industry on the economy as a whole [Gupta, 2016]. It can be applied at the level of individual firms, industries, or entire economies [Cottrell, 2019].

Cobb-Douglas production function helps the industry make rational decision on the quantity of each factor inputs to employ so as to minimize the production cost for its profit maximization. The industry as a rational economic agent needs information on the marginal productivity of factors to be able to produce at optimum. If the production of an industry becomes at maximum level for each input and also if it maintains the rules of prevention of environment pollution, then the industry is considered as sustainable [Roy *at al.*, 2021].

Labour is measured as the total number of employees in the industry during some period; the capital is measured as the total fixed assets during the same period, the output is taken as the value added [Ahmad & Khan, 2015]. In any industry, the production level is described by production function and this industry tries to minimize its cost of production [Onalan & Basegmez, 2018]. The Cobb-Douglas production function is the most ubiquitous form in theoretical and empirical analyses of growth and productivity. We can work on growth, technological change, productivity, and labour even in the 21<sup>st</sup> century by the use of Cobb-Douglas production function [Felipe & Adams, 2005].





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## 2. Literature Review

David Gordon and Richard Vaughan have explained various types of production functions, such as the Cobb-Douglas, Constant Elasticity of Substitution (CES), and Generalized and Leontief production functions [Gordon & Vaughan, 2011]. Umesh Kumar Gupta has analyzed the Cobb-Douglas production function and cost function in generalized form [Gupta, 2016]. Shaiara Husain and Md. Shahidul Islam worked with the Cobb-Douglas production functions for impressive average annual growth of manufacturing sector of Bangladesh. They have collected data of total value of output, total asset, total liabilities, number of permanent workers, etc. of about six major types of industries including garments, textiles, food and food processing, leather and leather products, electronics, and chemicals and pharmaceuticals [Husain & Islam, 2016].

Tahmina Khatun and Sadia Afroze have tried to explore the relationship between real GDP, and labour and capital in case of some Asian countries, such as Bangladesh, India, China, Malaysia and Thailand using the Cobb-Douglas production function to make a comparison among Bangladesh and these selected countries [Khatun & Afroze, 2016]. Thakur Prasad Wagle states that agriculture is the main source of food, income, and employment of Nepal and economic growth of the country depends on both increasing the productivity of existing crops and diversifying the agricultural base for use as industrial inputs. He uses the Cobb-Douglas production function on the agricultural production of Nepal in various spaces and dimensions [Wagle, 2016].

Jeff Biddle uses the Cobb-Douglas model as very innovative as it shows that statistical method can be used to derive empirical relationship between input and output [Biddle, 2012]. Cătălin Angelo Ioan and Gina Ioan have tried to discuss various aspects concerning the Cobb-Douglas production function, such as short- and long-term costs, profit is made both for perfect competition market and maximizes its conditions, the effects of Hicks and Slutsky and the production efficiency problem, the existence of the Cobb-Douglas function, etc. [Ioan & Ioan, 2015]. Aurelia Rybak has tried to present the potential of the production function in relation to such a complicated production process as hard coal mining and to examine the regularities occurring during the extraction process, verify the validity of the current method of resource allocation, disclose the origin of possible problems, and offer efficient corrective solutions. The author also provides the necessary level of the most appropriate combination of labour and capital [Rybak, 2019].



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### 3. *Research Methodology of the Study*

Word ‘Research’ is comprised of two syllables, *re-* and *search*. Here *re-* means again, anew or over again, and *search* is a verb to examine closely and carefully, to test and try, or to probe. 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 may relate to any subject of inquiry with regard to collection of information, interpretation of facts, and revision of existing theories or laws in the light of new facts or evidence [Adams *et al.*, 2007]. It also emphasizes on creativity that is carried in a systematic way to improve knowledge, which consists of human knowledge, culture, and society [OECD, 2002].

‘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 [Leedy & Ormrod, 2001]. Greek element *ology* means ‘the study of’. 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].

We have used secondary data to prepare this paper. It can identify the domain, selection, designing and inclusion of various measuring variables in any research. For the collection of secondary data, we have used 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. On the other hand, the unpublished data are collected from diaries, letters, unpublished biographies and autobiographies of scholars, and from various public and private organizations.

In this study, we have discussed the Cobb-Douglas production function to obtain minimum cost by showing mathematical calculations in some detail. In Bangladesh, garments sector is the backbone of the country’s economy. The country exports garments in many countries of Europe, America and the Middle East. In the study, we have tried to provide a suitable suggestion to this sector by the statistical analysis for the sustainable production. 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, 2020].

#### 4. Objective of the Study

The main objective of this study is to analyze the cost minimization techniques of garments industry of Bangladesh by the help of Cobb-Douglas production function. The other particular objectives are as follows:

- To provide a detail mathematical procedure to show the findings more accurately;
- To discuss returns to scale using Cobb-Douglas production function;
- To increase the production and profit of the industry by minimizing cost in a sustainable way.

#### 5. Preliminary Concepts

In this section, we have included some basic concepts of economics and mathematics for those who are novice in this field. We hope all the readers and researchers of this study will capture the full concept efficiently and interestingly.

##### 5.1. 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  $\mathbf{x} = (x_1, x_2, \dots, x_n)$ . For a function  $f(x)$  to be optimum

(maximum or minimum)  $\frac{df}{dx} = f'(x) = 0$ . If  $\frac{d^2f}{dx^2} < 0$  at  $x = x_0$ , the function is

maximum at a point  $x = x_0$ , and if  $\frac{d^2f}{dx^2} > 0$  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,  $\frac{\partial f}{\partial x} (\text{i.e. } f_x) = 0 = \frac{\partial f}{\partial y} (\text{i.e. } f_y)$ , and  $f_{xx}f_{yy} - f_{xy}^2 > 0$ . If

$f_{xx} > 0$  (and  $f_{yy} > 0$ ), then the function has a minimum point, if

$f_{xx} < 0$  (and  $f_{yy} < 0$ ), 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 extremum (maximum or minimum) or a saddle



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point to the surface  $z = f(x, y)$ , is parallel to the  $z$ -plane [Mohajan, 2018b; Roy *et al.*, 2021].

### 5.2. Production Function

Production plays a major role in economics. A production function gives the technological relation between quantities of physical inputs and quantities of output of goods [Mishra, 2007]. The growth of economics generally has measured by Gross Domestic Production (GDP) rate in current price. Economic production is effected from various environmental factors, such as capital, labour, and other inputs [Onalan & Basegmez, 2018]. There are various production functions, such as the Cobb-Douglas, Constant Elasticity of Substitution (CES), and Generalized and Leontief production functions [Gordon & Vaughan, 2011]. Production function has been used as an important tool of economic analysis. It is generally believed that in 1894, Philip Henry Wicksteed was the first economist to algebraically formulate the relationship between output and inputs as  $Q = f(x_1, x_2, \dots, x_n)$ , where  $Q$  is the quantity of output and  $x_1, x_2, \dots, x_n$  are the quantities of factor inputs, such as capital, labour, land, raw materials, etc. [Wicksteed, 1894].

But, there are some evidences suggest that Johann von Thünen first formulated it in the 1840s [Humphrey, 1997]. He was perhaps the first economist who implicitly formulated the exponential production function as:

$$P = f(F) = A \prod_{i=1}^3 (1 - e^{-a_i F_i}) \quad (1)$$

where  $F_1, F_2$ , and  $F_3$  are the three inputs, labour, capital and fertilizer,  $a_i$  are the parameters and  $P$  is the agricultural production [Mishra, 2007; Sickles & Zelenyuk, 2019]. He applied the concept of diminishing returns to a two-input: i) variable proportions, and ii) production function for the first time [Gordon & Vaughan, 2011]. Some studies suggest that production function was made firstly by economist Knut Wicksell in 1906. Later, mathematician Charles W. Cobb and economist Paul H. Douglas developed Cobb-Douglas production function, in 1928 [Cobb & Douglas, 1928].

### 5.3. Cobb-Douglas Production Function

In mathematical economics, the Cobb-Douglas production function is a particular functional form of the production function, which is widely used to represent the technological relationship among two or more inputs, such as capital  $K$ , labour  $L$ , and other inputs  $R$ ; and the amount of output that can be produced by those inputs. The Cobb-Douglas production function form was developed and tested against statistical evidence by Charles W. Cobb and Paul H. Douglas during 1927-1947. The nature of Cobb-Douglas function is such that it is every time Hicks neutral [Cobb & Douglas, 1928].

The general form of a Cobb-Douglas production function for a set of  $n$  inputs is:

$$Q = f(x_1, x_2, \dots, x_n) = A \prod_{i=1}^n x_i^{a_i} \quad (2)$$

where  $Q$  is output,  $x_1, x_2, \dots$  are inputs, and  $A$  and  $a_i$  are parameters determining the overall efficiency of production and the responsiveness of output to changes in the input quantities [Brown, 2017]. A production function with  $n$  input factors is called  $h$  homogeneous,  $h > 0$ , if [Onalan & Basegmez, 2018]:

$$f(kx_1, kx_2, \dots, kx_n) = k^h f(x_1, x_2, \dots, x_n) \quad (3)$$

where  $k$  is any real number. If  $h > 1$ , per percent increase in input levels would result greater than per percent increase in the output level (the increasing returns to scale), if  $h < 1$ , per percent increase in input levels would result less than per percent increase in output (the decreasing returns to scale), and if  $h = 1$  represent the constant returns to scale. A simple aggregated Cobb-Douglas production function, with no natural resources is:

$$Q = AK^a (HL)^{1-a} \quad (4)$$

where  $Q$  is total output and  $0 < a < 1$ , and  $A, K, H$ , and  $L$  are total factor productivity, the stock of physical and human capitals, and the amount of labour employed, respectively [Barros, 2017].

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### 5.4. Returns to Scale

In economics, returns to scale indicates what happens to long-run returns as the scale of production increases, when all input levels including physical capital usage are variables. The concept of returns to scale arises in the context of the production function of an industry [Gelles *et al.*, 1996]. The returns to scale are determined by [Onalan & Basegmez, 2018]:

$$\text{Returns to scale} = \frac{\% \partial (\text{quantity of output})}{\% \partial (\text{quantity of input})} \quad (5)$$

Marginal productivity of capital (MPC) is  $MP_K = \frac{\partial Q}{\partial K}$ , marginal productivity of labour (MPL) is  $MP_L = \frac{\partial Q}{\partial L}$ , and marginal productivity of other inputs (MPI) is  $MP_R = \frac{\partial Q}{\partial R}$ . Therefore, the marginal rate of the technical substitution of labour ( $L$ ) for capital ( $K$ ) is given by:

$$MRTS = \frac{MP_L}{MP_K} = \frac{\partial Q / \partial L}{\partial Q / \partial K} \quad (6)$$

The marginal rate of the technical substitution of other inputs ( $R$ ) for capital ( $K$ ) is given by:

$$MRTS = \frac{MP_R}{MP_K} = \frac{\partial Q / \partial R}{\partial Q / \partial K} \quad (6a)$$

There are three types of returns to scale in economics: i) constant returns to scale, ii) increasing returns to scale, and iii) decreasing returns to scale.

#### 5.4.1. Constant Returns to Scale

Constant returns to scale (CRS) was explained by a Swedish economist Erik Lindahl (1891-1960) [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  $f(\alpha K, \alpha L) = \alpha f(K, L)$ , where constant  $\alpha \geq 0$ . CRS exists if an industry increases all resources; labour, capital, and other inputs, by 25% (say), and output also increases by 25%. For example, an industry employs 10,000 workers in factory to produce 10 million units of a product each year. CRS exists if the scale of operation expands to 20,000 workers in that factory and production increases to exactly 20 million units each year [Mohajan, 2018b; Roy *et al.*, 2021].

#### 5.4.2. 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  $f(\alpha K, \alpha L) > \alpha f(K, L)$ , where constant  $\alpha \geq 0$ . For example, in a year an industry employs 10,000 workers, uses 1,000 machines, and produces 10 million products. In the next year, it employs 20,000 workers, uses 2,000 machines (inputs doubled), and produces 25 million products (output more than doubled) [Mohajan, 2018b; Roy *et al.*, 2021].

#### 5.4.3. 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  $f(\alpha K, \alpha L) < \alpha f(K, L)$ , where constant  $\alpha \geq 0$ . For example, in year one, an industry employs 20,000 workers, uses 1,000 machines, and produces 20 million products. In the next year, it employs 40,000 workers, uses 2,000 machines (inputs doubled), and produces 15 products million (output less than doubled) [Mohajan, 2018b; Roy *et al.*, 2021].





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### 5.4.4. Elasticity of Substitution

Elasticity of substitution is the elasticity of the ratio of two inputs to a production function with respect to the ratio of their marginal products [Hicks, 1932]. In a competitive market, it measures the percentage change in the two inputs used in response to a percentage change in their prices [Mas-Colell *et al.*, 1995]. The general definition of the elasticity of  $X$  with respect to  $Y$  is [Hicks, 1932]:

$$E_Y^X = \frac{\% \text{ change in } X}{\% \text{ change in } Y}. \quad (7)$$

The output elasticity of capital  $K$  is measured by:

$$E_K = \frac{\% \Delta Q}{\% \Delta K}. \quad (8)$$

The output elasticity of labour  $L$  is measured by:

$$E_L = \frac{\% \Delta Q}{\% \Delta L}. \quad (9)$$

The output elasticity of other inputs  $R$  is measured by:

$$E_R = \frac{\% \Delta Q}{\% \Delta R}. \quad (10)$$

For infinitesimal changes and differentiable variables, (7) becomes:

$$E_Y^X = \frac{dX/dY}{X/Y} = \frac{dX}{dY} \cdot \frac{Y}{X}. \quad (11)$$

For a Cobb-Douglas production function with two inputs  $K$  and  $L$ , elasticity of substitution can be written as [Mas-Colell *et al.*, 1995]:

$$\sigma = \frac{d \ln(K/L)}{d \ln(MP_L/MP_K)} = \frac{d \ln(K/L)}{d \ln(MRTS)} = 1. \quad (12)$$

The distribution of national income between capital and labour determines the elasticity of substitution. If  $\sigma = 1$ , any change in  $K/L$  is matched by a proportional

change in  $w/r$  and the relative income shares of capital and labour stay constant, where  $w$  is wage rate and  $r$  is rental rate of capital [Miller, 2008]. For a production function that has more than two inputs, Hicks elasticity of substitution measure is described as [Onalan & Basegmez, 2018]:

$$\sigma_{ij} = - \frac{\partial \ln(X_i / X_j)}{\partial \ln \left( \frac{\partial Q / \partial X_i}{\partial Q / \partial X_j} \right)}. \quad (13)$$

For Cobb-Douglas production function  $\sigma_{ij} = 1$ .

### 5.5. 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  $\frac{\partial C}{\partial Q} = \lambda$ , then if the firm wants to increase (decrease) 1 unit of its production, it would cause total cost to increase (decrease) by approximately  $\lambda$  units [Mohajan, 2018b].

### 6. Mathematical Representation of Cobb-Douglas Production Function

We consider that for the fixed price, an industry of Bangladesh wants to produce and deliver quantity  $Q$  units of a modern dress during a specified time, with the use of  $K$  quantity of capital, which is represent by the total investment in fixed assets, such as the monetary worth of all machinery, equipment and buildings,  $L$  quantity of labour, i.e., the total number of person/hours worked in a year, and  $R$  quantity of other inputs, such as technology, agricultural activities, energy, raw materials, etc. If the industry follows the least cost combination of three factors  $K$ ,  $L$ , and  $R$  to produce  $Q$  quantity of products; to reach its target the industry must minimize its cost function [Moolio & Islam, 2008; Mohajan *et al.*, 2013; Roy *et al.*, 2021]:

$$C(K, L, R) = rK + wL + \rho R, \quad (14)$$

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subject to the constraint of production function:

$$Q = f(K, L, R), \quad (15)$$

where  $r = \frac{\partial Q}{\partial K}$  is rate of interest or services of capital per unit of capital  $K$  that

represents the marginal product of capital;  $w = \frac{\partial Q}{\partial L}$  is the wage rate per unit of

labour  $L$  that represents the marginal product of labour; and  $\rho = \frac{\partial Q}{\partial R}$  is the cost

per unit of other inputs  $R$  that represents the marginal product of other inputs; 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  $\lambda$  in (14) and (15) with the Lagrangian function  $U$ , in a four-dimensional unconstrained problem as follows [Mohajan, 2017a; Moolio & Islam, 2008; Roy *et al.*, 2021]:

$$U(K, L, R, \lambda) = C(K, L, R) + \lambda(Q - f(K, L, R)). \quad (16)$$

Here  $K$ ,  $L$ ,  $R$  are referred to as endogenous (dependent) variables, and  $C$ ,  $Q$ , and  $f$  are referred to as exogenous (independent) variables. We assume that the industry minimizes its cost, the optimal quantities  $K^*$ ,  $L^*$ ,  $R^*$ ,  $\lambda^*$  of  $K$ ,  $L$ ,  $R$ , and  $\lambda$  that necessarily satisfy the first order conditions; which we obtained by partially differentiation of the Lagrangian function (16) with respect to four variables  $K$ ,  $L$ ,  $R$ , and  $\lambda$ ; and setting them equal to zero [Baxley & Moorhouse, 1984],

$$U_\lambda = Q - f(K, L, R) = 0, \quad (17a)$$

$$U_K = C_K - \lambda f_K = 0, \quad (17b)$$

$$U_L = C_L - \lambda f_L = 0, \quad (17c)$$

$$U_R = C_R - \lambda f_R = 0, \quad (17d)$$

where  $U_K = \frac{\partial U}{\partial K}$ , etc. are partial derivatives.

From (17b) we get:

$$\lambda = \frac{C_K}{f_K}. \quad (18a)$$

From (17c) we get:

$$\lambda = \frac{C_L}{f_L}. \quad (18b)$$

From (17d) we get:

$$\lambda = \frac{C_R}{f_R}. \quad (18c)$$

Combining (18a-c) we get:

$$\lambda = \frac{C_K}{f_K} = \frac{C_L}{f_L} = \frac{C_R}{f_R}. \quad (19)$$

From (14), we observe that cost  $C$  is a function of  $K$ ,  $L$ , and  $R$ ; and also from (15), we observe that quantity of product  $Q$  is a function of  $K$ ,  $L$ , and  $R$ . Hence, using the properties of multivariate calculus, we can write for infinitesimal changes of  $dQ$  and  $dC$  as:

$$dC = C_K dK + C_L dL + C_R dR, \quad (20)$$

$$dQ = f_K dK + f_L dL + f_R dR. \quad (21)$$

Dividing (20) by (21) we get:

$$\frac{dC}{dQ} = \frac{C_K dK + C_L dL + C_R dR}{f_K dK + f_L dL + f_R dR}. \quad (22)$$

If  $L$  and  $R$  remain constants,  $K$  varies then  $dL = 0$  and  $dR = 0$ , hence (22) becomes:

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$$\frac{dC}{dQ} = \frac{C_K dK}{f_K dK} = \frac{C_K}{f_K} = \lambda . \quad (23a)$$

If  $K$  and  $R$  remain constants,  $L$  varies then  $dK = 0$  and  $dR = 0$ , hence (22) becomes:

$$\frac{dC}{dQ} = \frac{C_L dL}{f_L dL} = \frac{C_L}{f_L} = \lambda . \quad (23b)$$

If  $K$  and  $L$  remain constants,  $R$  varies then  $dK = 0$  and  $dL = 0$ , hence (22) becomes:

$$\frac{dC}{dQ} = \frac{C_R dR}{f_R dR} = \frac{C_R}{f_R} = \lambda . \quad (23c)$$

Combining (13a-c) we get:

$$\frac{dC}{dQ} = \frac{C_K}{f_K} = \frac{C_L}{f_L} = \frac{C_R}{f_R} = \lambda . \quad (24)$$

Equation (14) can be written as:

$$\frac{dC}{dQ} = \lambda . \quad (25)$$

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. An Economic Analysis of Cobb-Douglas Production Function

Let us consider the Cobb-Douglas production function  $f$  is given by [Humphery, 1997]:

$$Q = f(K, L, R) = AK^a L^b R^c , \quad (26)$$



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where  $A$  is the efficiency parameter reflecting the level of technology, i.e., technical process, economic system, etc., which represents total factor productivity. Moreover,  $A$  also reflects the skill and education level of the workforce. 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  $K$  and  $R$  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  $a$ . The values of  $a$ ,  $b$ , and  $c$  are constants determined by available technologies. Now these three constants  $a$ ,  $b$ , and  $c$  must satisfy the following three inequalities [Mohajan *et al.*, 2013; Roy *et al.*, 2021]:

$$0 < a < 1, 0 < b < 1, \text{ and } 0 < c < 1. \quad (27)$$

### 6.2. Elasticity Coefficients

In the Cobb-Douglass production function;  $a$ ,  $b$ , and  $c$  are defined as follows:

Output elasticity coefficient of capital:

$$a = \frac{\partial Q / Q}{\partial K / K}. \quad (28)$$

Output elasticity coefficient of labour:

$$b = \frac{\partial Q / Q}{\partial L / L}. \quad (29)$$

Output elasticity coefficient of other inputs:

$$c = \frac{\partial Q / Q}{\partial R / R}. \quad (30)$$

### 6.3. Marginal Production and Diminishing Returns

The marginal productivity of factors can be calculated as follows:

Marginal productivity of capital (MPC):

$$MP_K = \left( \frac{\partial Q}{\partial K} \right)_{L,R = \text{constant}} = aAK^{a-1}L^bR^c = a \left( \frac{Q}{K} \right) > 0. \quad (31)$$

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Diminishing returns to capital:

$$\frac{\partial MP_K}{\partial K} = \frac{\partial^2 Q}{\partial K^2} = a(a-1)AK^{a-2}L^bR^c = a(a-1)\left(\frac{Q}{K^2}\right) < 0. \quad (32)$$

The second order derivative is negative, output should increase but at a diminishing rate, where  $R$  and  $L$  are constants in this case. An increase in capital raises the marginal product of labour:

$$\frac{\partial MP_K}{\partial L} = abAK^{a-1}L^{b-1}R^c > 0. \quad (33)$$

An increase in other inputs raises the marginal product of labour:

$$\frac{\partial MP_K}{\partial R} = acAK^{a-1}L^bR^{c-1} > 0. \quad (34)$$

Marginal productivity of labour (MPL):

$$MP_L = \left(\frac{\partial Q}{\partial L}\right)_{K,R=\text{constant}} = bAK^aL^{b-1}R^c = b\left(\frac{Q}{L}\right) > 0. \quad (35)$$

Diminishing returns to labour:

$$\frac{\partial MP_L}{\partial L} = b(b-1)AK^aL^{b-2}R^c = b(b-1)\left(\frac{Q}{L^2}\right) < 0. \quad (36)$$

The second order derivative is negative, output should increase but at a diminishing rate, where  $R$  and  $K$  are constants in this case. An increase in labour raises the necessity of capital:

$$\frac{\partial MP_L}{\partial K} = abAK^{a-1}L^{b-1}R^c > 0. \quad (37)$$

An increase in labour raises the necessity of other inputs:

$$\frac{\partial MP_L}{\partial R} = bcAK^{a-1}L^bR^{c-1} > 0. \quad (38)$$



Marginal productivity of other inputs (MPI):

$$MP_R = \left( \frac{\partial Q}{\partial R} \right)_{L,K = \text{constant}} = cAK^a L^b R^{c-1} = c \left( \frac{Q}{R} \right) > 0. \quad (39)$$

Diminishing returns to other inputs:

$$\frac{\partial MP_R}{\partial R} = c(c-1)AK^a L^b R^{c-2} = c(c-1) \left( \frac{Q}{R^2} \right) < 0. \quad (40)$$

The second order derivative is negative, output should increase but at a diminishing rate, where  $L$  and  $K$  are constants in this case. An increase in other inputs raises the necessity of capital:

$$\frac{\partial MP_R}{\partial K} = acAK^{a-1} L^b R^{c-1} > 0. \quad (41)$$

An increase in other inputs raises the necessity of capital:

$$\frac{\partial MP_R}{\partial L} = bcAK^a L^{b-1} R^{c-1} > 0. \quad (42)$$

#### 6.4. Linearity of Cobb-Douglass Production Function

Relation (26) is a nonlinear equation among production  $Q$ , capital  $K$ , labour  $L$ , and other inputs  $R$ . To obtain accurate results by displaying graph or arithmetic calculation of nonlinear equation sometimes becomes complicated. To simplify the determination of parameters of the production function for the time of calculation it is reduced to a linear form by operating log in (26) we get:

$$\begin{aligned} \log Q &= \log A + \log K^a + \log L^b + \log R^c \\ \log Q &= \log A + a \log K + b \log L + c \log R. \end{aligned} \quad (43)$$

Now equation (43) represents a linear regression model and in this case drawing of graph for production function or arithmetic calculations will be very easy.

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### 6.5. Returns to Scales of Cobb-Douglass Production Function

We consider an economy in an initial state has initial capital  $K_0$ , labour  $L_0$ , and other inputs  $R_0$ ; and the initial production of the industry is  $Q_0$ , then (26) becomes [Cottrell, 2019],

$$Q_0 = AK_0^a L_0^b R_0^c. \quad (44)$$

Now suppose we scale the inputs by some common factor  $\alpha$ , then let capital  $K_1 = \alpha K_0$ , labour  $L_1 = \alpha L_0$ , and other inputs  $R_1 = \alpha R_0$ , then (26) becomes:

$$\begin{aligned} Q_1 &= AK_1^a L_1^b R_1^c \\ &= A(\alpha K_0)^a (\alpha L_0)^b (\alpha R_0)^c \\ &= \alpha^a \alpha^b \alpha^c AK_0^a L_0^b R_0^c \\ &= \alpha^{a+b+c} Q_0, \quad \text{by (44)}. \end{aligned} \quad (45)$$

A strict Cobb-Douglass production function, in which  $a + b + c = 1$ , indicates constant returns to scale,  $a + b + c > 1$  indicates increasing returns to scale, and  $a + b + c < 1$  indicates decreasing returns to scale [Besanko & Braeutigam, 2010].

### 7. Cost Minimization Analysis by Cobb-Douglass Production Function

A Cobb-Douglass production function is optimized subject to a budget constraint [Mohajan, 2018b]. Now using (14), (15), and (26) in (16) we get [Mohajan *et al.*, 2013; Moolio & Islam, 2008; Roy *et al.*, 2021]:

$$U(K, L, R, \lambda) = rK + wL + \rho R + \lambda(Q - AK^a L^b R^c). \quad (46)$$

Taking the partial differentiations in (46), for minimization, we get:

$$U_\lambda = Q - AK^a L^b R^c = 0, \quad (47a)$$

$$U_K = r - a\lambda AK^{a-1} L^b R^c = 0, \quad (47b)$$

$$U_L = w - b\lambda AK^a L^{b-1} R^c = 0, \quad (47c)$$



$$U_R = \rho - c\lambda AK^a L^b R^{c-1} = 0. \quad (47d)$$

From (47a), we get:

$$K^a L^b R^c = \frac{Q}{A}. \quad (48a)$$

From (47b), we get:

$$\lambda = \frac{r}{aAK^{a-1}L^bR^c} = \frac{rK}{aAK^aL^bR^c}. \quad (48b)$$

From (47c), we get:

$$\lambda = \frac{w}{bAK^aL^{b-1}R^c} = \frac{wL}{bAK^aL^bR^c}. \quad (48c)$$

From (47d), we get:

$$\lambda = \frac{\rho}{cAK^aL^bR^{c-1}} = \frac{\rho R}{cAK^aL^bR^c}. \quad (48d)$$

Combining (48b-d), we get:

$$\lambda = \frac{rK}{aAK^aL^bR^c} = \frac{wL}{bAK^aL^bR^c} = \frac{\rho R}{cAK^aL^bR^c}. \quad (49)$$

$$\Rightarrow \frac{rK}{a} = \frac{wL}{b} = \frac{\rho R}{c}. \quad (50)$$

From (47a), we get:

$$K^a = \frac{Q}{AL^bR^c}$$
$$\Rightarrow K = \frac{Q^{1/a}}{A^{1/a}L^{b/a}R^{c/a}}. \quad (51a)$$

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Similarly, from (47a), we get:

$$L = \frac{Q^{1/b}}{A^{1/b} K^{a/b} R^{c/b}}. \quad (51b)$$

$$R = \frac{Q^{1/c}}{A^{1/c} K^{a/c} L^{b/c}}. \quad (51c)$$

From (47a), we get:

$$Q = AK^a L^b R^c. \quad (52a)$$

From (47b), we get:

$$r = a\lambda AK^{a-1} L^b R^c. \quad (52b)$$

From (47c), we get:

$$w = b\lambda AK^a L^{b-1} R^c. \quad (52c)$$

From (47d), we get:

$$\rho = c\lambda AK^a L^b R^{c-1}. \quad (52d)$$

Dividing (52b) by (52c), we get:

$$\begin{aligned} \frac{r}{w} &= \frac{a\lambda AK^{a-1} L^b R^c}{b\lambda AK^a L^{b-1} R^c} = \frac{aL}{bK} \\ \Rightarrow w &= \frac{rbK}{aL}. \end{aligned} \quad (53a)$$

From (51a), we get:

$$R^c = \frac{Q}{AK^a L^b}. \quad (53b)$$



$$\Rightarrow R = \left( \frac{Q}{AK^a L^b} \right)^{1/c} = \frac{Q^{1/c}}{A^{1/c} K^{a/c} L^{b/c}}. \quad (53c)$$

From (51c), we get:

$$R^c = \frac{w}{b\lambda AK^a L^{b-1}}. \quad (53d)$$

From (51d), we get:

$$\rho = c\lambda AK^a L^b R^{c-1}. \quad (54a)$$

$$\Rightarrow \rho = c\lambda AK^a L^b \frac{R^c}{R}. \quad (54b)$$

Using (53c) and (53d) in (54b), we get:

$$\Rightarrow \rho = c\lambda AK^a L^b \cdot \frac{w}{b\lambda AK^a L^{b-1}} \cdot \frac{A^{1/c} K^{a/c} L^{b/c}}{Q^{1/c}}. \quad (54c)$$

Using (53a) in (54c), we get:

$$\Rightarrow \rho = c\lambda AK^a L^b \cdot \frac{1}{b\lambda AK^a L^{b-1}} \cdot \frac{rbK}{aL} \cdot \frac{A^{1/c} K^{a/c} L^{b/c}}{Q^{1/c}}$$

$$\Rightarrow \rho = \frac{crK^{\frac{a+c}{c}} L^{b/c} A^{1/c}}{aQ^{1/c}}$$

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



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

$$\Rightarrow K = \frac{a^{\left(\frac{c}{a+c}\right)} \rho^{\left(\frac{c}{a+c}\right)} Q^{\left(\frac{1}{a+c}\right)}}{c^{\left(\frac{c}{a+c}\right)} r^{\left(\frac{c}{a+c}\right)} A^{\left(\frac{1}{a+c}\right)} L^{\left(\frac{b}{a+c}\right)}}. \quad (55a)$$

Similarly, we get:

$$L = \frac{b^{\left(\frac{c}{b+c}\right)} \rho^{\left(\frac{c}{b+c}\right)} Q^{\left(\frac{1}{b+c}\right)}}{c^{\left(\frac{c}{b+c}\right)} w^{\left(\frac{c}{b+c}\right)} A^{\left(\frac{1}{b+c}\right)} K^{\left(\frac{a}{b+c}\right)}}. \quad (55b)$$

Now, using the values of  $K$  and  $L$  from equation (54a) and (55b) respectively in (53a), we get:

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

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

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

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



$$K = K^* = \frac{a \left(\frac{b+c}{\Omega}\right) w \left(\frac{b}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1}{\Omega}\right)}{b \left(\frac{b}{\Omega}\right) c \left(\frac{c}{\Omega}\right) r \left(\frac{b+c}{\Omega}\right) A \left(\frac{1}{\Omega}\right)}. \quad (56a)$$

where  $\Omega = a + b + c$ .

Similarly, we get:

$$L = L^* = \frac{b \left(\frac{a+c}{\Omega}\right) r \left(\frac{a}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1}{\Omega}\right)}{a \left(\frac{a}{\Omega}\right) c \left(\frac{c}{\Omega}\right) w \left(\frac{a+c}{\Omega}\right) A \left(\frac{1}{\Omega}\right)}, \text{ and} \quad (56b)$$

$$R = R^* = \frac{c \left(\frac{a+b}{\Omega}\right) r \left(\frac{a}{\Omega}\right) w \left(\frac{b}{\Omega}\right) Q \left(\frac{1}{\Omega}\right)}{a \left(\frac{a}{\Omega}\right) b \left(\frac{b}{\Omega}\right) \rho \left(\frac{a+b}{\Omega}\right) A \left(\frac{1}{\Omega}\right)}. \quad (56c)$$

Using (56a, b) in (47b), we get the optimal value of Lagrange multiplier  $\lambda^*$  as:

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

After some mathematical manipulation, we yield:

$$\lambda = \lambda^* = \frac{r \left(\frac{a}{\Omega}\right) w \left(\frac{b}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1-\Omega}{\Omega}\right)}{a \left(\frac{a}{\Omega}\right) b \left(\frac{b}{\Omega}\right) c \left(\frac{c}{\Omega}\right) A \left(\frac{1}{\Omega}\right)}. \quad (56d)$$



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Now, using the values of  $K^*$ ,  $L^*$  and  $R^*$  in (27), we can write:

$$\begin{aligned}
 C &= r \frac{a \left(\frac{b+c}{\Omega}\right) w \left(\frac{b}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1}{\Omega}\right)}{b \left(\frac{b}{\Omega}\right) c \left(\frac{c}{\Omega}\right) r \left(\frac{b+c}{\Omega}\right) A \left(\frac{1}{\Omega}\right)} + w \frac{b \left(\frac{a+c}{\Omega}\right) r \left(\frac{a}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1}{\Omega}\right)}{a \left(\frac{a}{\Omega}\right) c \left(\frac{c}{\Omega}\right) w \left(\frac{a+c}{\Omega}\right) A \left(\frac{1}{\Omega}\right)} + \rho \frac{c \left(\frac{a+b}{\Omega}\right) r \left(\frac{a}{\Omega}\right) w \left(\frac{b}{\Omega}\right) Q \left(\frac{1}{\Omega}\right)}{a \left(\frac{a}{\Omega}\right) b \left(\frac{b}{\Omega}\right) \rho \left(\frac{a+b}{\Omega}\right) A \left(\frac{1}{\Omega}\right)} \\
 &= \frac{ar \left(\frac{a}{\Omega}\right) w \left(\frac{b}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1}{\Omega}\right) + br \left(\frac{a}{\Omega}\right) w \left(\frac{b}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1}{\Omega}\right) + cr \left(\frac{a}{\Omega}\right) w \left(\frac{b}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1}{\Omega}\right)}{a \left(\frac{a}{\Omega}\right) b \left(\frac{b}{\Omega}\right) c \left(\frac{c}{\Omega}\right) A \left(\frac{1}{\Omega}\right)} \\
 C^* &= \frac{\Omega r \left(\frac{a}{\Omega}\right) w \left(\frac{b}{\Omega}\right) \rho \left(\frac{c}{\Omega}\right) Q \left(\frac{1}{\Omega}\right)}{a \left(\frac{a}{\Omega}\right) b \left(\frac{b}{\Omega}\right) c \left(\frac{c}{\Omega}\right) A \left(\frac{1}{\Omega}\right)}. \tag{57}
 \end{aligned}$$

Equation (57) is the optimal cost in terms of  $r$ ,  $w$ ,  $A$ ,  $a$ ,  $b$ ,  $c$ ,  $Q$ ,  $\rho$ , and  $\Omega = a + b + c$ . Now, putting the known values of in right side of (57), we can easily calculate the value of minimum cost  $C$ .

### 8. Analysis of Lagrange Multiplier

From (14) and (47b-d), we get [Mohajan, 2017a; Roy *et al.*, 2021]:

$$\begin{aligned}
 \frac{\partial C}{\partial Q} &= C_K \frac{\partial K}{\partial Q} + C_L \frac{\partial L}{\partial Q} + C_R \frac{\partial R}{\partial Q} \\
 &= r \frac{\partial K}{\partial Q} + w \frac{\partial L}{\partial Q} + \rho \frac{\partial R}{\partial Q}. \tag{58}
 \end{aligned}$$

From (47b-d), we get:

$$r = a\lambda AK^{a-1} L^b R^c, \tag{59a}$$

$$w = b\lambda AK^a L^{b-1} R^c, \tag{59b}$$

$$\rho = c\lambda AK^a L^b R^{c-1}. \tag{59c}$$

Using (59a-c) in (58), we get:

$$\frac{\partial C}{\partial Q} = \lambda \left[ aAK^{a-1}L^bR^c \frac{\partial K}{\partial Q} + \beta AK^aL^{b-1}R^c \frac{\partial L}{\partial Q} + \lambda AK^aL^bR^{c-1} \frac{\partial R}{\partial Q} \right]. \quad (60)$$

Differentiating (47a) with respect to  $Q$ , we get:

$$1 = aAK^{a-1}L^bR^c \frac{\partial K}{\partial Q} + bAK^aL^{b-1}R^c \frac{\partial L}{\partial Q} + cAK^aL^bR^{c-1} \frac{\partial R}{\partial Q}. \quad (61)$$

From (60) and (61), we get:

$$\begin{aligned} \frac{\partial C}{\partial Q} &= \lambda, \\ \Rightarrow \frac{\partial C^*}{\partial Q} &= \lambda^*. \end{aligned} \quad (62)$$

We have observed that (62) verifies (25). So that, Lagrange multiplier  $\lambda^*$  indicates that if the industry wants to increase (decrease) one unit of its production, it would cause total cost to increase (decrease) by approximately  $\lambda^*$  units, i.e., the Lagrange multiplier is a shadow price [Mohajan, 2017a, 2018b].

### 9. *Special Cases of Returns Scale*

In this section, we will discuss returns scale by choosing various elasticity of coefficient. We will try to obtain a suitable technique of production to minimize production cost of a garments industry. In the study, we will analyze three returns scales and try to provide a suitable tool for the sustainability of the industry. In this section, all the data are provided based on garments industry of Bangladesh. We hope, the garments sector of Bangladesh will be benefited from our works.

#### 9.1. **Case I: Constant Returns Scale**

We consider the constant returns scale such that,  $a = b = c = \frac{1}{3}$ ; so,

$\Omega = 3a = 1$ , then from (57), we get the minimum cost as:

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$$\begin{aligned}
 C^* &= \frac{\frac{1}{3} r^{\left(\frac{1}{3}\right)} w^{\left(\frac{1}{3}\right)} \rho^{\left(\frac{1}{3}\right)} Q + \frac{1}{3} r^{\left(\frac{1}{3}\right)} w^{\left(\frac{1}{3}\right)} \rho^{\left(\frac{1}{3}\right)} Q + \frac{1}{3} r^{\left(\frac{1}{3}\right)} w^{\left(\frac{1}{3}\right)} \rho^{\left(\frac{1}{3}\right)} Q}{\left(\frac{1}{3}\right)^{\left(\frac{1}{3}\right)} \left(\frac{1}{3}\right)^{\left(\frac{1}{3}\right)} \left(\frac{1}{3}\right)^{\left(\frac{1}{3}\right)} A} \\
 &= \frac{r^{\left(\frac{1}{3}\right)} w^{\left(\frac{1}{3}\right)} \rho^{\left(\frac{1}{3}\right)} Q}{\frac{1}{3} A} \\
 &= \frac{3r^{\left(\frac{1}{3}\right)} w^{\left(\frac{1}{3}\right)} \rho^{\left(\frac{1}{3}\right)} Q}{A}.
 \end{aligned} \tag{63}$$

For  $a = b = c = \frac{1}{3}$ , and  $\Omega = 3a = 1$ , then from (56d), we get the Lagrange multiplier as:

$$\begin{aligned}
 \lambda^* &= \frac{r^{\left(\frac{1}{3}\right)} w^{\left(\frac{1}{3}\right)} \rho^{\left(\frac{1}{3}\right)} Q^{\left(\frac{2}{3}\right)}{\left(\frac{1}{3}\right)^{\left(\frac{1}{3}\right)} \left(\frac{1}{3}\right)^{\left(\frac{1}{3}\right)} \left(\frac{1}{3}\right)^{\left(\frac{1}{3}\right)} A} \\
 \lambda^* &= \frac{3r^{\left(\frac{1}{3}\right)} w^{\left(\frac{1}{3}\right)} \rho^{\left(\frac{1}{3}\right)} Q^{\left(\frac{2}{3}\right)}}{A}.
 \end{aligned} \tag{64}$$

## 9.2. Case II: Increasing Returns Scale

We consider the increasing returns scale such that,  $a = b = \frac{1}{2}, c = \frac{3}{4}$ ; so,  $\Omega = \frac{1}{2} + \frac{1}{2} + \frac{3}{4} = \frac{7}{4}$ , then from (57), we get the minimum cost as:



$$C^* = \frac{7 \left(\frac{2}{7}\right) w \left(\frac{2}{7}\right) \rho \left(\frac{3}{7}\right) Q \left(\frac{4}{7}\right)}{\left(\frac{1}{2}\right)^{\left(\frac{2}{7}\right)} \left(\frac{1}{2}\right)^{\left(\frac{2}{7}\right)} \left(\frac{3}{4}\right)^{\left(\frac{3}{7}\right)} A^{\left(\frac{4}{7}\right)}} \\ C^* = \frac{7 \left(\frac{2}{7}\right) w \left(\frac{2}{7}\right) \rho \left(\frac{3}{7}\right) Q \left(\frac{4}{7}\right)}{\left(\frac{3}{4}\right)^{\left(\frac{3}{7}\right)} A^{\left(\frac{4}{7}\right)}} . \quad (65)$$

We consider the increasing returns scale such that,  $a = b = \frac{1}{2}, c = \frac{3}{4}$ ; so,

$\Omega = \frac{1}{2} + \frac{1}{2} + \frac{3}{4} = \frac{7}{4}$ , then from (56d), we get the Lagrange multiplier as:

$$\lambda^* = \frac{r \left(\frac{2}{7}\right) w \left(\frac{2}{7}\right) \rho \left(\frac{3}{7}\right) Q \left(\frac{-3}{7}\right)}{\left(\frac{1}{2}\right)^{\left(\frac{2}{7}\right)} \left(\frac{1}{2}\right)^{\left(\frac{2}{7}\right)} \left(\frac{3}{4}\right)^{\left(\frac{3}{7}\right)} A^{\left(\frac{4}{7}\right)}} \\ \lambda^* = \frac{r \left(\frac{2}{7}\right) w \left(\frac{2}{7}\right) \rho \left(\frac{3}{7}\right)}{\left(\frac{3}{4}\right)^{\left(\frac{3}{7}\right)} Q \left(\frac{3}{7}\right) A^{\left(\frac{4}{7}\right)}} . \quad (66)$$

### 9.3. Case II: Decreasing Returns Scale

We consider the decreasing returns scale such that,  $a = \frac{1}{2}, b = \frac{1}{4}, c = \frac{1}{8}$ ; so,

$\Omega = \frac{1}{2} + \frac{1}{4} + \frac{1}{8} = \frac{7}{8}$ , then from (57), we get the minimum cost as:

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$$C^* = \frac{\frac{7}{8} r^{\left(\frac{4}{7}\right)} w^{\left(\frac{2}{7}\right)} \rho^{\left(\frac{1}{7}\right)} Q^{\left(\frac{8}{7}\right)}}{\left(\frac{1}{2}\right)^{\left(\frac{4}{7}\right)} \left(\frac{1}{4}\right)^{\left(\frac{2}{7}\right)} \left(\frac{1}{8}\right)^{\left(\frac{8}{7}\right)} A^{\left(\frac{8}{7}\right)}}. \quad (67)$$

We consider the decreasing returns scale such that,  $a = \frac{1}{2}, b = \frac{1}{4}, c = \frac{1}{8}$  so,

$\Omega = \frac{1}{2} + \frac{1}{4} + \frac{1}{8} = \frac{7}{8}$ , then from (56d), we get the Lagrange multiplier as:

$$\lambda^* = \frac{r^{\left(\frac{4}{7}\right)} w^{\left(\frac{2}{7}\right)} \rho^{\left(\frac{1}{7}\right)} Q^{\left(\frac{1}{7}\right)}}{\left(\frac{1}{2}\right)^{\left(\frac{4}{7}\right)} \left(\frac{1}{4}\right)^{\left(\frac{2}{7}\right)} \left(\frac{1}{8}\right)^{\left(\frac{1}{7}\right)} A^{\left(\frac{8}{7}\right)}}. \quad (68)$$

## 10. Statistical Analysis of Returns Scale

In this section, we present statistical analyses on the results to show which returns scale will give more satisfactory results for the benefit of the industry, as well as that of Bangladesh. The country is situated in South Asia. It is a developing and densely populated country. In this country, the availability of labour for the industry is satisfactory and the industry can manage labours with lower wages. In all three cases, we have used the values of parameters from three industries of Bangladesh. The industry authorities provide their crude data in the condition that we cannot use their industries' name in the article. So that we have used the disguise name of three industries as X, Y, and Z. We have collected data from 2020. Due to COVID-19 pandemic, the garments industries of the country remain closed for four months.

### 10.1. Case I: Constant Returns Scale

In this section, we have used the data provided by the industry X. This industry tries to follow constant returns scale. Here, the industry provides us its data of the



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year 2020. In this industry,  $Q = 10,000,000$  units,  $A = \frac{1}{2} = 0.5$ ,  $r = \$0.02$ ,  $w = \$5$ , and  $\rho = \$2$ , then from (63) we get the minimum cost as:

$$C^* = 2 \times 3 \times (0.02)^{\frac{1}{3}} (5)^{\frac{1}{3}} (2)^{\frac{1}{3}} \times 10,000,000 = \$35,088,213. \quad (69)$$

Now, using same data,  $Q = 10,000,000$  units,  $A = \frac{1}{2} = 0.5$ ,  $r = \$0.02$ ,  $w = \$5$ ,  $\rho = \$2$  in (64), we get the Lagrange multiplier of this industry as:

$$\lambda^* = 6 \times (0.02)^{\frac{1}{3}} (5)^{\frac{1}{3}} (2)^{\frac{1}{3}} \times (10,000,000)^{\frac{2}{3}} = \$162,865. \quad (70)$$

### 10.2. Case II: Increasing Returns Scale

In this section, we have used the data provided by the industry  $Y$ . This industry tries to follow increasing returns scale. Here, this industry also provides us its data of the year 2020.

In this industry,  $Q = 20,000,000$  units,  $A = 0.75$ ,  $r = \$0.05$ ,  $w = \$7$ ,  $\rho = \$1.5$ , then from (65), we get the minimum cost as:

$$C^* = \frac{7}{4} (0.05)^{\left(\frac{2}{7}\right)} (7)^{\left(\frac{2}{7}\right)} (1.5)^{\left(\frac{3}{7}\right)} (20,000,000)^{\left(\frac{4}{7}\right)} \left(\frac{3}{4}\right)^{\left(\frac{3}{7}\right)} (0.75)^{\left(\frac{4}{7}\right)} = \$25,688. \quad (71)$$

Again, using same data,  $Q = 20,000,000$  units,  $A = 0.75$ ,  $r = \$0.05$ ,  $w = \$7$ , and  $\rho = \$1.5$ , in (66), we get the Lagrange multiplier of this industry as:

$$\lambda^* = \frac{(0.05)^{\left(\frac{2}{7}\right)} (7)^{\left(\frac{2}{7}\right)} (1.5)^{\left(\frac{3}{7}\right)}}{\left(\frac{3}{4}\right)^{\left(\frac{3}{7}\right)} (20,000,000)^{\left(\frac{3}{7}\right)} (0.75)^{\left(\frac{4}{7}\right)}} = \$8.73228 \times 10^{-4}. \quad (72)$$

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### 10.3. Case II: Decreasing Returns Scale

In this section, we have used the data provided by the industry Z. This industry tries to follow decreasing returns scale due to run short of capital, labour, and other inputs, and also for dislocation. We have collected data from this industry in 2020. In this industry,  $Q = 1,000,000$  units,  $A = 0.55$ ,  $r = \$0.07$ ,  $w = \$6$ ,  $\rho = \$3$ , then from (67), we get the minimum cost as:

$$C^* = \frac{7(0.07)^{\left(\frac{4}{7}\right)}(6)^{\left(\frac{2}{7}\right)}(3)^{\left(\frac{1}{7}\right)}(1,000,000)^{\left(\frac{8}{7}\right)}}{\left(\frac{1}{2}\right)^{\left(\frac{4}{7}\right)}\left(\frac{1}{4}\right)^{\left(\frac{2}{7}\right)}\left(\frac{1}{8}\right)^{\left(\frac{8}{7}\right)}(0.55)^{\left(\frac{8}{7}\right)}} = \$63,948,913. \quad (73)$$

Again, using same data,  $Q = 1,000,000$  units,  $A = 0.55$ ,  $r = \$0.07$ ,  $w = \$6$ ,  $\rho = \$3$ , then from (68), we get the Lagrange multiplier as:

$$\lambda^* = \frac{r^{\left(\frac{4}{7}\right)}w^{\left(\frac{2}{7}\right)}\rho^{\left(\frac{1}{7}\right)}Q^{\left(\frac{1}{7}\right)}}{\left(\frac{1}{2}\right)^{\left(\frac{4}{7}\right)}\left(\frac{1}{4}\right)^{\left(\frac{2}{7}\right)}\left(\frac{1}{8}\right)^{\left(\frac{1}{7}\right)}A^{\left(\frac{8}{7}\right)}} = \frac{(0.07)^{\left(\frac{4}{7}\right)}(6)^{\left(\frac{2}{7}\right)}(3)^{\left(\frac{1}{7}\right)}(1,000,000)^{\left(\frac{1}{7}\right)}}{\left(\frac{1}{2}\right)^{\left(\frac{4}{7}\right)}\left(\frac{1}{4}\right)^{\left(\frac{2}{7}\right)}\left(\frac{1}{8}\right)^{\left(\frac{1}{7}\right)}(0.55)^{\left(\frac{8}{7}\right)}} = \$27. \quad (74)$$

In the light of the above statistical analysis, we have found that minimum cost in constant returns scale in industry X is \$35,088,213, in increasing returns scale in industry Y is \$25,688, in decreasing returns scale in industry Z is \$63,948,913. In the statistical analysis, we have obtained the minimum cost in increasing returns scale. Therefore, garments sector of Bangladesh will be very satisfactory in increasing returns scale for sustainable production. Our suggestion to this sector is that all the industry must run to increasing return to scale production to obtain maximum profit and sustainable business. On the other hand, the Lagrange





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multiplier, i.e., shadow price in constant returns scale in industry  $X$  is \$62,865, in increasing returns scale in industry  $Y$  is  $\$8.73228 \times 10^{-4}$ , and in decreasing returns scale in industry  $Z$  is \$27. There is a very few change of shadow price in increasing returns scale, in decreasing returns scale it is very small, and in constant returns scale it is very high. Hence, there is no risk in increasing returns scale, but other two have high risks. Our suggestion to the garments sector of Bangladesh is that it should run to the increasing returns scale production for the betterment of the industry and for the welfare of economy of Bangladesh.

### 11. Conclusion and Recommendation

It is clear that Cobb-Douglas production function plays an important role in economics. In this study, we have discussed the production function and cost function of Cobb-Douglas model. The capital, labour, and raw materials are main elements to increase production of an industry. We observe that, in an industry, if production is increased, the use of various inputs also increases. Consequently, it generates employment in both government and private sectors. In the study, we have discussed the Cobb-Dougllass production function with mathematical calculations and statistical analysis for the social welfare, and for national and global economic development. In the study, we have tried to provide a reasonable interpretation of the Lagrange multiplier. We observe that the value of the Lagrange multiplier is positive, and our study it indicates shadow price. In the statistical analysis, we confirm that the garments sector of Bangladesh has better future if it moves to increasing returns to scale production.

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