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

## **JOURNAL HISTORY**

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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 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.

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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 analysed 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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## FOREWORD

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In March 2023, the OECD announced optimistic estimates for the world economy between 2023 and 2024. The Organization for Economic Co-operation and Development (OECD) announced on March 16, 2023, that the outlook for the world economy has improved compared to the end of 2022 because the inflation shock is easing, but the increase in interest rates will keep the risks high, increasing the forecasts for the main economies, informs the Romanian national press agency Agerpres on March 17, 2023, through an article signed by Mihaela Dicu, a fact also reported by the newspaper Forbes Romania, in an article dated March 18, 2023.

The OECD upgraded its global economic growth forecast from a 2.2% forecast in November 2022, citing declining energy and food prices and the easing of restrictions in China.

After growing by 3.2% in 2022, the world economy is on schedule to register a 2.6% advance as central banks' monetary policy tightening takes full effect, it is shown in the interim report of the OECD dedicated to economic prospects, notes Agerpres.

In 2024, global GDP growth should accelerate to 2.9% – compared to a level of 2.7% forecast in November 2022, in the context of reducing the effects on households from high energy prices.

According to an article from the businessmen's newspaper, BURSA.RO, dated March 17, 2023, in the G20 inflation will decrease from 8.1% in 2022 to 5.9% in 2023 and 4.5% in 2024 - much above the target, despite the increase in interest rates by the central banks. The full impact of higher interest rates is difficult to assess, the OECD says, warning that increased pressure on borrowers could result in some banks posting losses, as was recently the case with the collapse of US group Silicon Valley Bank (SVB).

Without taking into account the turbulence in the financial markets after the collapse of the SVB and the concerns about the situation of the Swiss bank Credit Suisse, the European Central Bank (ECB) decided that on March 16, 2023, it will

increase the reference interest rate by another 50 basis points, to counter high inflation.

The OECD predicts that interest rates will reach a peak of 5.25 - 5.5% in the United States and 4.25% in the euro area.

The OECD also expects US economic growth to slow from 1.5% in 2023 to 0.9% in 2024 as higher interest rates weigh on demand. In November 2022, the institution predicted an advance of 0.5% in 2023 and 1% in 2024.

Stimulated by the easing of restrictions, China would register economic growth of 5.3% in 2023 and 4.9% in 2024, after in November 2022 the institution predicted an advance of 4.6% in 2023 and 4, 1% in 2024, according to the Agerpres source.

And the prospects for the euro area were revised upward, following the drop in energy prices. The 20 countries in the eurozone would register an expansion of 0.8% in 2023 and 1.5% in 2024. In November 2022, the OECD forecast an advance of 0.5% in 2023 and 1.4% in 2024.

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 the economy. Whether or not they succeeded in responding to the challenges, we leave it to you to determine.

In the first paper published in the present issue, entitled *The Significance of Life Insurance Sale Management for the Development of the Financial Market*, the authors Milena NIKOLIĆ, Danka MILOJKOVIĆ, Mirjana JEMOVIĆ present life insurance companies as institutional investors, who are key participants in the global financial market. By collecting the savings of the insured, accumulating large amounts of funds, and their long-term investment into various financial instruments, these companies affect the development and stability of the financial market. Considering their significance, the aim of the paper is to establish the determinants of life insurance demand by analyzing the environment in which these companies operate on the European financial markets, in order to detect the possibilities for increasing the sale of life insurance policies, and thus the amount of collected amount that will be invested in the financial market for a long term. Based on the research results, determinants that may encourage the life insurance demand in European countries are determined, and the recommendations on how to manage the sale of life insurance policies, with the aim of increasing the number of collected funds.

The authors **Sunday Adekunle ADULOJU** and **Taiwo Olarinre OLUWALEYE**, in their paper named *Risk Financing Techniques and Safety Culture of Road Construction Companies in Ekiti State, Nigeria* are telling us that this study explores the effects of risk financing techniques on the safety culture among selected road construction companies in Ado-Ekiti, Nigeria. The study engaged a descriptive survey research design. The population of the study comprises all twenty-eight (28) indigenous road construction companies in Ekiti State out of which seven road construction companies were purposively chosen for the study. A total of 130 copies of a structured questionnaire were dispersed among the respondents to gather data for this study, out of which 118 which represent a 90.6% response rate was found useful for analysis. Descriptive and inferential statistics were used for data analysis. The regression results from the structural equation model revealed that risk retention has a significant influence on the safety culture with estimates .143( $P = .015 < .05$ ) while the risk transfer technique recorded an estimate  $-.002 (P = .987 > .05)$  indicating a negative insignificant relationship with the safety culture of road construction companies in Ekiti State, Nigeria. Finally, this study confirms that risk financing techniques hold a negative significant joint influence on the safety culture of road construction companies in the metropolis of Ado, Ekiti State based on reported estimates  $-.591$  and ( $P = *** < .05$ ). Therefore, the researcher recommends that road contractors should be meticulous about the appropriate risk financing techniques that will aid safety culture.

The paper entitled *Evaluation of Foreign Direct Investment Importance in Promoting Economic Development in Developing Countries*, written by author **Halima HUSEYNOVA**, examines the relationship between foreign direct investment (FDI) and economic development in developing countries. The paper begins with an introduction that provides a brief overview of the research topic. The research methodology is then discussed, followed by an exploration of the theoretical approaches to FDI and economic development. Case studies of FDI in developing countries are presented and analyzed, providing insight into the impact of FDI on economic development. The analysis section of the paper examines the data collected from the case studies and discusses the findings. Singapore is taken as a case study to measure for better understanding of the impact of FDI on economic development in developing countries. Foreign direct investment and gross domestic product variables were used to measure this relationship. Gross domestic product is dependent and foreign direct investment is independent

variable in the study. In conclusion, the paper provides a summary of the key points. The references section provides a list of sources used in the paper.

The purpose of the paper entitled *Risk Financing Techniques and SMEs Performance: Empirical Evidence from Nigeria*, written by the authors **Pretoria IPIGANSI** and **Sunday Stephen AJEMUNIGBOHUN**, is to talk about risk financing as a critical element of a resilient future. Risk management techniques are important metrics in safeguarding the lives and property of mankind. Therefore, this study aimed at assessing the effects of financial risk management techniques on business performance, with specific reference to the perceptions of selected SMEs in Lagos, Nigeria. The study adopted a cross-sectional survey research design. The study population consisted of the total number of registered SMEs recorded in Lagos State at 11,666. Thus, both single-stage cluster and convenience sampling techniques were employed in the questionnaire distribution and data collection processes. Two hundred and forty-eight (248) respondents were used in the study. The statistical technique employed was simple regression. This study confirms the importance of financial risk management techniques in the business performance of selected SMEs operators in Lagos, Nigeria. It is recommended that insurance providers in Nigeria should attempt to tailor insurance products in a lovable and affordable manner to SMEs' operators/owners in a bid to improve their behavioral risk attitudes. More so, interest should be placed on impressive risk management communication and ideal physical risk control techniques among SMEs' owners/operators.

In their paper entitled *The Impact of Investment in Research and Development Activities on the Profitability of Pharmaceutical Companies: A Cost Accounting Approach*, the authors **Bojana NOVIĆEVIĆ ČEČEVIĆ**, **Jovana MILENOVIĆ**, and **Tamara RAĐENOVIĆ** are talking about the fact that investing in research and development (R&D) activities greatly impact the assessment of the company's finances and performance, which is why the issue of the accounting treatment of these costs is so important. The aim of this paper is to examine the relationship between investment in R&D activities and the profitability of pharmaceutical companies, i.e., to see whether R&D activities can affect the financial position and performance of 30 pharmaceutical companies in the period from 2010 to 2020. The obtained results show that investing in R&D activities has a positive effect on net income, earnings before interest and taxes, and earnings per share (EPS).

The authors **Nureni Sanusi ALAKA** and **Sunday Stephen AJEMUNIGBOHUN**, in their paper entitled *Evaluating Turnaround Strategies*

*and Organizational Performance in a Small Business–A Study Of Eko Support Service Limited*, are talking about the fact that numerous associations today experience authoritative decay sooner or later in their life cycles as a result of both outside and inside factors. Much of the time, associations face decline when they neglect to perceive and adjust to outer and interior tensions that compromise the association's presence. The reaction to such circumstances is quite often a significant amount of work to "turn the organization around". This study seeks to examine the effects of turnaround strategies on the organizational performance of Eko Support Service Limited. The researcher used a structured questionnaire to collect data. The population of the study was 400 and a sample of 200 respondents was obtained via the Taro Yamane formula. The data collected were analyzed using descriptive statistics such as simple percentages and the relationship between the variables of the model was tested using linear regression analysis. The study found that there is a positive and significant effect of diversification strategy on market share ( $R^2 = 0.127$ , at  $p < 0.05$ ) and the F-Value yielded 9.335. The result of hypothesis 2 also indicates a positive significant effect of retrenchment strategy on profitability ( $R^2 = 0.388$ , at  $p < 0.05$ ) and F-Value yielded 60.793 and lastly, top management re-organization strategy has a significant effect on organizational efficiency ( $R^2 = 0.116$ , at  $p < 0.05$ ) and F-Value yielded 13.034. The study, therefore, concludes top-level management have significant roles to play indecision-making and conceptual skill regarding turnaround strategies and their applicability. The study recommends that top management re-organization in terms of structure, people, leadership, and organizational culture should be given priority in times of distress as this has proven to be a measure to improve organization efficiency.

Ali HUSEYNOV, in his research paper named *Exploring the Relationship between Economic Convergence and Salary Levels in Developing Countries: A Case Study of Azerbaijan* is telling us that the purpose of this paper is to examine the relationship between wage levels and economic convergence in developing countries. Although the topic was approached from a broader perspective at the beginning of the article, more specific factors were mentioned in the continuation. Here, the economic growth in many countries of the world, the rate of salary level, changes in the level of welfare of the population, and the economic convergence trends of those countries are examined. Although Azerbaijan was chosen as the main research object to analyze the issue more concretely, as mentioned above, the general aspects of the developing countries of the world are studied. This will lead



to a comparison of the experience of Azerbaijan and the world in this field and, as a result, a more accurate analysis. The article talks about the factors that have a greater influence on the salary levels and economic convergences of developing countries. Analyses are made, results are obtained, and recommendations are made. This article contains useful information about the economy of Azerbaijan and other countries of the world for those studying this topic.

**Abiodun Samuel ISAYOMI, Olumide Olumuyiwa OMODUNBI, and Bmidele Perowei ABALABA**, in their paper entitled *Income Inequality, Clientelism, and Governance: Implications for Socioeconomic Development in West Africa* are talking about the fact that genuine redistribution of income is usually not commonplace in underdeveloped democracies. Instead, politicians in these democracies often target private, excludable, and reversible benefits for the poor in exchange for electoral support. This electoral strategy often results in a situation where the maintenance of political power or re-election becomes the focus of public policies instead of public welfare. This study investigated the main and interaction effects of income inequality and clientelism on government effectiveness in West African Countries from 1996 to 2020. The study objectives were achieved using pooled mean group (PMG) approach of the panel autoregressive distributed lag (ARDL) estimation technique and the Dumitrescu Hurlin panel causality test. Findings from the study revealed that clientelism enhances government effectiveness at higher levels of income inequality but inhibits government effectiveness at lower levels of income inequality. The study findings also revealed a positive relationship and uni-directional causality between income inequality and clientelism. The study concluded that government effectiveness which thrives on lower levels of income inequality and clientelism is beneficial to socioeconomic development; and that socioeconomic development and government effectiveness is interdependent and mutually reinforcing.

**Devajit MOHAJAN and Haradhan Kumar MOHAJAN**, in their paper entitled *Sensitivity Analysis between Lagrange Multipliers and Consumer Budget: Utility Maximization Case*, are discussing about the sensitivity analysis between Lagrange multipliers and total budget. The method of Lagrange multipliers is a very useful and powerful technique in multivariable calculus. In mathematical economics, utility is the vital concept that increases or decreases the overall happiness of consumers. This study tries to discuss the utility maximization policy of an organization by considering two constraints: budget constraint and

coupon constraint. In this article, an attempt has been taken to achieve the best result through the application of the scientific method of optimization.

**Chiyem Lucky NWANZU** and **Sunday Samson BABALOLA** wrote a very interesting paper entitled *The Role of Workplace Friendship in Cultural Intelligence and Quality of Work-Life: A Cross-Sectional Study*. The purpose of this study is to examine the effect of cultural intelligence (CI) and workplace friendship (WPF) on the quality of work-life (QWL) of individual workers and to examine whether WPF mediates the relationship between CI and QWL between employees of the same nationality, but of different ethnic groups working in government-owned organizations. A cross-sectional study was conducted among 161 employees using self-report measures. Data analysis was performed using two statistical procedures (the Harman single factor test and the correlation matrix) to assess the presence of a common-method variance (CMV) bias in the data collected for this study. Theoretical propositions and empirical observations offered plausible explanations for WPF's mediating role in the CI-QWL relationship. The present study confirms the reliability and, to some extent, the validity of the measures in a developing economy context. However, this study also builds empirical evidence that age and gender are fewer differentiating factors in employees' work attitudes and behavior.

The study *Revival of Tourism after the Pandemic Period* written by **Laurenția AVRAM**, **Cristina NAFTANAILA**, **Viorica BRAGA** **Robert DRAGOMIR** and **Daliana TASCOVICI**, aims to present the effects of the pandemic on national and international tourism. The first part describes tourism in Romania and Arges county. In addition, tourist sights in these locations were also mentioned. Then the authors statistically analyzed the evolution of tourism in the European Union, Romania, and Arges county during the period 2017-2021. They choose to expose the main trends. To realize the research aim, they focused on literature in the field as well as European and national statistics reports.

The study of the author **Mansuma ALIYEVA**, entitled *Analysis of an Effective Use of Human Resources in Tourism: A Case Study in Azerbaijan*, is talking about big and successful companies that understand the importance of the human factor. Unfortunately, the purpose of some small and not very successful companies is only to make a profit. Many of them do not think about the ways how that profit is made. The abuse of people's knowledge and skills has never been considered to be correct and never will be considered. The loss of employees' loyalty is the result of underestimating their personality, desires, and needs, which

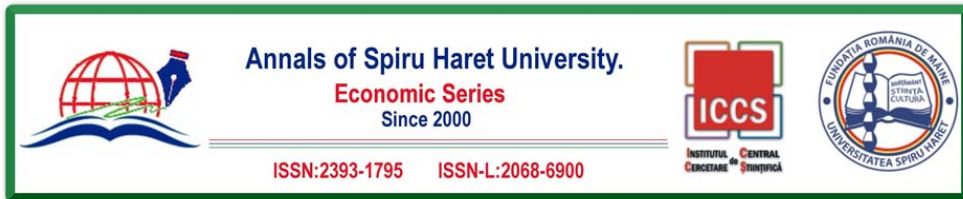
is common, especially in the service sector. This article is about human resources and their role in the hotel sector of Azerbaijan. The purpose of the article is to emphasize the importance of the human factor in the development of tourism in Azerbaijan and the importance of investing in human resources in order to achieve quality and competitive advantage. The paper adapts and modifies the human action model to use it in analyzing the effectiveness and success of hotel companies.

The study of **Oloyede Raheem LAWAL** and **Michael Ayorinde AFOLAYAN**, named *Qualitative Analysis of Public Perception of Work Ethics in Nigeria's Public Sector*, is discussing about the Nigerian public service who is crucial to the country's economic development. This is because a vibrant public service sector is able to harness effectively overhead taxes and also account for public expenditure at all levels. The objective of this study is to investigate how public servants perceive work ethics to positively influence organizational success and productivity in Nigeria's public sector. In this study, the researchers used qualitative methods to analyze the response of 15 individuals from the public who have visited a typical public office at least 3 times within the last years. An interview form containing 7 items was administered, and the results were analyzed from themes that give a true picture of the perception of respondents. It was observed that workers in public service are not professional enough, taking their jobs with levity. As a result, this study recommends public service reforms.

The main objective of the authors **Tudor-Vladimir HRENIUC** and **Elena GURGU**'s paper entitled *Challenges and Trends Regarding the Implementation of ITC Solutions in the Management of Customer Service Department, with Case Study at AS&ITC Romania* is the fact that the motivation for choosing the theme is primarily due to author's passion for the ITC field. In this work, we first approached the study and analysis of the national and international ITC market from the last 5 years, then we will refer to the challenges and trends regarding the implementation of ITC solutions in the management of the customer services department, with a case study at the Company AS&ITC Romania.

The ITC industry in Romania represents one of the most prosperous economic sectors, registering a turnover of almost 6 billion euros in 2019, representing approximately 5.5% of the country's Gross Domestic Product.

In 2020, the IT&C sector had a turnover of 70.3 billion lei and was in the Top 5 economic sectors, along with manufacturing, construction, transport and storage



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The purpose of the paper is mainly to follow the evolution of the ITC market on a national and international level in the last 5 years.

The objectives pursued in the paper have in mind the establishment of the year-by-year evolution of the national and international ITC market, as well as the impact it generates on the economy and everyday life.

The importance of the theme for research and for the business environment consists in the fact that increasingly in recent years the ITC field represents in the business environment an important pillar in the digitization and automation of services. Digitization means a large number of tools that make work more efficient within a company.

The novelty of the paper's theme would consist in measuring the impact of the influence of the ITC industry on the perception of everyday life, studying the growth of the national and international ITC industry, as well as its impact on the business environment.

We hope that ASHUES 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 invite you to expose your ideas in new studies published by us.

Finally, hoping that you found interesting Issue no. 1/2023, 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**



## THE SIGNIFICANCE OF LIFE INSURANCE SALE MANAGEMENT FOR THE DEVELOPMENT OF THE FINANCIAL MARKET

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### **Abstract:**

*Life insurance companies as institutional investors are key participants in the global financial market. By collecting the savings of the insured, accumulating large amounts of funds and their long-term investment into various financial instruments, these companies affect the development and stability of the financial market. Considering their significance, the aim of this paper is to determine the determinants of life insurance demand by analysing the environment in which these companies operate on the European financial markets, in order to detect the possibilities for increasing the sale of life insurance policies, and thus the amount of collected amount that will be invested in the financial market for a long term. Based on the research results,*

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*determinants that may encourage the life insurance demand in European countries are determined and the recommendations on how to manage the sale of life insurance policies, with the aim of increasing the amount of collected funds.*

**Keywords:** *management, sale, financial market, institutional investors, life insurance, Europe*

**JEL Classification:** E44, G22, M31

## Introduction

Life insurance is long-term insurance that provides significant security to society, by protecting individuals and their families from experiencing various life adversities [Žarković, 2008, p. 24; Nikolić et al., 2021], but also with the security for the economy because it collects significant funds that are invested in the capital market in the long term and attracts investors who affect the development of the economic environment and the financial market [Oyedokun et al., 2022; Surdu et al., 2020; Bhatia et al., 2021]. During their length of service, the insured pay a life insurance premium for a long period of time, forming in this way a fund that will enable them to pay the funds after the expiration of the prescribed period – upon retirement [Vojvodić & Vojvodić, 2016], that is, after the occurrence of death, when funds are paid to beneficiaries that they have specified. Owing to the accumulation of funds that are available for the economy over a long time period, this type of insurance significantly affects the economic growth and development of the country [Marović & Njegomir, 2015, pp. 27-30; Su-Yin & Han, 2022].

Along with life insurance policies, the insured are often provided with accident insurance (in case of injury) as additional insurance, protecting individuals from the risks of injury and physical injuries, creating additional security for individuals and their families. In situations when companies provide their employees with the aforementioned, along with the application of numerous occupational health and safety measures, the preconditions for achieving greater efficiency and productivity of employees are created [Nikolić et al., 2022, p. 145]. This contributes to the affirmation of life insurance and injury insurance, as well as to the creation of opportunities for increasing the level of collected premium funds for these types of insurance. The same impact and effect is achieved by health insurance, when it is included as supplementary insurance along with life insurance.

Life insurance companies, as institutional investors collecting large amounts of funds from the insured, have great financial potential and their activities greatly impact the trends on the financial market [Hadžić, 2021, p. 13; Labudović, 2007, p. 31; Marinković et al., 2016]. Their significance and impact are the consequence of the following features: stable insurance premium flow, long-term nature of the source of funds, long-term investments, inconsistency of payments and payouts, as well as the predictability of the occurrence of the insured event affecting the predictability of withdrawal of funds [Labudović, 2007, p. 30].

The amount of funds that life insurance companies collect from their insured, and then invest, depends on the supply of a life insurance company and the demand of the insured for life insurance. The analysis of the determinants of demand is of great significance for increasing the value of collected life insurance premium funds at a time of numerous changes in the life insurance sector, and especially after the introduction of life insurance products that, in addition to protection against the risk of death, offer opportunities for savings and investment [Dobrin, 2010]. Previous research were not sufficient for adequate management and for increasing the amount of collected life insurance premium funds. These research on the determinants of life insurance demand were limited in terms of time, number of analyzed countries or number of dependent variables that represented the life insurance demand. Most research were often, conducted for a shorter period of time or using data from the period covering the second half of the 20<sup>th</sup> century, and possibly the first decade of the 21<sup>st</sup> century. Most research was conducted for specific countries or one country, rarely for European countries. The impact of independent variables on one dependent variable was often investigated, while research including two or more dependent variables for investigating life insurance demand were rare. The authors of this paper investigate the general environment of life insurance companies and the determinants of demand for life insurance policies in 23 European countries, in the period from 2006 to 2019, using four dependent variables that indicate the life insurance demand, which contributes to the credibility of the obtained results. The aim of the paper is to determine the determinants that significantly impact the life insurance demand on the European financial market, in order to determine the possibilities for increasing the sale of life insurance policies in European countries and impact the development of their financial markets.

In accordance with the defined subject and goal of research, the paper is divided into a few sections. After the introduction, the first section provides a brief overview of literature and research on determinants of life insurance demand. The

methodology of empirical research is presented in the following section. Then, the research results are presented, along with the discussion of the results. The last section of the paper summarizes the conclusions of the empirical analysis of the determinants of life insurance demand and it is indicated how using the results of this research can increase the sale of life insurance policies and impact the development of financial markets.

### Literature Review

Research on life insurance demand dates back to the second half of the 20<sup>th</sup> century, when Yaari [1965] created theoretical model to explain the life insurance demand. The basic assumptions on which they based their models were that households had uncertain income due to the probability of premature death of the wage earner and that life insurance reduced the volatility of household consumption [Li et al., 2007]. Using Yaari's theoretical model, Lewis [1989] developed his life insurance demand model that included the preferences of other household members. He analysed the life insurance demand from the perspective of the insurance beneficiary, while previous research emphasized the perspective of the wage earner. In this research, the determinants of life insurance demand most often cited are as follows: wealth, expected income during an individual's lifetime, interest rate, administrative costs, assumed subjective discount rate for the current in comparison to the future consumption and the probability of death of the primary wage earner [Kjosevski, 2012].

In later research, numerous authors discovered demographic, economic and social determinants of life insurance demand and they used them to extend the exiting life insurance demand models. The most frequent life insurance demand determinants from these groups were as follows: the income level, industrialization rate, employment rate, savings rate, inflation, life expectancy at birth, education level, size of the social protection system of a country or public expenditures for social insurance.

Burnett and Palmer [1984], Beenstock et al. [1986, p. 261], Feyen et al. [2011], Kjosevski [2012] and Mahdzan and Victorian [2013] proved in their research that income was one of the most significant determinants of life insurance demand and they pointed out that it has a strong and positive impact on the life insurance demand. Burnett and Palmer [1984] pointed out that persons with high incomes were the owners of large amounts of life insurance policies and Beck and Webb [2002] that with an increase in income, both insurance penetration and insurance density increase. Beck and Webb [2002] and Feyen et al. [2011] point out several

reasons for the significant and positive correlation between income and life insurance demand: greater availability of life insurance products, a stronger need to protect the potential income of the insured and the expected consumption of dependents, as well as reduced unit cost of larger life policies. Dragota et al. [2022] revealed positive and statistically significant impact of income (GDP per capita) on the demand for life insurance products. Mare et al. [2019] considered the impact of employment on the purchase of life insurance and they obtained results showing that there was a significant and positive relationship between employment and life insurance demand.

The industrialization rate often appears as a determinant of the life insurance demand. The industrialization rate is mentioned by Kočović and Šulejić [2006] who indicate that there is a positive correlation between the industrialization rate and the life insurance demand and they explain that the life insurance demand is increased in countries that industrialize faster.

In their research, Headen and Lee [1974] showed that the life insurance demand depends on the net savings rate and the interest rates. They believe that life insurance is viewed as an alternative investment asset by low-asset holders while demand is encouraged by high savings rates.

Inflation is a very important life insurance demand determinant. In their research, Babbel [1985], Outreville [1996], Beck and Webb [2003], Li et al. [2007], Chiaramonte et al. [2020], Segodi and Sibindi [2022] proved that inflation had a negative impact on life insurance demand. Life insurance policies represent savings instruments that provide financial benefits during longer time periods. An increased inflation rate discourages savings, because it creates monetary uncertainty. [Kjosevski, 2012]. Fortune [1973], Brown and Kim [1993], Li et al. [2007] and Feyen et al. [2011] proved that inflation hinders the development of the life insurance sector and they explained that it devalues life insurance policies, making them less desirable and less attractive products.

Life expectancy is often cited in research by numerous authors as a significant determinant of the life insurance demand. Beenstock, Dickinson & Khajuria [1986] developed a model to determine the impact of various economic and social variables on the supply and demand, and they discovered that life insurance premiums increased with the increase of life expectancy. Outreville [1996] also found that life expectancy at birth positively and significantly affected the life insurance density. A positive correlation between life expectancy and the life insurance demand is pointed out by Zerriaa et al. [2017] and by Kočović and Šulejić [2006]. Kočović and Šulejić [2006] explain that is because longer life

expectancy impacts the increase of life insurance demand, as a savings instrument. They believe that longer life expectancy should also impact the reduction of the life insurance premium. On the other hand, Feyen et al. [2011] found that the life expectancy negatively and significantly impacted life insurance in their research that included approximately 90 countries during the period from 2000 to 2008, and they explained that occurred because longer life expectancy reduces life insurance demand because the probability of premature death decreases.

In Beck and Webb's [2002] and Feyen et al. [2011] research, the impact of the size of the country's social security system or national expenditures on social security on the life insurance demand. Feyen et al. [2011] point out that the size of the social security system (expressed by the contribution rate) negatively affects the life insurance demand and the development of this type of insurance. The negative impact is the consequence of the fact that by paying contributions to the state pension system the level of disposable income that remains for the population to invest in life insurance policy is reduced. On the other hand, in their research, Browne and Kim [1993] determine a positive correlation between the size of social security (expressed by public expenditures for social security) and the life insurance demand.

Kočović and Šulejić [2006] state that there is a positive correlation between the life insurance demand and the education level, emphasizing that more educated population shows a higher demand for life insurance. Browne and Kim [1993] point out that education extends the dependence period and they believe that in countries in which population is educated for a longer period of time, there is a greater demand for life insurance policies. In addition, they emphasize that more educated individuals have a greater need to protect themselves from risk and to insure themselves in general. Mahdzan and Victorian [2013], Truett and Truett [1990] had similar initial assumptions and they determined in their research on the determinants of life insurance demand in Malaysia, that is, Mexico and the USA the positive impact of education on the life insurance demand. In their research on the determinants of life insurance demand in OECD countries, that is, the countries of Central and Eastern Europe, Li et al. [2007] and Kjosevski [2012] also confirmed a positive relationship between the education level and the life insurance demand.

### **Data and Methodology**

Empirical research is focused on the analysis of life insurance demand determinants in 23 European countries in the period from 2006 to 2019. Secondary

data from different sources were used in the analysis – the World Bank, Eurostat and OECD statistics. The group of European countries included in this analysis are: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

In order to determine the determinants of life insurance demand and provide recommendations and guidelines for increasing the demand and sale of life insurance products in European countries, the following hypotheses were proposed in this research:

H1: Economic determinants are significant for the prediction of the life insurance demand in European countries;

H2: Socio-demographic determinants have an impact on the life insurance demand in European countries.

Testing of hypotheses was performed using standard multiple regression by forming 4 models for determining the impact of 8 independent variables on 4 dependent variables (Table 1). Independent variables are the gross domestic product per capita, the employment ratio, the industry, the education level (the tertiary education), the aggregate replacement ratio for pensions, the life expectancy at birth, the gross savings, and the inflation (consumer prices index). Dependent variables are the life insurance penetration (Model 1), the life insurance density (Model 2), the life insurance share (Model 3) and the total life insurance gross premiums (Model 4).

**Table 1. Variables and data used in statistical analysis**

Variable	Variable description	Type of variable	Data source
GDPPC	Gross domestic product per capita accommodated with purchasing power parity (current international dollars)	Independent	The World Bank
EM	Employment ratio (%)	Independent	The World Bank
IR	Industry (% GDP)	Independent	The World Bank
GS	Gross savings (% GDP)	Independent	The World Bank
ICPI	Inflation - consumer price index (annual %)	Independent	The World Bank
ELT	Education level - tertiary education (%)	Independent	Eurostat



Variable	Variable description	Type of variable	Data source
LEB	Life expectancy at birth - total (years)	Independent	The World Bank
ARRP	Aggregate replacement ratio for pensions (%)	Independent	Eurostat
LIP	Life insurance penetration (%)	Dependent	OECD
LID	Life insurance density (US dollar)	Dependent	OECD
LIS	Life insurance share (%)	Dependent	OECD
TLIGP	Total life insurance gross premiums (millions US dollar)	Dependent	OECD

Source: Adapted from the authors.

### Independent variables

With the aim of determining the impact of economic variables on insurance demand in the analysis, the following variables were used: the gross domestic product per capita, the employment ratio, the industry, the gross savings, and the inflation expressed as consumer price index.

The gross domestic product per capita is an indicator used for measuring the income of the population at the national level. In order to be used for comparative analysis between countries, it is adjusted for purchasing power parity and it is expressed in international US dollars. Having in mind the data on the gross domestic product per capita are given in absolute values, before applying the standard multiple regression analysis, the data were transformed using a logarithmic function.

The employment rate represents the share of the employed population of the country population. This indicator includes only working-age persons, starting from the age of 15 or more who were engaged in an activity for the production of goods or the provision of services for a salary or profit, during a shorter reference period, regardless of whether they were at work or not at work during that period (e.g. due to temporary absence from work) [The World Bank, 2022].

The gross savings is an indicator obtained when gross national income is reduced by total consumption and increased by net transfers [The World Bank, 2022]. The inflation is measured by the consumer price index and it shows the annual percentage change in the costs of the average consumer for the purchase of a consumer basket of goods and services (the consumer basket). The consumer

basket may be fixed or it may change after a certain period (e.g. annually) [The World Bank, 2022]. The industry refers “the values added in production, mining, construction, electricity, water and gas, and it is expressed as a share of GDP” [The World Bank, 2022].

The impact of socio-demographic determinants on the life insurance demand was determined using the life expectancy at birth and the education level. The life expectancy at birth represents the number of years that a new-born could live, provided that the existing mortality patterns valid at the time of his/her birth do not change during his life [The World Bank, 2022]. This indicator represents the expected age expressed in years and the total value for both genders. To determine the impact of people’s education on the life insurance demand, the education level indicator was used, which represents young people who are in the tertiary education process, aged 25-29, due to the assumption that young people with a higher level of education have a more developed awareness of the need for savings for the third age and protection against the risk of death and disease. According to Eurostat methodology, the tertiary level of education represents undergraduate, master and PhD students.

The analysis of the impact of social determinants of the life insurance demand was conducted using the aggregate replacement ratio for pensions indicator. This indicator represents the ratio of the median gross of an individual pension of the population aged between 65 and 74, and the median gross individual earnings of the population aged from 50 to 59, excluding other social benefits [Eurostat, 2022]. The aggregate replacement ratio for pensions was chosen for measuring the impact of social determinants on the life insurance demand, because it represents the disposable income of pensioners in the so-called “third age”, and the need for additional income in this period of life (e.g. from life insurance).

### **Dependent variables**

In order to determine the degree of development of the life insurance market and the demand for life insurance policies, 4 dependent variables were used in the analysis - the life insurance penetration, the life insurance density, the life insurance share and the total life insurance gross premiums.

The life insurance penetration represents the share of the life insurance premium in the country GDP. It is used to determine the development of life insurance in relation to the size of the country economy and it is therefore suitable for the comparison of the development of life insurance between countries [Beck & Webb, 2003]. The life insurance density is an indicator that is obtained when the total



value of the life insurance premium is related to the total number of inhabitants of a country, so that it represents the amount of the life insurance premium per capita. It shows how much each resident of a certain country spends on life insurance in US dollars on average [Beck & Webb, 2003]. Considering the fact that the data for this variable is given in absolute amounts, in order to unify the data for the analysis, it was adjusted using a logarithmic function. The life insurance share represents the share of the life insurance premium in the total insurance premium of a country [OECD, 2022a]. The total life insurance gross premiums indicate the total life insurance premium of a certain country. It is the most important indicator of the significance of this type of insurance in the economy of a country. The value of this indicator is expressed in millions of US dollars [OECD, 2022b]. With the aim of adjusting the data given in absolute values, the total life insurance gross premiums were transformed by applying a logarithmic function.

### Results and Discussion

The impact of independent variables on the life insurance penetration was analyzed in the first model, and the results are shown in Table 2. The results of the analysis show that the multiple correlation between these independent variables and the life insurance penetration is strong and significant ( $R=86$ ,  $p=0.00$ ). It is obvious that the selected independent variables can explain 74% of the variation in the life insurance penetration ( $R^2=0.74$ ), but that 6 are statistically significant for the regression model. Therefore, the regression equation for this model is as follows:

$$LIP = -120.631 + 0.243 * GDPPC + 9.139 * ARR - 1.438 * LEB - 0.118 * IR - 0.494 * GS + 0.349 * ICPI$$

Based on the results of the regression analysis, it can be seen that the gross domestic product per capita, the aggregate replacement ratio for pensions and the inflation encourages the life insurance demand. An increase in the gross domestic product per capita, the aggregate replacement ratio for pensions and the inflation by 1 percent affect the increase in life insurance penetration by 0.24, 9.14 and 0.35 percent, respectively. On the other hand, the life expectancy at birth, the industry and the gross savings have a discouraging effect on the life insurance demand in the observed countries. Increasing the life expectancy at birth by 1 year, the industry and the gross savings by 1 percent leads to a decrease in life insurance penetration by 1.44, 0.12 and 0.49 percent, respectively.

**Table 2. Regression results for the life insurance penetration**

Variable	Regression Coefficients					Number of observation
	B	$\beta$	P	Tolerance	VIF	
Constant	-120.631		0.000			
GDPPC	24.297	1.219	0.000	0.243	4.177	322
EM	-0.110	-0.075	0.066	0.534	1.871	322
TE	-0.029	-0.034	0.330	0.739	1.353	322
ARRP	9.139	0.120	0.001	0.712	1.405	321
LEB	-1.438	-0.556	0.000	0.354	2.827	322
IR	-0.118	-0.086	0.030	0.573	1.745	322
GS	-0.494	-0.375	0.000	0.545	1.834	322
ICPI	0.349	0.090	0.010	0.737	1.356	322
R=0.861						
R Square=0.741						
p=0.000						

Source: Authors' calculations.

The impact of independent variables on the life insurance density was analysed in the second model, and the results are shown in Table 3. This regression analysis shows that the multiple correlation between the independent variables and the life insurance density is strong and significant ( $R=86$ ,  $p=0.00$ ) and that they can explain 75% of the variation in the life insurance density ( $R^2=0.75$ ). The most statistically significant independent variables for the regression model are 4. Therefore, the regression equation for this model is as follows:

$$LID = -34.211+3.120*GDPPC+11.500*LEB-5.900*GS+15.900*ICPI$$

In this model, in which the life insurance density is used as an indicator of the life insurance demand, the encouragement of the life insurance demand is impacted by the gross domestic product per capita, the life expectancy at birth and the inflation. An increase in the gross domestic product per capita by 1 percent affects an increase in the life insurance density by 3.12 percent, while an increase in the life expectancy at birth by 1 year and the inflation by 1 percent affects an increase in the life insurance density by 11.50 and 15.90 percent. As in the previous model, the negative impact of the gross savings on the life insurance density can be seen,

an increase in the gross savings by 1 percent affects a decrease in the life insurance density by 5.90 percent.

**Table 3. Regression results for the life insurance density**

Variable	Regression Coefficients					Number of observation
	B	$\beta$	P	Tolerance	VIF	
Constant	-34.211		0.000			
GDPPC	3.120	0.781	0.000	0.243	4.177	322
EM	0.020	0.069	0.086	0.534	1.871	322
TE	-0.010	-0.059	0.085	0.739	1.353	322
ARRP	-0.520	-0.034	0.328	0.712	1.405	321
LEB	0.115	0.222	0.000	0.354	2.827	322
IR	-0.012	-0.043	0.273	0.573	1.745	322
GS	-0.059	-0.225	0.000	0.545	1.834	322
ICPI	0.159	0.204	0.000	0.737	1.356	322
R=0.864						
R Square=0.747						
p=0.000						

Source: Authors` calculations.

In the third model, the results of the regression analysis are presented, which determines the impact of the same independent variables on the dependent variable - the life insurance share (Table 4). This analysis showed that the multiple correlation between the independent variables and the life insurance share is strong and significant ( $R=61$ ,  $p=0.00$ ), but that the independent variables can explain only 38% of the variation in the life insurance share ( $R^2=0.38$ ). The regression equation for this model is as follows:

$$LIS = -271.125 + 0.375 * GDPPC - 1.436 * GS + 1.378 * ICPI$$

The results of the regression model 4 show that the increase of the gross domestic product per capita and the inflation by 1 percent affects the increase of the life insurance share by 0.38 and 1.38 percent, respectively. As opposed to that, an increase in the gross savings by 1 percent affects a decrease in the life insurance share by 1.44 percent. According to this model, an increase in demand can be expected with an increase in the gross domestic product per capita and the inflation.

**Table 4. Regression results for the life insurance share**

Variable	Regression Coefficients					Number of observation
	B	$\beta$	P	Tolerance	VIF	
Constant	-271.125		0.000			
GDPPC	37.493	0.726	0.000	0.243	4.177	322
EM	-0.155	-0.041	0.520	0.534	1.871	322
TE	-0.096	-0.044	0.419	0.739	1.353	322
ARRP	18.713	0.095	0.084	0.712	1.405	321
LEB	-0.528	-0.079	0.311	0.354	2.827	322
IR	0.182	0.051	0.403	0.573	1.745	322
GS	-1.436	-0.420	0.000	0.545	1.834	322
ICPI	1.378	0.137	0.012	0.737	1.356	322
R=0.612						
R Square=0.375						
p=0.000						

Source: Authors` calculations.

The fourth regression model was created by replacing the previous dependent variable with the new dependent variable - the total life insurance gross premiums (Table 5). The results of the regression analysis in this model show that the multiple correlation between the independent variables and the total life insurance gross premiums is strong and significant ( $R=75$ ,  $p=0.00$ ) and that the independent variables can explain 57% of the variations in the total life insurance gross premiums ( $R^2= 0.57$ ). The regression equation for this model is as follows:

$$TLIGP=-42.147+5.100*EM+57.300*LEB-8.300*GS+25.400*ICPI$$

Based on the results of the regression analysis in the fourth model, it can be seen that the life expectancy at birth and the inflation in this model also have a positive impact on the dependent variable, in this case the total life insurance gross premiums. The employment ratio, which did not appear in the previously mentioned models, has such an impact in this model. The increase of the employment ratio by 1 percent, the life expectancy at birth by 1 year and the inflation by 1 percent affect the increase of the total life insurance gross premiums by 5.10, 57.30 and 25.40 percent, respectively. On the other hand, the negative impact of the gross savings on the total life insurance gross premiums was

confirmed in this model as well. An increase in the gross savings by 1 percent affects a decrease in the total life insurance gross premiums by 8.30 percent.

**Table 5. Regression results for the total life insurance gross premiums**

Variable	Regression Coefficients					Number of observation
	B	$\beta$	P	Tolerance	VIF	
Constant	-42.147		0.000			
GDPPC	0.414	0.075	0.335	0.243	4.177	322
EM	0.051	0.125	0.018	0.534	1.871	322
TE	-0.016	-0.069	0.125	0.739	1.353	322
ARRP	0.168	0.008	0.860	0.712	1.405	321
LEB	0.573	0.804	0.000	0.354	2.827	322
IR	0.028	0.073	0.153	0.573	1.745	322
GS	-0.083	-0.228	0.000	0.545	1.834	322
ICPI	0.254	0.238	0.000	0.737	1.356	322
R=0.753						
R Square=0.568						
p=0.000						

Source: Authors` calculations.

### Conclusion

The analysis of the research results determined that most economic variables significantly affect the life insurance demand, but that their impact on the demand for these products is different. The most important economic variables that encourage the life insurance demand are the gross domestic product per capita, the employment ratio and the inflation. Increasing the level of national income and employment increases the amount of funds that can be invested in life insurance policies. The positive impact of inflation on the life insurance demand reveals by Zerriaa and Noubbigh [2016]. It can be explained by the tendency of people to invest in life insurance policies that have an option to protect the insured against inflation. The variable that has a discouraging impact on the life insurance demand is the gross savings. The reason for the negative impact may be that people who are oriented towards savings generally invest money in financial instruments that cause high returns, while investment in insurance policies is safer, but in developed European countries where there is a culture of savings and insurance, it is an investment that does not make great returns.

The impact of socio-demographic variables on the life insurance demand was also confirmed. The variable of life expectancy at birth has an encouraging impact on the life insurance demand in the second and fourth models (models where the demand is expressed in terms of value), while the variable of aggregate replacement ratio for pensions showed a significant and positive impact only in the first model. The life expectancy at birth has a positive impact on the life insurance demand, because people expect to live longer and that they will need funds to maintain their standard of living, and this can be achieved by securing an additional pension through a life insurance policy. The positive impact of the aggregate replacement ratio for pensions on the life insurance penetration can be explained in two ways. First, it may be a consequence of people's desire to secure additional income for old age compared to that provided by the social security system. On the other hand, considering the fact that this variable was found to be significant only in the first model, where it is the dependent variable of the life insurance penetration, an increase in this dependent variable may also be a consequence of a decrease in the country's gross domestic product, rather than an increase in the value of the paid premium. Therefore, these results can be taken with certain level of doubt. The education level did not prove to be significant for encouraging and predicting the life insurance demand.

The results of this study have several implications. They give insurance company managers clear guidance on which customer group to target their products and how to manage the demand for life insurance policies. Employed individuals are most likely to purchase a life insurance policy. Also, incorporating and promoting inflation protection clauses can be a good strategy for selling policies, especially today when people are looking for ways to protect their money from losing value. In addition to this clause, over a long period of time the impact of inflation is not very dominant. Increased life expectancy should be used as an important argument for buying life insurance policies to protect people from poverty during old age. This should be especially emphasized in the case of women, who usually have a longer life expectancy. The offer of life insurance policies should be aimed at categories of the population that prefer security, rather than savings. Also, when designing the offer of life insurance policies, it would be useful to offer life insurance policies with a stronger savings component for those categories of people who want a good profit. By monitoring trends in income levels, employment and inflation, it is possible to predict the future demand for life insurance policies and the impact on the increase in insurance premiums. By improving the sale of life insurance policies, an increase in the collected life

insurance premium, that is, the volume of long-term investment funds that are placed on the financial market of the analysed countries can be expected. In this way, the possibility of increasing the share and importance of insurance companies as institutional investors in the financial market is created, which increases the security of individuals and creates conditions for financing projects that are important for the economic growth and development of the country.

With the aim of improving the management of life insurance sales and increasing the amount of collected premium funds that will be placed on the financial market, this study needs to be extended by introducing new independent variables such as: the number of children born, the dependency ratio, the human development index or the level of education of the older population of people (from 30 to 45 years old). Considering that due to the lack of data, the period from 2020 up to this day is not included in the analysis, the study needs to be repeated when the data is available, in order to assess the impact of the COVID-19 pandemic on the life insurance demand and to establish guidelines for managing the sale of this type of insurance under those conditions.

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## ***RISK FINANCING TECHNIQUES AND SAFETY CULTURE OF ROAD CONSTRUCTION COMPANIES IN EKITI STATE, NIGERIA***

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### ***Abstract***

*This study explores the effects of risk financing techniques on the safety culture among selected road construction companies in Ado-Ekiti, Nigeria. The study engaged a descriptive survey research design. The population of the study comprises all twenty-eight (28) indigenous road construction companies in Ekiti State out of which seven road construction companies were purposively chosen for the study. A total of 130 copies of a structured questionnaire were dispersed among the respondents to gather data for this study, out of which 118 which represent a 90.6% response rate was found useful for analysis. Descriptive and inferential statistics were used for data analysis. The regression results the from structural equation model revealed that the Risk retention has a significant influence on the safety culture with estimates .143( $P = .015 < .05$ ) while the risk transfer technique recorded an estimate  $-.002(P = .987 > .05)$  indicating a negative insignificant relationship with the safety culture of road construction companies in Ekiti State, Nigeria. Finally, this study confirms that risk financing techniques hold a negative significant joint influence on the safety culture of road construction companies in the metropolis of Ado, Ekiti State based on reported estimates  $-.591$  and ( $P = *** < .05$ ). Therefore, the researcher recommends that road contractors*

*should be meticulous about the appropriate risk financing techniques that will aid safety culture.*

**Keywords:** Risk Management; Risk Financing Techniques; Road Construction Project; Safety Culture; Structural Equation Modelling.

**Jel Classification:** G32, L74,

## Introduction

Road construction worksite is most risky and dangerous workplaces in the construction industry. This is because a road construction project is opened to a high level of risk from project inception to completion. It is highly hazardous and involved the use of heavy machinery such as graders, excavators, compactors, trenchers, bulldozers, wheel tractor-scraper, forklift trucks, dragline excavators, cranes, and liquid substances like asphalt, cement, chemical substance, bituminous occasioned by the high incidence of accidents and fatality. Risk in a road construction project is the probability of an event that disrupts the successful execution of the project within the anticipated time, calculated cost, scope, and quality standard (Ogunbayo, 2014; Msoba, Samson & Mlinga, 2018). Risks can ensue from any phase of the project life cycle. It could be at the planning and designing stage, construction and development, material production, legal and contractual confines, financing stage, operation-onsite, maintenance, and logistic stage (Gain, Mishra & Aithal, 2022). If risks were not identified early it could create a lot of exposure and uncertainties thereby affecting the time of completion, cost, scope, and quality of the project delivery (Vivian, 2021).

Because road construction projects are carried out in the most complex and dynamic locations, it breed high levels of uncertainty and inherent risks to project objectives and the safety of the workforce. It exposes both the management and workers to a wide range of risks and safety hazard (Gilkey, Puerto, Keefe, Bigelow, Herron, Rosecrance & Chen, 2012). Although, risk management would not eliminate all risks from the projects but it will ensure risks are managed effectively to achieve project objectives and timely delivery anticipated at the inception (Al-Ajmi & Makinde, 2018).

Risk financing as one of the risk response actions entails the determination of how risks inherent in the road construction projects can be funded at the least possible cost. Choosing appropriate risk financing techniques depends on the adequate assessment of the risks and considering financial capacity of the

construction company. Whatever risk financing techniques adopted to cushion the effect of risk exposures in road construction projects, it is important to evaluate the cost effectiveness of such technique in order to make right decision on which risks should be financed (Epstein, Metz & Mc Laughlin, 2013). Financing risks exposure in road construction projects could provide incentives for parties involved to manage the risk consequences and minimize damages at construction sites (Smith & Kam, 2018). Managing road construction risks effectively also cater for workforce safety issues.

In developing countries like Nigeria, findings have shown that majority of construction risk management decisions are based on manager's personal instinct, prior experience and professional judgment (Jarkas & Haupt, 2015; Bahamid & Doh, 2017; Sebastian, Francis & Charity, 2018). There is no general consensus on appropriate usage of risk financing techniques adopted by road construction companies because one of the major challenge faced by the indigenous contractors is how to balance road construction costs against the future costs of the project (Smith & Kam, 2018). Indigenous construction companies in developing countries often used preventive and remedial risk response techniques to manage their uncontrollable project risks and to address workforce safety at worksite (Kartam and Kartam, 2001; Iqbal, Choudhryb, Holschemacherc, Alid & Tamošaitienė, 2015).

Managing a project successfully within the stipulated time, budgeted funds and specification has constituted a major problem because of poor safety culture, poor implementation of appropriate risk financing techniques and poor policy management systems among indigenous construction companies in Nigeria. (Byakika, 2016, Latief, et al, 2017). Empirically, there seem to be sparse studies on risk financing techniques (risk transfer and risk retention) as a response to ensuring safety on construction road projects. Based on the problem identified above, this study seeks to investigate the effect of risk financing techniques and safety culture among indigenous road construction companies in Ado-Ekiti, Nigeria.

The aim of the study is to investigate the effects of risk financing techniques on the safety culture among selected road construction companies in Ado-Ekiti, Nigeria while the specific objectives are to:

- i. ascertain the influence of risk retention techniques on the safety culture among selected road construction companies in Ado-Ekiti metropolis;
- ii. investigate the relationship between risk transfer techniques and safety culture among selected road construction companies in Ado-Ekiti metropolis;

iii. evaluate the joint effect of risk financing techniques on the safety culture of selected road construction companies in Ado-Ekiti metropolis.

The following relatable questions were raised to achieve the stated objectives:

- i. Do risk retention techniques influence the safety culture of selected road construction companies in Ado-Ekiti metropolis?
- ii. What is the relationship between risk transfer technique and the safety culture of selected road construction companies in Ado-Ekiti metropolis?
- iii. How do risk financing techniques jointly affect the safety culture of selected road construction companies in Ado-Ekiti metropolis?

In the quest to proffer answers to the above research questions; the following propositions were postulated:

H<sub>01</sub>: Risk retention techniques have no significant influence on safety culture of selected road construction companies in Ado-Ekiti metropolis;

H<sub>02</sub>: There is no significant relationship between risk transfer techniques and the safety culture of selected road construction companies in Ado-Ekiti metropolis;

H<sub>03</sub>: Risk financing techniques have no joint effects on the safety culture of selected road construction companies in Ado-Ekiti metropolis.

## Literature Review

### Risk in Road Construction Projects

The term 'risk' is a multifarious concept that has the possibility of a negative incident occurring during the project lifecycle, which could disrupt achievement of project objectives. Risk is inherent in all construction activities and all the stakeholders should familiarise themselves with different categories of risks in road construction project so as to manage the risks effectively to prevent it from disrupting achievement of project objectives (Ogunbayo, 2014). Risks is an action that have pernicious influence on the financial and operational performance of road construction company. Risk in road construction projects entails multifarious undertakings which has negative influence on the four broad areas of project management known as time, cost, scope and quality (Ehsan, Alam, Mirza & Ishaque, 2010).

### Risk Management in Road Construction Projects

Risk management involve systematic method of recognizing, evaluating, analyzing, responding, observing and regulating risks inherent in road construction



projects. Risk management in road construction project is the process concerned with planning, identification, assessment, analysis, monitoring and controlling of road project risks (PMBOK, 2004). It is a technique that is inevitable to the success of road construction project. It is a process that should be embrace with high regards among road construction companies in Nigeria, especially the indigenous construction companies for the purpose of attaining financial stability and maintaining solvency.

### **Risk Financing Techniques**

Risk financing techniques is an integral part of risk management. It is critical in addressing a major issue: how to align a road construction company's willingness to take on a project despite the risk potential with its capacity to do so. It is a risk response activity to abate the effect of risks inherent in road construction worksite. Risk financing techniques is the utilisation of funds to cover the financial effect of unpredicted losses or cost related to unplanned negative events at the road construction worksite. In road construction projects, risk financing techniques is a systematic approach to funding or paying for the loss occurrences that a project faces in the most efficient and cost-effective way feasible (Epstein, Metz & Mc Laughlin, 2013). Effective risk financing techniques in road construction project require a thorough assessment of the current risks as well as potential risk exposures. Also, it is critical to assess the cost-effectiveness of risk financing options before deciding which risks should be financed.

### **Risk Retention Strategy**

Risk retention is a risk financing strategy adopted by construction companies to accept parts of its construction risks and manage it internally. Risks can be retained in two possible ways, namely active retention or passive retention (Redja & McNamara, 2014; Renault & Ansary, 2020). Active risk retention involves a conscious managing plan developed after a persistent valuation of the possible losses and outlays of alternative ways of handling risks while passive risk may occur because of ignorance, risk manager indifference or a failure to detect a significant risk in road construction project. Risk retention is used when the impact of risk is small and its cost can be included as legitimate project cost (Bustan, Sammang, Nurali & Ramli, 2015). Paleologos and Fletcher (1999) asserted that risk retention is based on the idea that possible construction obligation costs can be documented as legitimate projects costs and priced into project.

Redja and McNamara (2014) stipulated that adoption of risk retention takes the following: (i.) Current Net Income: losses from risk exposures might be paid out of current net income and treated as costs for that year. When a high number of losses exceed current revenue, other assets must be liquidated to cover the losses. (ii.) Funded Reserve: This involve setting aside liquid funds to finance road construction losses. (iii.) Credit line: Road construction losses can be covered by establishing a credit line with a bank, which can be used to borrow funds to cover losses as they occur. One of the most significant drawbacks of using a credit line is that repayment might exacerbate any cash flow issues that a road construction company may be experiencing. (iv.) Self-finance: This is a special form of retention used by road construction company to pay for losses arising from workers' bodily injury at worksite, medical treatment, drug prescribed to injured workers.

This form of retention can be used for workers' health insurance benefit by saving money to fund workers' health care cost (Redja & McNamara, 2014). (v.) Captive Finance: Losses from risk exposures on road construction project could be paid by captive arrangement. A captive firm is a wholly-owned subsidiary company that provides risk-mitigation services to its parent company (Redja & McNamara, 2014; Renault & Ansary, 2020). Road construction company can fund its losses through its subsidiary established for such purpose. A captive insurance company may be formed in a situation where the parent company cannot find a firm to insure their specific business risks or if the premium paid to the captive insurer enjoys tax exemption and the captive services and coverages are very affordable (Redja & McNamara, 2014).

### **Risk Transfer Strategy**

In road construction projects, risk transfer is the arrangement to shift the burden of construction risk exposures to third party, either through commercial insurance or submitted sub-contractors such as suppliers, contractual modifications, variation and change orders (Gain, Mishra & Aithal, 2022). Although risk transfer does not eliminate risk existence, it ensures that risks are managed and handled by the professionals who can manage them effectively (Okate & Kakade, 2019; Renault, Agumba & Ansary, 2020). Risk transfer is the process of transferring ownership of construction risk exposures to an insurance company or another third party without increasing the overall quantity of risks or reducing the significance of risk causes.

Insurance as a risk transfer strategy is the pooling of inadvertent losses by passing such risks to insurers, who undertake to indemnify insureds for such losses,



provide other financial benefits in the event of their occurrence, or provide services related to the risk (Redja & McNamara, 2014). Purchasing insurance policy, for example, transfers a certain construction risk of loss from the contractors to the insurer. The most widely used approach for preventing risk occurrences by the contractor was to transfer risk to other project participants and rely on the client's subjective opinion (Gain, Mishra & Aithal, 2022).

### **Safety Culture and Road Construction Worksite**

Safety culture is the consequence of individual and group credence, outlooks, insights, capabilities, and shapes of behavior that affect an organization's commitment to, and the style and effectiveness of health and safety management in an organisation (Hughes and Ferret, 2016). It is a term used to define the ethics, standards, assertiveness, and principles held collectively regarding safety within an organization. Safety culture is becoming more widely acknowledged as a crucial strategy and possibly a prerequisite for addressing the pervasive problems with construction accidents. Akpan (2012) asserted that safety culture is a system of thoughts, conventions, assertiveness, and social- technical practices aimed at reducing individual experience to potentially hazardous or damaging situations both within and outside of an organization. Road construction projects are capital intensive and highly hazardous. This is why the right methods must be used to manage both the risks and the safety of the workers in the construction worksites. Safety practices have not been given due attention among indigenous construction companies in Nigeria, and methods of accomplishing project goals have been marked by accidents, injuries, and deaths, posing a threat to the workers' lives and well-being. Thus, every road construction stakeholder, particularly the client and their representative, should be concerned about project safety right from the start of the project by implementing sustainable ideas and practices that will eradicate potential for a misfortune (Ogundipe et al., 2018).

### **Theoretical Review**

This research was based on Heinrich's Domino Accident Theory, which was created in 1931 by W. H. Heinrich, a safety manager and pioneer in the subject of industrial accidents. According to the hypothesis, accidents typically result from a chain of events. Heinrich listed five primary reasons as causes of accidents at construction sites, these are social environment and inherited behavior, staff/workers fault, dangerous act with machine-driven and bodily-exposure, accident and injury. Heinrich claims that a corrective action sequence can be

achieved by reducing risks associated with product design or process changes, educating employees through the organization of training sessions that cover all aspects of safety, and enforcing both internal and external rules, regulations, and standard operating procedures that both employees and management must follow when performing their duties.

### **Empirical Review**

According to Jayasudha and Vidivelli (2016), there is a dearth of understanding on how to successfully apply construction planning tools and financing techniques. Road construction projects should use construction planning tools and techniques, and experts should be periodically trained on the usefulness and improvement of information technology in the construction business, mostly in project planning and implementation. Based on the discussion of construction safety and health issues on road construction investigated by Byakika (2016), it was found that arranging proper work zone layouts, relatively good traffic management on the construction sites, good condition of plant and equipment, and regular provision of first aid; provision of personal protective equipment, efficient safety committees and adequate training will aid safety practices and culture at road construction sites. As opined by Latief, Machfudiyanto and Harryanto (2017) bad policy management systems are the source of poor safety culture in road construction companies. But improving policy management in relation to safety culture, such as through careful monitoring, penalties, strict punishments, training and education can make road construction sites safer.

Ogundipe et al, (2018) revealed that the most important factors influencing effective usage of safety-gear at work sites include: absence of safety managers on site; poor training on usage of safety gear and failure to adapt to safety practices by workers because they were contrary to their previous training. This article stated that making efficient use of audio-visual showing devices on the work site, performing in-house safety training for workers, and guaranteeing that every construction site has at least one safety manager will go a long way toward improving worker safety practices. Changquan, Guangshe, Brenda and Jide-Sun (2019) investigated the mediating functions of communication skills in the relationship between leader-member interactions and construction worker safety behavior. Finding from the study explained that to increase construction safety behavior, safety managers should strengthen their leadership and communication abilities, as well as promote a supportive safety environment on the construction site.

Vivian (2021) identified that risk financing in road construction projects is inevitable in controlling the economic losses attributable to pre-loss objectives. Applying the most appropriate risk financing strategy can prevent an unsuccessful road construction project that considerably impairs the company's financial status. A good technique should be established and implemented by the organizations or parties concerned in order to efficiently and successfully prevent and manage these risks. Construction firms should prevent profitless construction projects by being able to recognize them from the start to reduce financial volatility.

Aduloju and Akindipe (2022) posits in their study on risk financing strategy and project success among builders in Nigeria that a strong positive link exists between risk financing techniques and project completion. They adjudged that if contractors, clients and workers at the construction site become more active in risk management implementation, there will be improvement in stakeholders' teamwork and communication within the Nigerians construction sector and this will facilitate successful completion of the project. Also, Gain, Mishra and Aithal (2022) affirmed in their study that risk response strategy commonly used by client is risk transfer while monitoring the risk and establishing a contingency plan are the contractor's risk response strategies for road construction projects in Sindhupalchowk district.

### **Research Methodology**

Descriptive research design was used for this study. The population of the study comprises of all the twenty-four (24) registered indigenous road construction companies in Ekiti State (Ekiti State Ministry of works, 2022) while the sample size for this study consists of seven active indigenous road construction companies operating in Ekiti State. This study engage simple random sampling. This sampling technique provides no basis for calculating the likelihood that each item in the population was involved in the sample and the procedure was used purposely because it allows the researcher to have access to the respondents that is readily available to attend to the research instruments (Kothari, 2004). In order to ensure that pertinent data are adequately collected for this study, primary sources of data was used. A well-structured questionnaire was designed to address the research questions posed by the study, provide pertinent data for the testing of research hypotheses, and accomplish both the study's general and more granular aims. A five-point Likert scale was used to grade questionnaire, with the options of strongly disagree, disagree, undecided, agree and strongly agree. Out of one-hundred and thirty (130) copies of the questionnaire distributed among managers, employees

and site workers of the road construction companies that were selected for the study, one-hundred and eighteen (118) representing 90.7 percent of the total were completed and found fit for the study analysis.

The content validity of the research instrument was established by the experts in the field of insurance. The specialists evaluated the instrument for applicability and suitability, linguistic completeness of items, aptness of content, and representation of the numerous questions and scales. In order to achieve the purpose for adopting the instrument, a pilot test re-test was conducted to test its reliability measure. The test result produced a Cronbach values of 0.812 for risk financing construct and 0.922 for safety culture which depicts a high stability of the questionnaire. This result was consistent with statistical inferences regarding the reliability of the scale, and the internal consistency. The data collected were analysed using descriptive and inferential analyses. The descriptive analysis presented the data using frequency table and charts while structural equation modelling was employed to test the hypotheses.

### **Results and Discussion**

This section presents the descriptive analysis of the respondents, chart diagrams of the responses and structural equation modeling to answer the study research objectives and hypotheses on effects of risk financing techniques on the safety culture among selected road construction companies in Ekiti State, Nigeria.

**Table 4.1: Demographic Characteristics of the Respondents**

<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Educational Qualification</b>		
Bachelor’s Degree/HND	93	78.8
Master’s Degree	18	15.3
Doctorate Degree	2	1.7
Others (ND, SSCE, GCE, etc.)	5	4.2
Total	118	100.0
<b>Respondent Position in the Organisation</b>		
Top Manager	15	12.7
Middle Manager	14	11.9
Supervisor	26	22.0
Worker	63	53.4
Total	118	100.0
<b>Do you have organisation risk financing</b>		

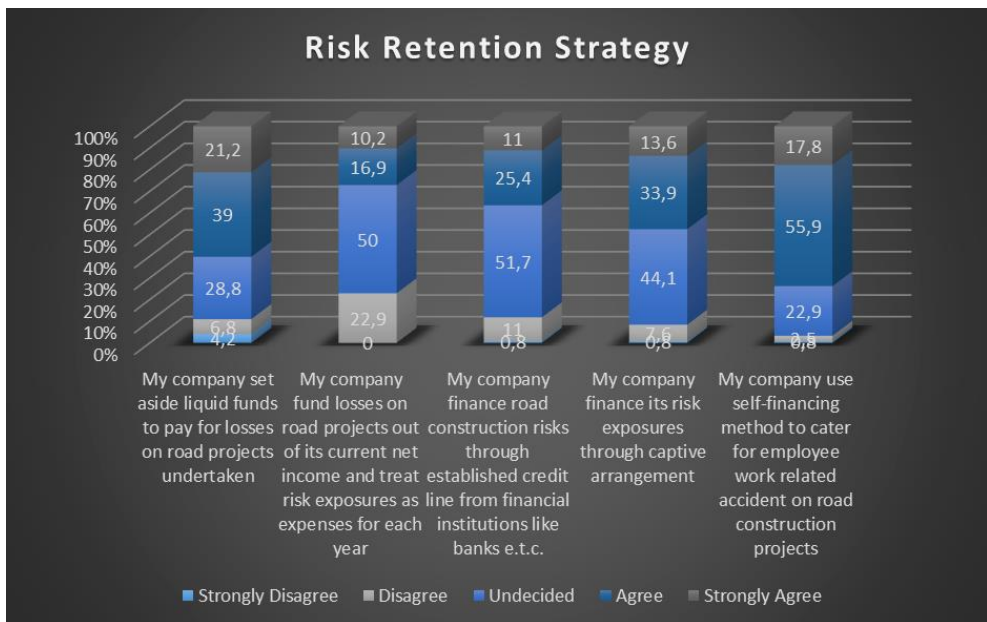
<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	110	93.2
No	8	6.8
Total	118	100.0
<b>My company have safety practice/policies for its operation</b>		
Yes	116	98.3
No	2	1.7
Total	118	100.0
<b>Management fully consider risk financing techniques to manage identified risk</b>		
Yes	110	93.2
No	8	6.8
Total	118	100.0
<b>Do you apply safety at worksite</b>		
Yes	116	98.3
No	2	1.7
Total	118	100.0

**Field Survey, 2022**

Table 4.1 presented the demographic characteristics of the respondents such as educational qualification of the respondents, and respondent position in their organisation. The Table revealed that 93(78.8%) of the respondents have Bachelor's Degree/Higher National Diploma, 18(15.3%) have Master's Degree, 2(1.7%) have Doctorate Degrees and 5(4.2%) have either Ordinary National Diploma or Senior Secondary Certificate Examination or General Certificate or Primary certificate. This depicted that majority of the respondents have degree certificates or its equivalent and above, which implies that the respondents are well educated to provide suitable responses to the items in the questionnaire. On the level of respondent position in their organisation, 15(12.7%) were top managers, 14(11.9%) occupied middle managers position, 26(22.0%) were supervisors and 63(53.4%) were road constructions site-workers. This shows that appropriate respondents positions were included in the study.

The table showed that 110(93.2%) of the respondents confirmed that their organisation has risk financing technique guideline while 8(6.8%) of the respondents submits that they don't have risk financing technique guidelines in

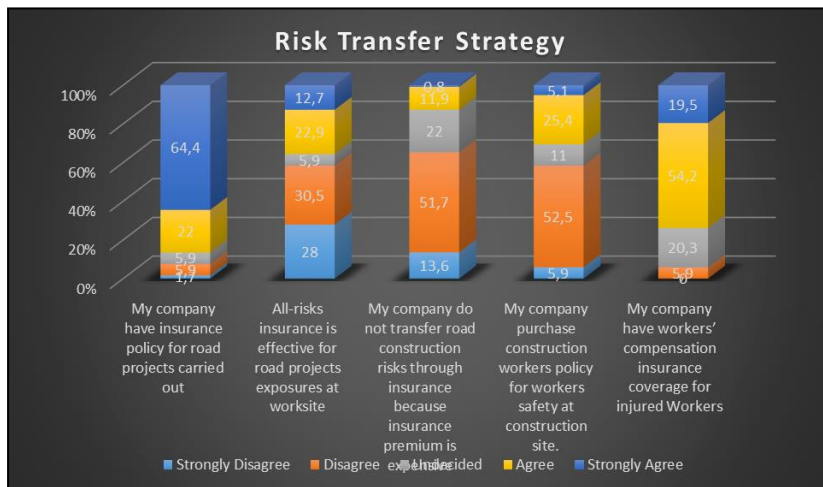
their organisation. 110(93.2%) of the respondents affirmed that their organisation management fully considered application of risk financing techniques to manage identified risks for road construction projects undertaken while 8(6.8%) of the respondents revealed that their management does not considered use of risk financing technique to manage identified risks for the road construction projects undertaken. Concerning organisation having safety culture practices/policies for its operation, 116(98.3%) confirmed that they have safety culture practices guiding their operation while only 2(1.7%) affirmed that their organisation does not have safety culture policies for their operation. This implies that majority of road construction companies in Ekiti State embrace safety culture practices for road construction works. Lastly, 116(98.3%) of the respondents affirmed that they apply safety at worksite while 2(1.7%) affirmatively said they do not they apply safety at worksite. This also implies that top managers, middle managers, site-supervisors and site-workers were all safety conscious while carrying out their responsibilities at the road construction work-sites.



**Figure 4.1:** The graphical model explains responses on risk retention's questions raised.  
**Source:** Field Survey, 2022



The Figure 4.1 explains the respondent responses on question raised on risk retention. For the statement “my company sets aside liquid funds to pay for losses on road projects undertaken”, 28.8 were undecided, 60.2 percent agreed with the statement while 10.7 percent disagreed. For the statement that “my company fund losses on road projects out of its current net income and treat risk exposures as expenses for each year”, while 22.9 percent expressed disagreement and only 27.1 percent agreed with the statement. For the statement that “my company finance road construction risks through established credit line from financial institutions like banks”, 36.4 percent agreed with the statement while 11.8 percent disagreed. For the statement that “my company finance its risk exposures through captive arrangement”, 47.5 percent agreed with the statement, 8.4 percent disagreed while others are undecided. For the statement that “my company use self-financing method to cater for employee work related accident on road construction projects”, while 73.7 percent agreed with the statement, 3.3 percent disagreed and others were undecided.

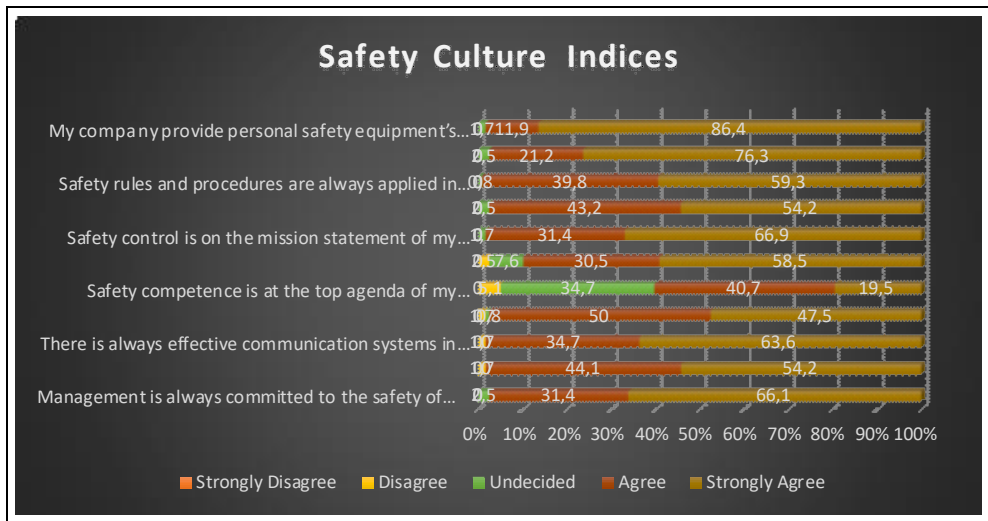


**Figure 4.2:** The graphical model explains responses on risk transfer’s questions raised

**Source:** Field Survey, 2022

The Figure 4.2 explains the respondent responses on question raised on risk transfer strategy. For the statement “my company have insurance policy for road projects carried out”, this implies that 86.4 percent agreed with the statement while

7.6 percent disagreed. For the statement that “*all-risks insurance is effective for road projects exposures at worksite*” while 5.9 percent were undecided, 35.6 percent agreed with the statement and 58.5 percent disagreed. For the statement that “*my company do not transfer road construction risks through insurance because insurance premium is expensive*”, while 22.0 were undecided, 12.7 percent agreed with the statement, 65.3 percent disagreed. For the statement that “*my company purchase construction workers’ policy for workers at construction site*”, while 11 percent were undecided, 30.5 percent agreed with the statement, 58.4 percent disagreed. For the statement that “*my company have workers’ compensation insurance coverage for injured workers*”, 20.3 percent were undecided, 73.7 percent agreed with the statement, 5.9 percent disagreed.



**Figure 4.3:** The graphical model explains responses on safety culture’s questions raised  
**Source:** Field Survey, 2022

Figure 4.3. explains the responses on safety culture indices of road construction companies in Ekiti State. For the statement “*In my organisation, management is always committed to the safety of members of staff at all times*”, while 2.5 were undecided, 97.5 percent of the respondents agreed with the statement. For the statement that “*staff members are permitted to participate in the safety procedures in my organisation*”, while 1.7 percent disagreed, 98.3 percent agreed with the



statement. For the statement that *“there is always effective communication systems in our organisation when it comes to safety atmospheric conditions”*, while 98.3 percent agreed with the statement, 1.7 percent disagreed. For the statement that *“safety education and training are always the priority of my organisation”*, 97.5 percent agreed with the statement, 1.7 percent disagreed, 0.8 percent were undecided. For the statement that *“safety competence is at the top agenda of my organisation when seeking for the right personnel to fill the gap”*, 60.2 percent agreed with the statement, 5.1 percent disagreed and 34.7 percent were undecided.

For the statement *“management of my organisation place priority on staff safety even at the expense of organisational activities”*, 89 percent of the respondents agreed with the statement while 2.5 disagreed, 7.6 percent were undecided. For the statement that *“safety control is on the mission statement of my organisation”*, while 1.7 percent were undecided, 98.3 percent agreed with the statement. For the statement that *“workers’ involvement in safety is usually allowed in my organisation”*, while 2.5 percent were undecided, 97.4 percent of the respondent agreed with the statement. For the statement that *“safety rules and procedures are always applied in the running of my organisation”*, 0.8 percent were undecided while 99.1 percent agreed with the statement. For the statement that *“Events happenings are frequently reported in my organisation to ensure safety at all times”*, 2.5 percent were undecided while 97.5 percent agreed with the statement. Lastly, for the statement that *“my company provide personal safety equipment’s such as helmet, hand glove, site overall wears etc. for worksite”*, 1.7 percent were undecided while 98.3 percent of the respondents agreed with the statement.

### **Inferential Statistic Results**

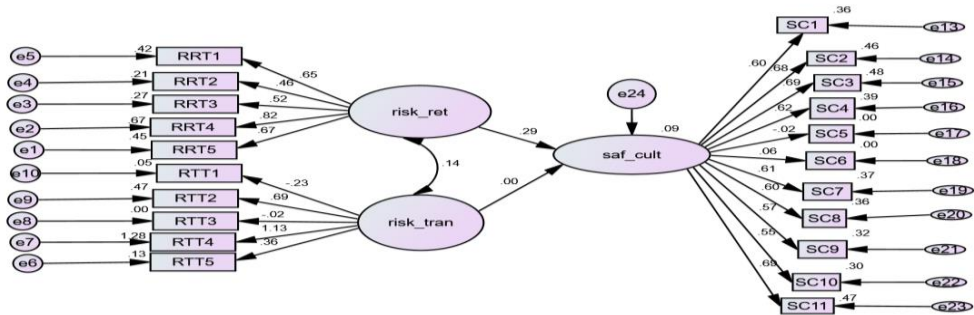
*Table 4.2: Results of Structural Model Fitness Indexes*

<b>Name of Category</b>	<b>Name of Index</b>	<b>Index value</b>	<b>Required level</b>
Absolute Fit	RMSEA	.000	< 0.08
Incremental Fit	CFI	.918	> 0.90
Parsimonious Fit	Chisq/df	2.868	< 5.0

*Note: RMSEA= root-mean-square error of estimation; CFI= comparative fit index; parsimonious comparative fit index used-chi-square difference.*

Table 4.2 showed the fitness of the model. The result revealed a root mean error of approximation (RMSE) value of .000 indicating an absolute model fitness since

this value is less than .08. Likewise, the baseline comparisons indicating a comparative fit index (CFI) of .918 which is greater than 0.90 required level, the model parsimonious fit with minimum discrepancy (CMIN/DF) of 2.868 is less than 5.0. The above analysis implied that the model in figure 4.1 satisfied the conditions for measurement of goodness of fit in structural equation modelling. Hence, the model is appropriate to envisage the effects of risk financing techniques on the safety culture among selected road construction companies in Ekiti State, Nigeria.



**Figure 4.4** Path Diagram on Effect of Risk Retention Strategy and Risk Transfer Strategy on Safety Culture among selected road construction companies in Ado-Ekiti.

In figure 4.4 above, there are three latent variables (Risk Retention and Risk Transfer) are the exogenous variable) representing risk financing techniques while Safety Culture is the endogenous variables. Twenty-one observed variables were used altogether, ten was used to measure the underlying exogenous variables (risk retention and risk transfer) and eleven was also used to measure the endogenous variable (Safety Culture).The diagram 4.4 presented the path coefficient for regression of the risk financing variables and safety culture variables of selected road construction companies in metropolis of Ado, in Ekiti State, Nigeria in other of loading or regression weights (effects). Risk Financing techniques represented by Risk Retention and Risk Transfer has the estimates  $\beta_1 = .29$ ,  $\beta_2 = .00$  respectively had positive effects on safety culture of indigenous road construction companies in Ekiti State. This indicated that safety culture of road construction companies in Ekiti State increases as the companies employed risk retention strategy and/or risk transfer strategy to manage identified risks and also a decrease

in risk financing techniques might lead to decrease in safety culture among road construction companies in Ekiti State.

**Hypothesis Testing**

H<sub>01</sub>: Risk retention techniques have no significant influence on safety culture of selected road construction companies in the metropolis of Ado-Ekiti.

**Table 4.3: Regression Weights on influence of risk retention technique on the safety culture among selected road construction companies in the metropolis of Ado-Ekiti**

Relationship	Estimate	S.E.	C.R.	P
Safety_Culture<--- Risk_Retention	.143	.059	2.436	.015

*Authors' Computation, 2022 in Spss Amos v23*

Table 4.3 showed the direct influence and the significance of risk retention on safety culture. From the table, it is found that risk retention have significant influence on safety culture with an estimates .143(p = .015< .05). This indicates that risk retention technique has positive significant influence on safety culture of road construction companies' in Ekiti State, Nigeria. Hence, there is statistical evidence to reject the null hypothesis that risk retention techniques have no significant influence on safety culture of selected road construction companies in the metropolis of Ado-Ekiti. This result is consistent with Aduloju and Akindipe, (2022), Renault, Agumba and Ansary (2020) which indicated a positive relationship between risk retention strategy and project success.

H<sub>02</sub>: There is no significant relationship between risk transfer techniques and safety culture of selected road construction companies in the metropolis of Ado-Ekiti.

**Table 4.4: Regression Weights on relationship between risk transfer technique and the safety culture of selected road construction companies in the metropolis of Ado-Ekiti**

Relationship	Estimate	S.E.	C.R.	P
SafetyCulture<--- Risk_Transfer	-.002	.093	-.017	.987

*Authors' Computation, 2022 in Spss Amos v23*

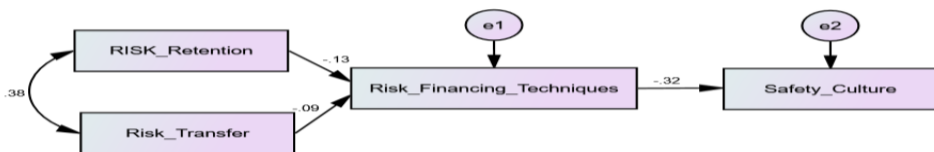
Table 4.4. Showed the direction of relationship and the significance of risk transfer with safety culture. From the table, it shows that risk transfer technique has an estimates  $-0.002$  and  $(P=0.987 > 0.05)$ . This indicates that risk transfer technique has a negative insignificant relationship with the safety culture of road construction companies in Ekiti State, Nigeria. This implies that managing identified risks in road construction sites through risk transfer strategy does not necessarily increase safety culture among road construction companies in Ekiti. Hence, there is no statistical reason to reject the null hypothesis which stated that there is no significant relationship between risk transfer techniques and safety culture of selected road construction companies in the metropolis of Ado-Ekiti. This result does not support the claim of Aduloju and Akindipe (2022).

**Table 4.5: Coefficient of Determination of Risk Financing Techniques on Safety Culture among selected road construction companies in Ado-Ekiti**

Exogenous Variable	Squared Multiple Correlations
Safety Culture	.086

*Authors' Computation, 2022 in Spss Amos v23*

Table 4.5 presented the predictive power of the structural equation model and is calculated as the squared correlation between specific endogenous constructs actual and predicted values. The table showed that safety culture recorded the square of multiple correlation value of  $.086$ , which implied that 9% variation in safety culture was accounted for by risk financing techniques.



**Figure 4.4: Path Diagram on Joint Effect of Risk Financing Techniques on Safety Culture among selected road construction companies in Ado-Ekiti.**

Figure 4.5 showed the path diagram for joint effect of risk financing techniques on safety culture of road construction companies in metropolis of Ado. The direct joint effect is represented by single-headed arrow in the path diagram. The path coefficient for regression of the risk financing technique on the safety culture is

shown on the regression weights. Risk financing techniques has an estimates  $-.32$  which show a negative joint effects on safety culture of indigenous road construction companies in Ekiti State. This indicated that the standardized joint effect of risk financing techniques on safety culture is  $-.32$ . That is when risk financing techniques goes up by one standard deviation, safety culture goes down by  $0.32$  standard deviation.

H<sub>03</sub>: Risk financing techniques have no joint effect on safety culture of selected road construction companies in the metropolis of Ado-Ekiti.

**Table 4.6: Regression Weights on Joint Effect of Risk Financing techniques on safety culture of selected road construction companies in the metropolis of Ado-Ekiti**

Relationship	Estimate	S.E.	C.R.	P
Safety_Culture <--- Risk_Financing_Techniques	-.591	.163	-3.624	***

*Authors' Computation, 2022 in Spss Amos v23*

Table 4.6 revealed the joint effect of risk financing techniques and its significance to safety culture. From the table, it is found that risk financing techniques have highly significant joint effect on safety culture with an estimates  $-.591$  ( $p = *** < .05$ ). This indicates that, the regression weight for risk financing techniques in the prediction of safety culture is significantly different from zero at the 0.001 level (two-tailed). Furthermore, the result shows that risk financing techniques has negative significant joint effect on safety culture of road construction companies in the metropolis of Ado, Ekiti State. Hence, there is statistical evidence to reject the null hypothesis that risk financing techniques have no joint effect on safety culture of selected road construction companies in the metropolis of Ado-Ekiti.

### Conclusion and Recommendations

Among the previous studies, risk financing techniques and safety culture of road construction companies was not investigated. This gave the motivation for this work to examine the effects of risk financing techniques on the safety culture among selected road construction companies in Ado-Ekiti, Nigeria. Therefore, this study makes use of structural equation modelling on *Spss Amos v23* to established that exogenous latent construct (Risk retention) have significant influence on endogenous latent construct (safety culture) with an estimates  $.143$  ( $p = .015 < .05$ ) while risk transfer technique recorded an estimates  $-.002$  and ( $P = .987 > .05$ )

indicating a negative insignificant relationship with the safety culture of road construction companies in Ekiti State, Nigeria. Finally, this study confirms that risk financing techniques has negative significant joint effect on safety culture of road construction companies in the metropolis of Ado, Ekiti State based on reported estimates  $-.591(p = *** < .05)$ . Based on the study findings, the researcher recommends that road contractors should be meticulous about the appropriate risk financing techniques that will aid safety culture among road construction companies. Also, the management of road construction companies should endeavor to educate all staff at different level including site workers on the importance of risk financing technique and safety culture for road construction projects undertakings. Lastly, insurance companies should develop more risk financing policies that Construction Company can benefit from.

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## EVALUATION OF FOREIGN DIRECT INVESTMENT IMPORTANCE IN PROMOTING ECONOMIC DEVELOPMENT IN DEVELOPING COUNTRIES

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### **Abstract**

*This insight paper examines the relationship between foreign direct investment (FDI) and economic development in developing countries. The paper begins with an introduction that provides a brief overview of the research topic. The research methodology is then discussed, followed by an exploration of the theoretical approaches to FDI and economic development. Case studies of FDI in developing countries are presented and analyzed, providing into the impact of FDI on economic development. The analysis section of the paper examines the data collected from the case studies and discusses the findings. Singapore is taken as a case study to measure for better understanding of the impact of FDI on economic development in developing countries. Foreign direct investment and gross domestic product variables were used to measure this relationship. Gross domestic product is dependent and foreign direct investment is independent variable in the study. In conclusion, the paper provides a summary of the key points. The references section provides a list of sources used in the paper.*

**Keywords:** *foreign direct investment, economic development, developing countries, regression analysis.*

**JEL Classification:** O16

## Introduction

In the current era of globalization, we see a rise in foreign capital investments. A foreign direct investment, also known as FDI, refers to an investment made by an organization in one nation into businesses situated in another nation. Foreign direct investment, which can bring a range of benefits to the host country such as financing current account deficits, transferring technology, and fostering economic growth, is particularly attractive to developing nations lacking in capital.(Gurgu, E., & Cociuban, A., 2016). Not only developing countries, but also developed countries are eager to receive foreign direct investment. Because foreign direct investments have significant positive effects on the country's economy. However, in addition to these positive effects, foreign direct investment can have several negative effects on the countries it enters. These types of investments are typically made by multinational corporations, which dominate the field of foreign direct investment.

The aim of this study is to investigate how foreign direct investments that can contribute to economic development attracted to developing countries. The study consists of several parts. Abstract, introduction, main body, research methodology, analysis part, conclusion and references are included in the article. Here, first, various ideas about foreign direct investment and economic development will be put forward, examples of foreign direct investment in several developing countries will be shown. Later, an analysis will be conducted to understand the topic more clearly. Given this information, the study's objective is to thoroughly examine how foreign direct investment impacts economic growth in developing nations. To achieve this, regression analysis was conducted using data from Singapore, a developing country, spanning from 2012 to 2021. The estimation results indicate that foreign direct investment has a positive effect on economic growth, which aligns with theoretical expectations. Furthermore, a positive correlation between foreign direct investment and economic growth was discovered.

## Research Methodology

The purpose of this study is to evaluate the importance of Foreign Direct Investment (FDI) in promoting economic development in developing countries, with Singapore as the specific case study. Here, both quantitative and qualitative research methods are reflected in order to achieve the goals of the research. For qualitative research, the articles of various authors, international journals, internet

resources were examined and necessary parts were added to the article. The study will use regression analysis to determine the relationship between FDI inflows and GDP in Singapore. This study is a quantitative research design that will use secondary data to analyze the relationship between FDI and economic development in Singapore. The study will collect data on FDI inflows to Singapore and GDP for the period from 2012 to 2021. The data will be collected from the World Bank's World Development Indicators and Macrotrends.com website which is statistical portal for market data. The variables used in the study will be GDP as the dependent variable and FDI inflows as the independent variable.

The regression equation will be  $Y = \beta_0 + \beta_1X + \varepsilon$ , where  $Y$  is the dependent variable (GDP growth),  $X$  is the independent variable (FDI inflows),  $\beta_0$  is the intercept,  $\beta_1$  is the regression coefficient, and  $\varepsilon$  is the error term.

### **Theoretical approaches to “foreign direct investment” and “economic development”**

Economic growth refers to the expansion of a country's ability to produce goods and services, as well as the amount of economic resources available within its borders, during a specific time frame. Economic growth can be understood as the rise of national income per person. In a broader sense, economic growth involves an increase in GDP, NI and GNP. Economic growth can take three forms: positive, negative or zero. Positive growth is observed when the yearly rates of macroeconomic indicators surpass the population's average growth rate. Negative economic growth is the opposite of this form. Zero economic growth occurs when the average growth rates of macroeconomic indicators, such as GDP, are equivalent to the population's growth rate. [Haller,2012]

Economic growth is influenced by several factors that one of them is foreign direct investment. Foreign direct investments, which gained significance after the discovery of the "New World" America in 1492, have historically been unidirectional, moving from developed nations to less developed ones. These investments were primarily aimed at exploiting the natural resources beneath and above ground, as well as the low-cost labor available in less developed countries. [Sabioghlu,2006]. Olokoyo (2012) noted that foreign investment has opened up numerous possibilities, including but not limited to job opportunities, infrastructure development, transfer of technology, and heightened productive efficiency. Foreign direct investment assists in filling the void of insufficient capital and supplements domestic investment, particularly when directed towards high-risk regions with limited domestic resources for new businesses. FDI offers valuable resources to

developing countries, such as capital, management expertise, technology, entrepreneurial skills, brand recognition, and market entry opportunities, which can give them an edge over others. This can be beneficial for developing countries. [Alshehry, 2015]. These factors have a significant impact on crucial elements for developing countries, including employment, production, trade and etc. that are important for their industrialization, development, and poverty reduction efforts. Finally, foreign companies can bring better management and marketing strategies, which can be beneficial for developing countries. [Pacheco-Lopez,2005]

These are the positive effects of foreign direct investment to host nation when coming into country:

- **Accumulation of Capital-** Typically, nations encounter difficulties in generating enough domestic savings and capital to support their developmental efforts. To address this issue, foreign investments can play a critical role in contributing to the economic growth of the host country. Therefore, foreign direct investments (FDIs) are highly valuable resources that can help overcome this challenge. [Aytekin, 2019]
- **Technology effect:** FDI can lead to the development of the local industry through technology, which can enhance the host country's export competitiveness by producing goods with superior technology that are easier to sell abroad. [Pacheco-Lopez ,2005]
- **Employment-** The entry of foreign direct investments (FDIs) into the host country leads to the creation of new employment opportunities for the workforce and enables employees to enhance their skills and experience in various technological environment and working places. [Ozdemir,2020]
- **Market competition-** When foreign direct investments (FDIs) are allowed to participate in the trade of goods and there are no restrictions on the quantity traded, it leads to liberalization, which in turn increases the number of firms operating in the national market, resulting in a more competitive market structure. This increased competition brought about by FDIs injects vitality into the economy of the host country, prevents domestic firms from monopolizing the market, and causes domestic production to rise while prices fall. [Aktan, 2006]

In addition to these positive effects, foreign direct investment can also have negative effects:

- **Balance of payments:** Although Foreign Direct Investments (FDIs) can have a favorable impact on the balance of payments, by boosting the export sector and reducing reliance on imports, this may not benefit all local companies equally. Some firms that lack the necessary capabilities to compete in the international

market may not be able to take advantage of these opportunities. Moreover, FDI in the service sector may not result in foreign currency inflows or may even have a negative impact on the balance of payments due to the use of imported inputs. [Vural, 2006]

- **Competition-** The likelihood of a monopoly is higher when foreign firms possess greater capital and technological advantages than domestic firms. If the host country fails to take required actions, local businesses may not be able to compete effectively with foreign businesses, leading to negative consequences for the local market and economy. Businesses that are unable to compete with foreign businesses may have no choice but to leave the market. [Gedikli,2011]

**The challenges and risks associated with FDI in developing countries, including political and regulatory risks, cultural differences, and environmental concerns**

Foreign direct investments can be influenced by several factors. If an investor wants to invest in another country, he tries to decide before investing by researching a few factors that may affect his business in the future. A foreign investor considers several factors when making a decision to invest abroad in another country. These include economic and socio-political factors. According to Emir and Kurtaran (2003), the size of the market, labor costs can be shown as an example for these economic factors, and political risks may be socio-political factors. The presence of political risk results in modifications to projected cash flows of multinational investment initiatives and has an adverse impact on the profitability of such investments. Political risk encompasses both large-scale macro factors and smaller-scale micro factors.

According to Turkey (2013), the escalation of political risk can lead to various negative outcomes, including:

- Foreign investors may withdraw their investments and leave the country;
- The uncertainty caused by political risk may result in a reduction in the overall level of investments in the country;
- Local investors may decide to transfer their capital abroad due to the elevated level of risk;
- In times of heightened political risk, speculators can exploit the situation to create greater instability in foreign and domestic currencies.

Numerous studies have examined the correlation between political risk and foreign direct investment, but the findings have been varied. Some studies suggest that FDI declines in response to an increase in political risk. [Masca,2008]

Acar (2012) identifies several factors that can impact political risk, including:

- The political regime of the country;
- social and demographic characteristics;
- rules pertaining to foreign investment;
- wars;
- trade barriers;
- government recession and etc.

The next challenge for foreign investors during decision making process is cultural differences. The dissimilarities in culture between the country of origin and the country of investment can impact foreign investment activities in numerous manners. The "cultural proximity" theory suggests that countries with higher cultural diversity may receive lower investments from foreign investors. [Lee,2008] Hennard (2002) noted in his article that when the cultural difference between the home country and the host country grows, foreign investors tend to opt for greenfield investment over acquisition. This is because significant cultural gaps can result in more pronounced disparities in management and organizational practices. If there is cultural similarity and a long-standing history between the home country and the host country, it can create a favorable political environment in the host country for foreign investors. This can make it easier for foreign investors to gain acceptance and support. Moreover, the strength of cultural and historical ties may increase the inclination of foreign investors to acquire greater ownership of their investments in the host country. [Vachani,1995] According to Berry (2010), the cultural differences between countries can be a major deterrent for firms looking to invest in foreign markets. Therefore, it is believed that when two countries have more similar cultures, their level of international trade will be higher. This is because a greater level of cultural similarity can reduce uncertainty and make it easier for firms to understand and negotiate with the foreign country.

Religion is a significant factor that influences the cultural fabric of a nation. It has a profound impact on the behavioral patterns of individuals and groups, and consequently affects the economic performance at different levels - be it individual, group or national. [Landes,2000] The impact of religious faith on foreign direct investment can be assessed in the context of the cultural proximity theory. Typically, foreign investors are inclined to invest lesser in countries with a more diverse religious landscape. This is because the divergence in religious beliefs leads to an increase in the cultural disparities between the home country and the host country. [Ak,2009]



According to Akay (2008), investors generally prefer to invest in countries where they are familiar with the local population, their culture, and their social norms. While commercial considerations and profitability are the primary drivers of investment decisions, differences in social and moral values can also play a role. Even though the legal framework may not differ significantly, the capital from the West and America tends to invest more among themselves, possibly due to shared cultural and social ties.

According to Mabey (2009), over the past ten years, there has been a noticeable increase in environmental degradation across various areas such as deforestation, greenhouse gas emissions and etc. This degradation is mainly attributed to the rise in economic activity, with foreign direct investment (FDI) being a notable factor.

Official statements on the environmental impacts of foreign direct investment (FDI) typically revolve around three key arguments:

- The first argument is that FDI is generally cleaner than domestic investment: FDI often introduces new technologies that are more environmentally friendly than those used by domestic producers, so promoting FDI can lead to an improvement in a country's environmental performance.
- Foreign direct investment (FDI) can raise the need for better environmental standards in host countries. As the host country's income levels increase, this can ultimately lead to a decrease in environmental damage over time according to the environmental Kuznets curve theory.
- Each country has unique environmental strengths that may give it a competitive edge. As a result, countries will create their own environmental regulations based on their specific domestic preferences and available resources.

### **Hypotheses**

Here's a possible hypothesis that will be tested for this study:

Null hypothesis ( $H_0$ ): There is no significant relationship between foreign direct investment (FDI) and the GDP of Singapore.

Alternative hypothesis ( $H_1$ ): There is a significant positive relationship between foreign direct investment (FDI) and the GDP of Singapore.

This hypothesis suggests that as the level of foreign direct investment increases, the GDP of Singapore will also increase. As a result, if there is a positive relationship between FDI and GDP, it would suggest that Singapore is benefiting from foreign investment and that the economy is growing as a result.

### Case studies of FDI in developing countries

In 2021, FDI inflows showed an upward trend in most subregions, except for South Asia. However, only six countries received more than 80% of the FDI inflows. China was the largest recipient, followed by Singapore, Indonesia, the United Arab Emirates, and India. [UNCTAD,2022] Some examples of foreign direct investment attracted to the country by several developing countries are shown below:

**Singapore**-Singapore is among the countries that attract the most foreign direct investment. FDI has played a crucial role in the economic and developmental history of Singapore, dating back to the period after the country gained independence in 1959. At that time, Singapore faced significant challenges related to poverty and unemployment, and due to limited financial resources, it was essential for the country to attract foreign investment in order to support its economic growth and development. [Siddiqui,2010] Lee and Tan (2006) indicate that Singapore considers FDI as a means to promote economic growth by leveraging successful technology transfers, implementing effective government strategies and policies to capitalize on FDI inflows, enhancing human resources, and creating a more open trade environment. The amount of foreign direct investment in Singapore will reach \$105.49 billion in 2021. This number means 26.57% of the gross domestic product of the country. This is quite a large number and makes a great contribution to the development of the country. There was a rise of 36.7 billion USD in the amount of Foreign Direct Investment (FDI) in Singapore for previous year. [World Bank,2022]

**China**- Hong (2014) and Peng (2016) analyzed data from panels at the provincial and municipal levels in China. Using the GMM approach, they recalculated the favorable relationship between China's economic growth and its production input, which is supported by the foreign direct investment (FDI). The result of their research showed that indeed foreign direct investment has a great impact on China's development. According to UNCTAD (2022) China has been ranked among the top countries globally in terms of foreign direct investment (FDI), with a total FDI of 189.1 billion U.S. dollars in recent years. The primary driver of growth was the service sector, which contributed to over 70% of the inflows. The inflow of Foreign Direct Investment (FDI) saw significant growth in industries related to technology. To encourage further investment, the government broadened the range of industries that welcome FDI, eased limitations on foreign investment in crucial sectors.

**Azerbaijan**- Following its independence, the Republic of Azerbaijan needed to adopt new economic principles to establish and develop its economy. This required



the country to engage in open market relationships with other nations. However, the Azerbaijani government encountered military, political, and other difficulties, which hindered the achievement of the desired level of economic liberalization. To compensate for the lack of resources needed for international trade and liberalization of prices, the government sought external resources. Foreign investment began flowing into the Azerbaijani economy in 1994, and legal and administrative changes were made between 1994 and 1997 to facilitate foreign capital inflow to the country. These changes ultimately resulted in the successful inflow of foreign capital. During the initial years, investment from Western countries began to flow into the country with the aim of exploiting its abundant oil and natural gas resources. [Ogan,2003] Mirzeyev (2019) noted that from 1994 to 2016, the Azerbaijani economy received approximately \$180 billion in foreign investment, with the oil sector receiving 74% of the total foreign direct investment. Between 2000 and 2020, the country attracted \$90.8 billion in foreign direct investment, with 85% of this amount directed towards the oil sector, and the rest invested in non-oil sectors. [ANB,2020]

Data regarding foreign investment in sectors other than oil is accessible until 2014. Throughout history, the industrial sector has been the most attractive sector for foreign direct investment in Azerbaijan, followed by the construction sector in second place. Despite the agricultural sector's significant potential, it has not received any foreign direct investment during this period. However, foreign investment in the agricultural sector could bring modern technologies, ultimately increasing productivity. [Mikayilov,2012]

**Brazil**-Starting from the 1990s, Brazil experienced a significant increase in foreign direct investment (FDI) from other countries, primarily due to privatization efforts. These investments played a crucial role in reducing recurring current account deficits (caused by the country's greater integration with the global market) and boosting productivity within the domestic economy. In 2021, Brazil received a total of US\$ 46.4 billion in foreign direct investment. Among different sectors, the service industry had the highest performance, with an increase of 83% in FDI inflows in 2021. The commerce, electricity and gas sectors also received a significant amount of FDI. However, the natural resources and manufacturing sectors saw a decline in investment. The information technology services sector also received significant amounts of foreign direct investment. [ECLAC, 2022]

**Analysis part**

Amount of foreign direct investment inflows and Gross Domestic Product (GDP) of Singapore are used to make regression analysis for the study. Followings are the amount of foreign direct investment and GDP for each year between 2012-2021.

**Table 1. Values of Singapore's foreign direct investment and gross domestic product**

Year	FDI (in billions)	GDP (in billions)
2012	55,31	295,09
2013	64,39	307,58
2014	68,7	314,85
2015	69,77	308
2016	65,36	318,83
2017	99,21	343,19
2018	81,18	377
2019	111,48	375,47
2020	74,75	345,3
2021	105,49	396,99

Source: World Bank, [www.worldbank.org](http://www.worldbank.org)

By using following data, regression analysis was conducted to show the relationship between these two dependent and independent variables.

**Table 2. Results of regression analysis for Singapore**

Regression Statistics	
Multiple R	0,85208376
R Square	0,726046734
Adjusted R Square	0,691802576
Standard Error	19,45647915
Observations	10

Regression Statistics:

Multiple R: This is the correlation coefficient between the dependent variable (Y) and the independent variable (X). In this case, it is 0.85208376, which indicates a strong positive correlation between the two variables.

R Square: This is the coefficient of determination, which represents the proportion of the variance in the dependent variable that is explained by the independent variable. In this case, it is 0.726046734, which means that 72.6% of the variance in the dependent variable is explained by the independent variable.

Adjusted R Square: This is a modified version of R Square that takes into account the number of independent variables and the sample size. In this case, it is 0.691802576, which is slightly lower than R Square.

Standard Error: This is the standard deviation of the residuals (the differences between the actual and predicted values of the dependent variable). In this case, it is 19.45647915, which indicates the degree of variability in the data around the regression line.

Observations: This is the number of data points used in the analysis. In this case, there are 10 observations.

**Table 3. Analysis of Variance**

ANOVA	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	8026,137352	8026,137352	21,20206109	0,001745
Residual	8	3028,436648	378,554581		
Total	9	11054,574			

df: This stands for degrees of freedom, which is the number of independent pieces of information in the data.

SS: This stands for sum of squares, which is a measure of the total variability in the dependent variable.

MS: This stands for mean square, which is a measure of the variability of the dependent variable that is explained by the independent variable.

F: This is the F-test statistic, which is the ratio of the mean square of the regression to the mean square of the residual. In this case, it is 21.20206109, which indicates that the regression model is statistically significant.

Significance F: This is the p-value associated with the F-test statistic. In this case, it is 0.001745, which is less than 0.05 (the commonly used threshold for statistical significance), indicating that the regression model is statistically significant.

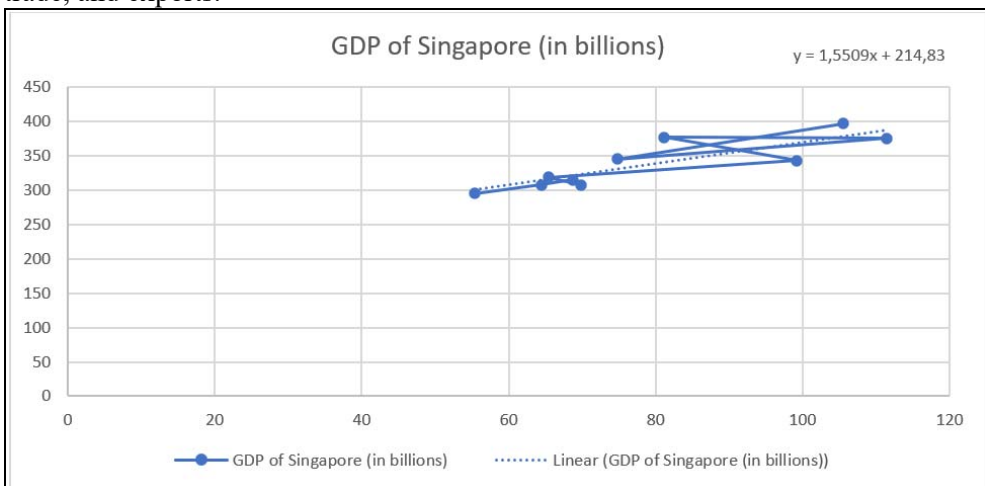
**Table 4. Intercept and coefficient results of analysis**

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	214,832001	27,49624471	7,813139695	5,17461E-05
X Variable 1	1,550927543	0,336823565	4,604569587	0,001745

Intercept: This is the y-intercept of the regression line, which represents the predicted value of the dependent variable when the independent variable is zero. In this case, it is 214.832001.

X Variable 1: This is the coefficient of the independent variable (X), which represents the change in the predicted value of the dependent variable for a unit change in X. In this case, it is 1.550927543.

Overall, these results indicate that there is a strong positive relationship between the independent and dependent variables, and the regression model is statistically significant. The intercept and coefficient values can be used to make predictions about the dependent variable based on the independent variable. The other factors that may also influence dependent variable (GDP), such as demographic, economic, or geographic factors. Therefore, it cannot be mentioned that only foreign direct investments contribute to the development of the country. According to Yue (2016), The success of Singapore’s economic growth are mainly reliant on trade. There is a strong and positive statistical relationship between GDP and FDI, trade, and exports.



**Graph 1. Scatter chart of relationship between GDP and FDI of Singapore**

y represents the dependent variable, in this case, GDP.

x represents the independent variable, in this case, FDI.

1,5509 is the slope coefficient, which indicates how much the dependent variable changes for each unit increase in the independent variable. This indicator means that for each unit increase in FDI, GDP is expected to increase by 1,5509 units.

214,83 is the intercept, which is the value of the dependent variable when the independent variable is equal to 0. If there were no FDI, the expected value of GDP would be 214,83 units for this equation.

Therefore, this equation represents a linear regression model that estimates the expected value of GDP based on the value of FDI, assuming that the relationship between the two variables is linear and that there are no other variables that affect the relationship between FDI and GDP.

### Conclusion

The research used regression analysis to examine the correlation between economic growth and foreign direct investment in Singapore, which is considered a developing nation, during the period from 2012 to 2021. For analysis part two different variables which are foreign direct investment and GDP are used. GDP is chosen as indicator of economic growth. Foreign direct investment is independent and GDP is dependent variable here. Based on the regression analysis conducted with the provided data, the study has found a strong positive correlation between the X(Variable1) (presumably foreign direct investment) and the economic growth of the selected country (Singapore). The regression model shows that the coefficient of determination (R Square) is 0.726, which implies that approximately 72.6% of the variation in economic growth can be attributed to foreign direct investment. Additionally, the p-value of the F-test is less than 0.05, indicating that the regression results are statistically significant. The regression model's intercept coefficient has a value of 214.83, indicating that if there were zero foreign direct investment, the estimated economic growth would be approximately 214.83. The coefficient of X(Variable1) is 1.55, which implies that for every one-unit increase in foreign direct investment, the estimated economic growth increases by 1.55 units.

The model's ANOVA (analysis of variance) table shows that the regression model's F-statistic is 21.20, and the corresponding p-value is less than 0.05, indicating that the regression results are statistically significant. Moreover, the residual standard error is 19.46, which implies that the regression model's

predictions have an average deviation of approximately 19.46 units from the actual data.

It's worth noting that this study has some limitations that may impact the generalizability of the findings. Firstly, the study only analyzes data from one developing country (Singapore), and the results may not be applicable to other developing nations with different economic characteristics. Additionally, the study only examines the impact of foreign direct investment on economic growth and does not consider other factors that may also contribute to economic growth, such as political stability, technological advancements, and infrastructure development.

Furthermore, the study assumes a linear relationship between foreign direct investment and economic growth, and this may not always hold in reality. Additionally, the study's data covers a relatively short period, and the results may not reflect the long-term effects of foreign direct investment on economic growth. Despite these limitations, the study's findings provide valuable insights into the impact of foreign direct investment on economic growth in developing countries. Apart from implementing strategies targeted at drawing foreign direct investments, it is crucial for nations to consider measures that enhance the degree of financial advancement, guarantee stability in macroeconomic conditions, and boost domestic investments.

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## RISK FINANCING TECHNIQUES AND SMEs PERFORMANCE: EMPIRICAL EVIDENCE FROM NIGERIA

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### Abstract

*Risk financing is a critical element of a resilient future. Risk management techniques are important metrics in safeguarding the lives and property of mankind. Therefore, this study aimed at assessing the effects of financial risk management techniques on business performance, with specific reference to the perceptions of selected SMEs in Lagos, Nigeria. The study adopted a cross-sectional survey research design. The study population consisted of the total number of registered SMEs recorded in Lagos State at 11,666. Thus, both single-stage cluster and convenience sampling technique were employed in the questionnaire distribution and data collection processes. Two hundred and forty-eight (248) respondents were used in the study. The statistical technique employed was simple regression. This study confirms the importance of financial risk management techniques in business performance of selected SMEs operators in Lagos, Nigeria. It is recommended that insurance providers in Nigeria should attempt to tailor insurance products in a lovable and affordable manner to SMEs' operators/owners in a bid to improve on their behavioural risk attitudes. More so, interest should be placed on impressive risk management communication and ideal physical risk control techniques among SMEs' owners/operators.*



**Keywords:** *financial risk techniques, risk management theory, business performance, SMEs*

**JEL Classification:** *G32, L74*

## 1.0. Introduction

Small and medium enterprises (SMEs) are being acknowledged as steady vehicle that stimulate the essential profitable drive globally (Ajemunigbohun, Isimoya, & Elegunde, 2020; Ledwin & Watson, 2019). Thoughts evident from studies (such as Alaka, Ajemunigbohun, & Balogun, 2022; Anokwuru & Wike, 2021; Ibiwoye, Mojekwu, & Dansu, 2020) concurred that most businesses are occupied by SMEs. SMEs' contributions within the African sub-region stand around 90% (businesses) and 50% (job creation). This, invariably, can be supported by the risk financing techniques adopted.

Risk financing technique, is an indispensable financial instrument required for all-round safety to lives, properties, businesses, to mention few. Risk financing technique, according to Arunajatesan and Viswanathan ((2017), is a combination of risk transfer and risk retention. Risk transfer technique such as insurance is key to the advancement or size (severity). This, then, necessitate the need to carry out the study on the relationship between risk financing techniques and business performance among SMEs in Lagos, Nigeria.

This study is to evaluate the relationship that exist between risk financing techniques and business performance among SMEs operators. The specific objectives are to ascertain the significant effect of the risk retention technique on SMEs performance in Lagos State; and thus, examine the relationship between risk transfer techniques and SMEs performance in Lagos State.

## 2.0. Literature Review

### 2.1. Conceptual Review

#### 2.1.1. Business Risk Management

Risk, as a construct, is defined as anything that probably causes an entity to lose its business value (Turner, 2010 as cited in Obalola, & Ajemunigbohun, 2017). It is also depicted as an element that can deeply impact business objectives; and possibility that both expected and unanticipated situations may have divergent consequence on business capital and earnings (Gwangwawa, Manuere, Kudakweshe, Tough, & Rangarirai, 2014). It is delineated as a sustained process

that can assist priorities, operations, and resources, find out legal compliance, gaining performance targets, enhance pecuniary stability and predominantly, avert business losses and destructions to the (Alaka, Ajemunigbohun, & Balogun, 2022). Kleffner, Lee, and McGannon (2003) as cited in Obalola and Ajemunigbohun (2017) stipulated that business risk management is the step-by-step handling of operational and financial risk management in a bid to curtail the cost suitability of handling risks within the limits of business tolerance for risk. Studies (such as Al-Qubtan, Gan, Abd. Hadi, Abdul Jalil, & Rambeli, 2021; Gatzert & Martin, 2013; Zoghi, 2017) came up that business risk management is an aggregate of an all-round business risk by taking account of interdependence between risks that allow for improved evaluation of an entity's risk event and afterward increasingly link decision process with strategic and operative advancement.

### 2.1.2. Business Risk Financing

A business is defined as a controlled system comprising of a detector, a selector, and an effector (Chuthamas, Aminul, Thiyada, & Dayang, 2011). Neneh and Van Zyl (2012) expressed that the survival of business tenet is dependent on the evidence of quality managerial principles and techniques in managing businesses which will steadily grow business performance especially in the applicability of business excellence in core facets of a business. However, business risk as the entirety of all risks a business organisation faces in the course of conducting its business activities (Dafikpaku, 2011 as cited Alaka et al., 2022). Earlier submission by Olsson (2002) as cited in Ajemunigbohun et al. (2020) gave it as the risk of failing to attain required business targets as a result of inappropriate plans, limited resources or economic/competing situational dynamics. It is also described as the extent to which the consequential effect from organisation's corporate tactics different from those stipulated in its organisational overall financial objectives (Dickinson, 2011 as cited in Obalola & Ajemunigbohun, 2017).

According to Poole (2014), risk financing involves the retention of risks combined with the adoption of an explicit financing strategy (insurance) to ensure that adequate funds are available to meet financial needs should a disaster occur. It is also seen as the estimation of how best an organisation will pay for loss events in the most effective and least costly way possible. Risk financing techniques are into two divisions namely risk retention and risk transfer (Outreville, 1998 as cited in Diaz & Sanchez, 2016). Risk retention, according to Mumassabba, Mukulu, and Atikiya (2022), is seen as the practice of setting up a self-insurance reserve fund to pay for losses as they occur, rather than shifting the risk to an insurer or using hedging instrument. They stressed that risk retention is when a company decides to

take responsibility for a risk it faces, as opposed to transferring the risk over to a third party. It is also seen as the method is appropriate when the risks of loss or the loss exposure is either too small with little impact or too great to be able to do anything with it (Kokobe & Gemechu, 2016). For risk transfer, according to Owolabi and Oloyede (2021), is a risk control option that embraces the contractual shifting of a pure risk from one individual to another. However, it is a voluntary arrangement between two parties, the insurer and the policyholder, where the insurer assumes strictly defined financial risks from the policyholder (Thuku & Muchemi, 2021)

### **2.1.3. SMEs' Performance**

Every organisation works in a competing milieu, and if such wishes to pull through with the current changes, it has to overcome so many difficulties that can possibly hamper its performance. Organisational performance, therefore, has been agreed to impart on organisation's success or failure (Bin-Nashwan, Abdullah, & Obaid, 2017; Durendez, Rulz-Palomo, Garcia-Perez-de-Lema, & Dieuez-soto, 2016). Organisational performance, according to Henri (2004) as cited in Rehman, Mohamed, & Ayoup (2019), means the efficaciousness of an organisation in the attainment of its desired objectives. It is also seen as a determinant that measures how well an organisation achieve its goal (Zehir, Yildiz, Kole, & Basar, 2016).

Accordingly, Cokins (2004) as cited in Obalola and Ajemunigbohun (2017) remarked that managing performance helps managers to sense unforeseen situations at the earlier stage and give it a swift response. Earlier submission by Armstrong (2006) opined that managing organisation's performance assists in creating a high-performance culture whereby every organisation's member takes cognisance of frequently upward movement of the expertise and business activities. Vichitdhanadadee, Wilmshurst and Cliff (2009) stipulated that the survival and success of SMEs activities dependent upon the constant development of their performance alongside maintaining adequate resources encompassing employee and prompt information, combine them towards creating great deal of business benefits.

## **2.2. Theoretical Review**

### **2.2.1. Risk Management Theory**

Risk management theory is a formation of three basic phenomena namely utility, regression and diversification (Ajupov, Sherstobitova, Syrotiuk, & Karataev, 2018). The financial risk management theories and practices were rooted in the wider risk management perspectives, hence its deepest part is traceable to the

decision analysis. However, the Expected Utility Theory (EUT) was formulated in the 18th century by Bernoulli (1738), and later developed, nurtured, and axiomatised in the mid-20th century by Von Neumann and Oskar (1944) to deal with events of quantifiable risk. Bernoulli's introduction of the expected utility theory was mainly to resolve predicaments by employing the expected value paradox posed by Petersburg. Bernoulli achieved the paradox's resolution by infusing the logarithmic utility function of wealth, characterised mainly as 'diminishing marginal utility'. This theory is based on the rationality of individual approaches to judgment making within the objective risk. The basic ideology behind its emergence was the desire to define people or people's rational thinking and behavioural attitudes when exposed to risky situations.

In his work, Zurita (2005) has argued that, under an objectivist explanation, the Expected Utility Theory presupposes that an economic agent has sufficient knowledge of the probabilities of all relevant events before he can make a rational choice. Furthermore, Lusardi and Mitchell (2014) found that an increase in the level of financial knowledge will lead to less deviation in the expected utility. Expected utility theory also assumes that decision makers will be able to make rational decisions if they have knowledge about the available choices and use that knowledge (OECD, 2013). In other words, decision makers must be financially literate regarding the expected utility of their choices.

### 2.3. Empirical Review

Several surveys have been dedicated both in Nigeria and other countries of the world to identify with risk financing techniques and how they are in relations to insurance companies and other areas of endeavours (e.g., Al Qubtan et al., 2021; Bashaija, 2022; Diaz & Sanchez, 2016; Offiong, Udoka, & Bassey, 2019; Pitchaya & Widya, 2020).

Zoghi (2017) examined the relationship between risk management practices and SMEs in Turkey. The study thus attempted to investigate the current state of risk management in Turkish SMEs in detail. The study population was 2000 Turkish SMEs. The study sampled 192 respondents and gathered relevant information via the questionnaire. The study employed Chi-square test and Cross-tabulation in the statistical analysis of collected data. The findings from the study proved a relationship and association between the variables in many cases.

Van den Boom (2019) evaluated the empirical analysis of financial risk management in Dutch SMEs. The study adopted a descriptive research design. The study collected its data through a questionnaire approach with 97 cases selected during the period from 2013 to 2016. Responses for the study were gathered those

involved in trading, servicing, logistics, engineering, construction, trading, and auditing. The findings show that possible determinants on the level of financial risk management in the Dutch SMEs were estimated by the level of education of the risk manager and the degree of decentralisation.

Chakabva, Tengeh, and Dubihlela (2021). Investigated factors inhibiting effective risk management in emerging market SMEs, with case of South Africa. The study engaged questionnaire, as a research instrument, in the collection of data, with 320 responses from FMCG. The findings of the study disclosed the significance of both tangible and intangible resources in positively impacting the efficaciousness of risk management in the world of SMEs in South Africa. The study concluded that owner-manager must pay close attention to both intangible and tangible resources, which could have positive impact resulting to effective risk management.

Aduloju and Akindipe (2022) ascertained the effect of risk control techniques on organisational performance of selected SMEs in Lagos State. The study covered ten major clustered markets in Lagos comprised of oil and gas, manufacturing, servicing, and general merchandised companies. The study adopted both survey research design and convenience sampling method. A regression technique was employed in the data analysis. The findings proved that there is a positive correlation between risk control techniques and SMEs' performance in Lagos State. The study suggested that SMEs should increase its risk appetite to improve efficient management of their businesses.

### 3.0. Methods

The method adopted for this study was a cross-sectional survey research design. This design thus assisted in planning and executing the research in a manner to acquire planned outcomes and thus, created a nexus with the real-life global situation (Creswell & Creswell, 2018; Gray, 2017). The population of this study consisted of the total number of registered small and medium enterprises in Lagos State. In accordance with the Small and Medium Enterprises Development Agency of Nigeria (2013), the totality of micro, small and medium enterprises (MSMEs) as cited in Alaka et al. (2022) stood at 37,067,416 with 36, 914,578 micro, 68,168 small and 4,670 medium enterprises. Lagos State, being the research ground, is said to have a share of 11,666 registered SMEs. Some major markets chosen for study areas were Alaba International Market (Ojo); Trade Fair (Amuwo Odofin); and Computer Village (Ikeja).

The study adopted both single-stage cluster and convenience sampling technique. The aim of selecting this sampling technique was due to the fact that it allowed the researchers to divide the population into favourable clusters by indiscriminately selecting the needed number of clusters as representative variables and examined all the cases in each of the randomly chosen clusters. This sampling technique is beneficial because its timely and inexpensive (Wilson, 2014). In a quest to collect additional information, convenience sampling technique was adopted at all study based on the availability and readiness of the respondents to complete the research instrument; as carried out by the researcher.

Since the target population comprised of all registered motor users in Lagos metropolis, the total sample size for the study was statistically determined by Taro Yamane's (1967) formula as cited in Amah and Okoisama (2017), given as:

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{11666}{1 + 11666 (0.05)^2} = 399$$

Where:

n= the sample size, N= the population size, e= the acceptable sampling error 95% confidence level and p=0.05 are assumed.

Data collection was carried out through field survey among chosen small and medium-sized enterprises with the assistance of the questionnaire. The choice of selecting the participants were due to their vital significance in economic sustenance of our nation. The use of this data collection instrument was because of its appropriateness to the design of the study with regards to being relatively cheap, wider usage and more sample representative, sufficiency of time for participants to assign well thought out responses and simplicity in the administration the research instrument (Cooper & Schindler, 2014; Kothari & Garg, 2016). The data instrument adopted a Likert scale measurement of 'strongly agree', 'agree', 'undecided', 'disagree', and 'strongly disagree'. These responses, according to Pallant (2011), were accorded values as follows: strongly agree = 5, agree = 4, undecided = 3, disagree = 2, strongly disagree = 1. The study observed tests of validity comprised of congruent, content, and criterion-related in nature. While the congruent validity was structured in accordance to preceding literature, content validity took cognisance of the specifics on the survey instrument, and the criterion-relation validity took a probe of the outcomes from other related participants (Booth, Colomb, Williams, Bizup, & Fitzgerald, 2016). Also, the



reliability test was conducted with a Cronbach alpha of 0.703 for risk financing techniques, and 0.713 for business performance. These results were in consonance with statistical interferences of the soundness of the scale, and the safety of the internal consistency.

#### 4.0. Data Analysis and Results

##### 4.1. Descriptive Analysis

**Table 4.1. Respondents’ Perceptions of Bio-Data of the Business**

Variables	Options	Responses	Percentages
Gender	Male	152	53.5
	Female	132	46.5
Ages	18 <30	51	18.0
	30 < 40	90	31.7
	40 < 50	89	31.3
	50 < 60	38	13.4
	60 & above	16	5.6
Education	BSc/HND	151	53.2
	MSc.	34	12
	Ph.D.	13	4.6
	Professional Certificate	35	12.3
	Others	51	17.9
Business Size Classification	Small	113	39.8
	Medium	142	50
	Large	29	10.2
Risk Management Guidelines	Yes	73	25.7
	No	211	74.3

*Source: Field Survey, 2022*

The analysis of Table 4.1 reveals that 53.5% of the respondents were male, while 46.5% were female. While the majority of the respondents’ ages were both 31.7% and 31.3% for ages 18 years but less than 30 and 40 years but less than 50 respectively, those respondents of 18 years but less than 30 recorded 18.0%. while aged 50 years but less than 60 were 13.4%, 5.6% was recorded for respondents aged 60 years and above. For education qualification, 53.2% represented those respondents with B.Sc./HND. While 17.1% was for others, 12.3% was recorded for professional certificate holders. While 12 % claimed to have Master degree, 4.6% were said to be doctoral degree holders. The business size classification of the SMEs’ operators shows that majority were medium, representing 50%. While



39.8% are recorded for small business, 10.2% were said to be large business. As for the risk management guidelines, majority of the business investigated revealed that no risk guidelines on their part.

#### 4.2. Test of Hypotheses

**Table 4.2: Simple Regression Results for Risk Retention vs. SMEs’ Performance**

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.471 <sup>a</sup>	.221	.218	2.573	.221	23.970	1	283	.000
a. Predictors: (Constant), Risk retention									
ANOVA <sup>a</sup>									
Model		Sum of Squares		Df	Mean Square	F	Sig.		
1	Regression	158.682		1	158.682	23.970	.000 <sup>b</sup>		
	Residual	1595.425		283	6.620				
	Total	1754.107		284					
a. Dependent Variable: SMEs’ Performance									
[1] Predictors: (Constant), Risk retention									
Coefficients <sup>a</sup>									
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		
		B	Std. Error	Beta			Lower Bound	Upper Bound	
		1	(Constant)	13.482	1.251		10.780	.000	11.018
	Risk retention	.157	.032	.301	4.896	.000	.094	.220	
a. Dependent Variable: SMEs’ performance									

Source: Researcher’s computation, 2022

From the results of the regression analysis presented above, it is clear that there is positively relationship between risk retention and SMEs’ performance. The model also shows the variations experienced by the dependent variable that could be explained by the independent variable (R square) which shows that risk retention is responsible for about 22.1% of variance in SMEs’ performance. This means that 77.9% of the SMEs’ performance enjoyed by the SMEs’ operators comes from other factors other than the predictor used in this model (risk retention). The generalisation of the results (Adjusted R square) indicates that true

21.8% of the variation in SMEs’ performance is explained by risk retention. This result is almost close to reality as the difference between R Square and Adjusted R Square is not high. The standard error fit, which is a measure of the precision of the model, shows how wrong the statistical outcomes could be at 3% if one uses this model to make real life predictions. The above result is statistically significant as seen in the ANOVA table (p-value = 0.157) as they are less than the 0.05 confidence interval used in this study. A value greater than 1 shows that F-ratio yield an efficient model but 23.97 F-ratio indicates that this model is not very efficient.

**Table 4.3: Simple Regression Results for Risk Retention Techniques vs. SMEs’ Performance**

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.760 <sup>a</sup>	.577	.513	4.205	.577	17.416	1	283	.000
a. Predictors: (Constant), Risk transfer									
ANOVA <sup>a</sup>									
Model		Sum of Squares	Df	Mean Square	F	Sig.			
1	Regression	118.216	1	118.216	17.416	.000 <sup>b</sup>			
	Residual	1635.891	283	6.788					
	Total	1754.107	284						
a. Dependent Variable: SMEs’ Performance									
[2] Predictors: (Constant), Risk transfer									
Coefficients <sup>a</sup>									
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		
		B	Std. Error	Beta			Lower Bound	Upper Bound	
1	(Constant)	13.949	1.353		10.312	.000	11.285	16.614	
	Risk transfer	.373	.089	.260	4.173	.000	.197	.549	
a. Dependent Variable: SMEs’ Performance									

Source: Researcher’s computation, 2022

From the results of the regression analysis presented above, it is clear that there is positively low relationship between risk transfer and SMEs' performance. The model also shows the variations experienced by the dependent variable that could be explained by the independent variable (R square) which shows that risk transfer is responsible for about 57.7% of variance in SMEs performance. This means that 42.3% of the SMEs performance enjoyed by the SMEs' operators comes from other factors other than the predictor used in this model (risk transfer). The generalisation of the results (Adjusted R square) indicates that true 51.3% of the variation in SMEs performance is explained by risk transfer. This result is almost close to reality as the difference between R Square and Adjusted R Square is not high. The standard error fit, which is a measure of the precision of the model, shows how wrong the statistical outcomes could be at 4% if one uses this model to make real life predictions. The above result is statistically significant as seen in the ANOVA table ( $p$ -value = 0.373) as they are less than the 0.05 confidence interval used in this study. A value greater than 1 shows that F-ratio yield an efficient model but 17.416 F-ratio indicates that this model is not very efficient.

### 5.0. Conclusion and Recommendations

From the empirical analyses conducted and the test of hypotheses carried out, this study has been able to address the research objectives. The results show that financial risk control techniques have positive and significant effects on SMEs performance in Lagos, Nigeria, leading to the rejection of all null hypotheses at 0.05 level of significance. The findings show that financial risk control techniques play a vital role in imparting SMEs performance. The responses of the respondents largely proved that effective implementation of financial risk control techniques will help enhance the capacity of SMEs operators to a moderate extent. The findings of this research reveal that risk management techniques (i.e., financial control) are significant in influencing business performance among SMEs owners/operators. Thus, insurance providers in Nigeria should focus on the risk management proxies that will have greater effects on the buying behaviour of the SMEs owners/operators and other entrepreneurs or business-related industries.

Based on the justification adduced to in this study, the researchers recommended that insurance education, as a field of study, should be taken as seriously as possible so that it can help develop the peoples' minds psychologically and sociologically to get attracted to insurance in order to manage their future. More so, insurance providers in Nigeria should make attempt to make the business of insurance lovable and affordable to SMEs' operators/owners in a bid to sharpen

their behavioural risk attitudes. The SMEs operators should try to shift their desire to managing the thrust of risk off to the insurance providers for adequate business, economic and financial security.

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## THE IMPACT OF INVESTMENT IN RESEARCH AND DEVELOPMENT ACTIVITIES ON THE PROFITABILITY OF PHARMACEUTICAL COMPANIES: A COST ACCOUNTING APPROACH

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### Abstract

*Investing in research and development (R&D) activities greatly impact the assessment of the company's finances and performance, which is why the issue of the accounting treatment of these costs is so important. The aim of this paper is to examine the relationship between investment in R&D activities and the profitability of pharmaceutical companies, i.e., to see whether R&D activities can affect the financial position and performance of 30 pharmaceutical companies in the period from 2010 to 2020. The obtained results show that investing in R&D activities has a positive effect on net income, earnings before interest and taxes, and earnings per share (EPS).*

**Keywords:** *R&D; investment; costs; profitability*

**JEL Classification:** M40, M41, B23

### **Introduction**

A large number of companies focus on R&D activities. Today, continuous investment in technology development is a prerequisite for the survival and development of companies. By investing in R&D activities, companies improve technical capacity, make progress in new product development, increase production efficiency and quality of services, and, thus, operate more successfully. Investing in these activities also brings a certain level of risk given the return on investment (whether the company's investment costs will be below the level of profit), but it is certain that investing in R&D activities will increase the competitive advantage of products and services through sales growth and higher market value. In addition, special attention should be paid to the accounting treatment of these costs, which can significantly affect the reality of the results the company reports and its production costs. The amount of investment in R&D is influenced by various factors such as capital structure, economic conditions, competitors' activities, globalization, and expansion of international networks. However, companies can cope with these factors in order to improve their future market position.

This paper focuses on international pharmaceutical companies with a high share of intangible assets (innovation) in their operations such as R&D, patents, brands, advertising, and the like. The pharmaceutical industry belongs to the group of high-tech industry and often faces numerous challenges. It is characterized by high manufacturer fragmentation, which can raise a number of issues such as drug safety, drug quality, as well as limited capacity for effective R&D. In addition to a high share of innovation, the price of innovation is high, which is certainly important for the survival of companies in this sector. That is why it is important to check the existence of a relationship between investing in R&D activities and the profitability of pharmaceutical companies.

The subject of the research includes 30 pharmaceutical companies selected as the highest-revenue companies in 2020. The research covers the period from 2010 to 2020. Secondary data are used and variables are selected (net income, earnings before interest and taxes, and earnings per share) to assess profitability using panel

regression analysis. The aim of this paper is to assess the impact of investment in R&D activities on the profitability of pharmaceutical companies.

In this regard, the paper is divided into three parts. The first part gives an overview of the literature. The second part of the paper deals with the methodology of panel regression analysis, research design, and description of variable measurement. Finally, the research results and their discussion are presented.

### Literature review

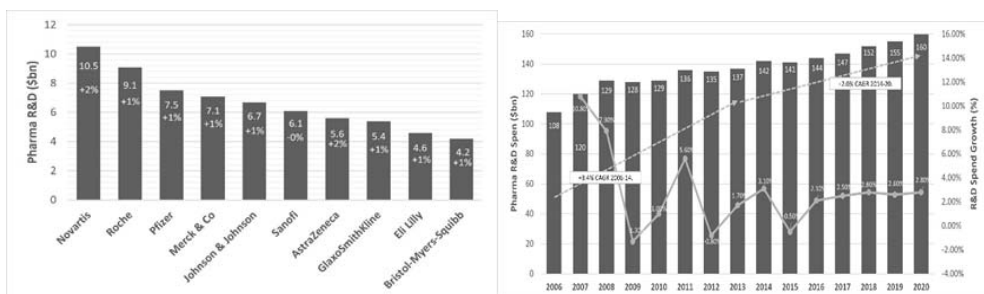
Scientific and economic development, intensive technology development, and growing competition raise the question of market survival when the product life cycle becomes shorter and shorter, forcing companies to monitor the relationship between business costs and the quality of products and services. This is especially true in the service sector, as the new strategic economic sector with a dominant share in GDP.

There are many definitions of R&D in scientific and academic literature, with as many links between R&D and innovation. The International Accounting Standard (IAS 38 – Intangible Assets) defines the concept of research as an *original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding* (Paragraph 8), while development is the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services before the start of commercial production or use. Pursuant to Paragraph 126, an entity shall disclose the aggregate amount of R&D expenditure recognized as an expense during the period (IAS 38). R&D (OECD 2015) comprises creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture, and society – and to devise new applications of available knowledge. Block (2012) points out that companies investing in R&D activities can develop new products, and create and adopt innovative technologies that can increase their competitive advantage. What is more, as De Medeiros et al. (2014), Huang et al. (2016), and Tumelero et al. (2019) say, the higher the amount of investment in R&D, the greater its impact on green product innovation.

Wang (2011) confirms that company performance depends on resources and R&D activities. Gunday et al. (2011) find that product and marketing innovations have a positive impact on company performance. Silva et al. (2015) and Gu (2016) find that the intensity of R&D has a positive effect on company performance. Dai and Yu (2013, according to Agustia et al. 2020) point out that the costs arising

from investment in R&D activities are not in vain. By investing, companies improve their innovative capabilities and absorption capacity. Dave et al. (2013) point to a significant relationship between R&D investment intensity and gross margin, while Beld (2014) finds a nonlinear relationship between R&D investment and financial performance. The performance of healthcare companies is one of the main scientific topics and is the subject of a large number of empirical studies (Fiala et al. 2020).

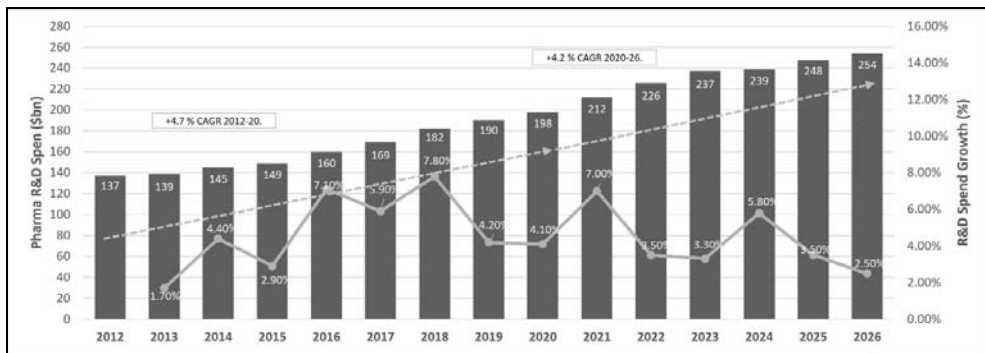
Pharmaceutical industries and their cumulative amount of investment in R&D activities, as well as the amount of investment at the level of individual companies, prove the importance of investing in R&D activities. The total global allocations of pharmaceutical and biotechnology companies for R&D activities increased from 108 billion USD in 2006 to 141 billion USD in 2015. The fifty largest world companies in terms of total investment in R&D activities in 2020 include 20 pharmaceutical companies. The companies in the top 10 leading companies for 2020 are Novartis (1), Roche (2), Pfizer (3), Merck & Co (4) Johnson & Johnson (5) (Figure 1). The 2020 World Preview Outlook report forecasted Novartis’s 10.5-billion-dollar spending on R&D. Furthermore, Celgene was forecasted to increase the amount of R&D costs by 10% per year from 1.8 to 3.3 billion dollars. Investment in R&D activities in the pharmaceutical industry was to increase by 2% (Compound Annual Growth Rate – CAGR), i.e., to 160 billion in 2020. In 2014 global investment amounted to 141.6 billion, a rise of 3.1% compared to previous years. Ultimately, total R&D investment was expected to increase by 2.0% each year (Figure 2).



**Figure 1 and 2. Top ten companies in 2020 and total investment in R&D activities of the pharmaceutical sector in the period from 2006 to 2020**

Source: Evaluate Pharma. World Preview Outlook (2015). Available at: <http://info.evaluategroup.com/rs/607-YGS-364/images/wp15.pdf> (Accessed on 11 February 2022)

Evaluate Pharma forecasts that global spending on R&D activities in the pharmaceutical industry will grow at an annual rate of 4.2% between 2020 and 2026. This is slightly slower than the historical CAGR of 4.7% between 2012 and 2020 (Figure 3). Figure 3 also shows that the amount of investment in R&D activities in 2020 exceeded forecasts (the realized amount is 198 billion).



**Figure 3. Total investment in R&D activities of the pharmaceutical sector in the period from 2012 to 2026**

Source: Evaluate Pharma. World Preview Outlook (2021). Available at: [https://info.evaluate.com/rs/607-YGS-364/images/WorldPreviewReport\\_Final\\_2021.pdf](https://info.evaluate.com/rs/607-YGS-364/images/WorldPreviewReport_Final_2021.pdf) (Accessed on 11 February 2022)

Given its exposure to pressure and changes in recent years, the further course of the pharmaceutical industry should be considered. Merck points out that companies can further thrive if their environment is conducive to innovation. The pharmaceutical industry should focus on the following (Gelijns and Halm 1991): it should remain successful in the discovery, development, production, and sale of innovative and cost-effective drugs; it should be confident in the profitability of R&D investments and be able to successfully convey the message of product profitability and real risk levels in relation to the return on investment in R&D. Investing in R&D (James 2019) is important for business growth and the ability to compete with the competitors. Companies that innovate, adopt new technologies, and improve their existing processes will surely operate in the long run. Broadly taken, the benefits of investing have a positive effect on other sectors, but also on the economy in general. Of course, a sector that invests a lot in R&D activities will develop more and will also bring numerous benefits to people around the world.

However, factors that may negatively affect the efficiency of R&D need also be considered, such as (Schuhmacher et al. 2016):

- Inadequate number of projects in early research stages;
- Technically complex research on new drugs and subsequent clinical studies;
- Increased burden of NME (new molecular entities) approval and refund with regard to already approved drugs;
- Lower risk tolerance;
- A Large number of mergers and acquisitions;
- Fewer research-based pharmaceutical companies that take the financial risk of drug R&D, and
- The negative effect of licensing, joint development, or joint ventures on clinical development and seeking authorization.

Therefore, the pharmaceutical industry must constantly check the strategy of its business model in order to generate revenue, and so that investment in R&D activities yields more important results in relation to the competition. Investment in innovation in this area brings a longer life expectancy of people, a large number of cured people, and improves available treatments. In fact, innovation has become a key factor in creating new and competitive products in the pharmaceutical industry. What is more, since the 1990s product development has become very important for companies operating on the global market (Calantone et al. 1997 according to Hutagaol and Natasha 2009). Company innovation does not have to be just about a new product. It can also be about investing in technology that allows companies to make progress in R&D (Aminullah 2007). R&D, as part of intellectual capital, has an impact on productivity and market value which can be beneficial. The rise in productivity increases profitability, while profitability determines the market value of companies (Pavlović et al. 2021). The pharmaceutical industry is very specific because it includes patent rights on the medicines produced, which for a longer period of time prevent the entry of competing players (Tömöri et al. 2022). Also, the pharmaceutical industry provides rewards in the form of intellectual property rights creating market power (Chen et al. 2021). Stanescu and Gurgu (2019) conducted research on the importance of marketing in the pharmaceutical field and examined how much companies spend resources on events organized in the pharmaceutical field. The authors came to the conclusion that in the Romanian pharmaceutical market, it is necessary to develop and implement complex marketing strategies that will ensure a competitive advantage in relation to competitors' channels. Besides, Calota Toma and Gurgu (2022) pointed towards the decisive role of the pharmaceutical field in the COVID-19 pandemic in Romania.



Therefore, investing in R&D activities is very important for company operations, but accounting for R&D costs is not easy. What is more, numerous authors, such as Hannel and St-Pierre (2002), Hokkanen (2006), and Coad and Rao (2007), confirm that R&D activities have an impact on company performance, so they must be given special attention. As R&D activities refer to researching new products and production procedures, improving the existing products, examining the possibilities of application of new materials, finding new product purposes, activities related to fundamental research, etc., costs of activities are not conditioned by current production. In that regard, their inclusion is not easy, given the uncertainty of future benefits, longer period of time from the beginning of activities to the identification of possible problems of failure (Wild et al. 2007). VanderPal (2015) pointed out, that R&D has an impact on corporate performance and therefore on profitability using multivariate statistical modeling and proved that R&D is considered an important prerequisite for growth companies and positive outcomes in terms of financial performance, as well as that there is a positive relationship between investment in research and future profits, all of which affects the growth of the market value of companies. R&D costs belong to the non-productive area and, therefore, do not enter the production costs, but they are still extremely important for the realistic calculation of company costs and determining business results. There has long been controversy over how to treat R&D costs. It is irrational to link them to products because they do not arise from current production but as a result of activities related to research and the realization of research results for new product development. One of the accepted proposals for the accounting treatment of R&D costs is to (Novičević and Antić 2010):

- Include them as a separate group of costs and write off current costs or cover them from the income of the current period,
- Include them together with the costs of general administration and administration and write off current costs, i.e., cover them from the revenues of the current period,
- Include them as a separate group of costs, and then allocate them to the production of the current period and make them share the fate of the costs of the functional area and
- Include them together with the general costs of the production functional area, allocate them to the production of the current period and share the fate of the costs of that area.

The stated accounting treatment of R&D costs is in line with cost differentiation of costs that do not bring current effects, those whose effects are felt in the current



period, as well as those whose effects are certain in the future. The effects of R&D costs are certain in the future and so it is reasonable to defer them to future periods in the balance sheet.

Thanks to innovation, the pharmaceutical sector has taken a high position in many countries. Observing its position from the economic and social aspects, the contribution of this industry is also important, emphasizing the good results in creating new jobs that result from continuous investment in R&D.

### Research Methodology

The panel data technique is used to assess whether investments in R&D activities have an impact on the profitability of pharmaceutical companies. Baltagi and Kao (2000) state that the advantage of panel data analysis is that it enables the development of correlation in time and observation units. It produces results based on a high degree of freedom and a low degree of multicollinearity, thus allowing for better efficiency of econometric estimates. The combination of time series and cross-sectional data increases the number of observations in the sample and gives greater information power to the model (Jovčić and Dragutinović Mitrović 2011, p. 217).

The initial sample includes 50 pharmaceutical companies with the highest revenue in 2020 (Drug Discovery and Development 2022). However, after a detailed data availability assessment (some pharmaceutical companies do not have data on the amount of R&D costs or data is not available for the selected time period of impact monitoring), companies that do not meet research requirements are eliminated, so the final sample includes 30 pharmaceutical companies. Secondary data collected from publicly disclosed financial statements of companies published on companies' official websites are used to test the hypothesis. As the sample consists of 30 companies whose data is observed in the period from 2010 to 2020, the use of panel regression analysis is justified, within which appropriate economic models and tests are selected.

Depending on the constraints of the model parameters, the following types of panel analysis models can be distinguished:

- **Pooled Regression Model** – In this model, all data can be combined and the least-squares model can be applied. The individual characteristics of companies are neglected, i.e., there is no single intersection and no universal effect over time, so it cannot explain the differences between observation units.

$$Y_{it} = \alpha + \beta X_{it} + e_{it} \quad (1)$$

where  $Y$  is a dependent variable,  $\alpha$  is a regression constant,  $\beta$  is a regression coefficient,  $X$  is a dependent variable,  $\varepsilon$  is the error value, and  $i$  is the number of observation units (1, ... N),  $t$  is the number of time periods.

- *Fixed Effect Model* – FEM – There are unique characteristics of the observation units that do not change over time. Differences between observation units are covered by the regression constant.

$$Y_{it} = \alpha + \beta X_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

where  $\mu_i$  is the individual effect.

- *Random Effect Model* – REM – There are unique, time-constant characteristics of the observation unit that do not correlate with individual independent variables.

$$Y_{it} = \beta X_{it} + \mu_i + \varepsilon_{it} \quad (3)$$

The analysis of the panel regression model is done using the STATA software package and includes dependent and independent variables. The indicators proposed by the International Accounting Standards Board based on the Balance Sheet, Income Statement and Cash Flow Statement are used as dependent variables, namely: Net Income, Earnings Before Interest and Taxes (EBIT), and Earnings Per Share (EPS). Investment in R&D is an independent variable in the model. The variables used and the method of their measurement are given in Table 1.

**Table 1. Selected variables for panel data analysis**

Variable	Measurement	Acronym
Investment in R&D	Highlighted in the income statement	R&D
Net income	Highlighted in the income statement	NI
Earnings before interest and taxes	Highlighted in the income statement	EBIT
Earnings per share	Highlighted in the income statement	EPS

Source: Authors based on the proposal of the International Accounting Standards Board

Model adequacy testing is done using the F-test, the Breusch-Pagan LM test, and the Hausman test. Two hypotheses are set for each test. First, an F test is performed where the null hypothesis indicates that if the probability is greater than

0.05 and if the variance of the standard error is zero, the Pooled OLS model should be accepted (the null hypothesis cannot be rejected), otherwise the fixed effect model is chosen. The model is then tested using the Breusch-Pagan LM test, where the null hypothesis refers to the Pooled model and the other hypothesis to the random effect model. The LM test checks whether variability applies only to a free member or to an independent variable. If the previous two tests (F-test and LM) point to different models for a final decision on the panel model, a Hausman test assesses the significance of the difference between the fixed and random effect estimates. The results of the models and tests as well as their discussion are presented in the third part of the paper.

### Results and discussion

Before presenting the results of the model and tests, Table 2 provides a tabular presentation of the descriptive values of the selected variables and points to their characteristics. Data in Table 2 shows that investment in R&D has a minimum value of 1.7 million euros and a maximum value of 29 billion euros. The standard deviation in R&D is greater than the arithmetic mean, so there is a high asymmetry when it comes to deviations from the amount of R&D. The minimum value of net income is -15.6 billion euros, and the maximum value is 8.2 billion euros. EBIT has a minimum value of -16.2 billion euros, while the maximum value is 137 billion euros. The minimum value of earnings per share is -15.85 euros, and the maximum value is 37.08792 euros. As with the net income, the standard deviation of other observed variables is larger in relation to the arithmetic mean, so there is a high asymmetry.

**Table 2. Descriptive statistics of selected variables**

- In 000 euros

Variables	N	Mean	Standard deviation	Minimum	Maximum
R&D	317	3.212.356	3.983.965	1.720,4	29.039.296
NI	325	2.721.092	3.758.889	-15.561.000	18.150.050
EBIT	325	4.111.637	8.613.617	-16.169.000	136.781.510
EPS	325	3,575774	5,23147	-15,85	37,08792

Source: Authors' calculation using Stata

Correlation analysis is used to test the strength of the correlation between the variables. Correlation analysis relies on Spearman's nonparametric correlation coefficient. There is a strong positive statistically significant correlation between

R&D investment and net income, as Spearman’s coefficient is 0.7727 at a significance level of 1%. A strong positive statistically significant correlation is recorded with earnings before interest and taxes (0.8075). Spearman’s earnings per share ratio is 0.4263, indicating a positive medium-strength correlation between R&D investment and earnings per share. The results of the Spearman coefficient are shown in Table 3.

**Table 3. Spearman coefficient results**

	<b>NI</b>	<b>EBIT</b>	<b>EPS</b>
<b>R&amp;D</b>	0.7727 (0.0000)	0.8075 (0.0000)	0.4263 (0.0000)
Correlation is significant at the 0.01 level Note: <i>p</i> values in ( )			

Source: Authors’ calculation using Stata

As the correlation analysis points to a correlation between the observed variables, the selection of an adequate regression model using the selected tests follows. The results of tests for the selection of an adequate regression model are shown in Table 4.

**Table 4. Results of model adequacy tests**

<b>Dependent variable</b>	<b><i>F</i>-test <math>H_0</math>: Pooled, <math>H_1</math>: FEM</b>	<b><i>Breusch-Pagan LM</i> <math>H_0</math>: Pooled, <math>H_1</math>: REM</b>	<b><i>Hausman</i> <math>H_0</math>: REM, <math>H_1</math>: FEM</b>
NI	7.656 (0.0000)	230.75 (0.0000)	0.38 (0.5364)
EBIT	3.48 (0.0000)	55.92 (0.0000)	0.01 (0.9318)
EPS	11.97 (0.000)	275.90 (0.0000)	25.52 (0.0000)
Note: <i>p</i> values in ( )			

Source: Authors’ calculation using Stata

The random effect model (REM) is adequate with two regression models – in models where net income and EBIT are dependent variables. The fixed effect model (FEM) is adequate to assess the impact of R&D investment on earnings per share, while the Pooled OLS model is not adequate to assess the impact of any model.

The first model to be tested for adequacy is the one in which net income is the dependent variable. The results of the F-test show that it is more adequate to apply the fixed effect model (FEM) compared to the Pooled model. Using the Breusch-Pagan LM test, a random effect model (REM) should be selected, which the Hausman test and the acceptance of the  $H_0$  hypothesis about the adequacy of the model confirm. As the probability is less than 0.01 (0.0000), this means that R&D has a statistically significant impact on net income. A 1% increase in R&D will increase net income by € 9.77 million. In the evaluated model,  $\theta$  is 0.6438, which confirms the adequacy of the selected model. This model explains 64.38% of the changes in net income. The values of the parameter  $\rho$  explain a significant part of the variance of the total random error, on the basis of which model adequacy can be determined (Park, 2011, p. 37). In the selected model, specific individual errors explain 38.49% ( $\rho = 0.38489871$ ) of the variance of the total random error.

The second model analyzes the impact of R&D on earnings before interest and taxes. The application of the F-test for model evaluation shows that the fixed effect model (FEM) should be selected, while the application of the Breusch-Pagan LM test shows that the random effect model is more adequate. Therefore, the Hausman test is applied in order to make a decision on the choice of the model. The results of the Hausman test show that a random effect model (REM) should be selected. An increase in R&D by 1% will increase earnings before interest and taxes by 16.37 million euros. The model is statistically significant ( $p < 0.01$ ) and the model explains up to 46.93% of changes in EBIT. Specific values of individual error explain 18.82% of the variance of total error ( $\rho = 0.18823633$ ).

The last model examines the impact of R&D investment on earnings per share. The results of the model evaluated using the F-test show that the fixed effect model should be applied; however, using the Breusch-Pagan LM test, the random effect model (REM) proves more adequate so the Hausman test is performed, to conclude that  $H_1$  hypothesis should be accepted, i.e., the fixed-effect model. The results of the tests point to a difference between the companies observed in the sample in terms of the impact of investment in R&D on EPS, i.e., the regression parameters are unique and do not change over the years. Investment in R&D has a statistically significant impact on EPS ( $p < 0.01$ ) with a coefficient of 2.447189 (Table 5), i.e., an increase in R&D by 1% will lead to an increase in EPS by 0.024 euros. The model is statistically significant ( $p < 0.01$ ), while the coefficient of determination (R-squared) indicates that changes in R&D explain up to 55.47% of changes in EPS.

**Table 5. Results of regression analysis**

Independent variable	Dependent variable		
	NI	EBIT	EPS
Constant	-10975788 (0.000)	-18866143 (0.000)	-30.90713 (0.000)
ln R&D	977040.1 (0.000)	1636798 (0.000)	2.447189 (0.000)
R-squared			0.5547
Adj R- squared			0.5080
$\theta$	0.6438	0.4693	
$\rho$	0.38489871	0.18823633	
F (FEM)			60.98 (0.000)
Wald (REM)	34.57 (0.000)	18.46 (0.000)	
Note: <i>p</i> values in ( )			

Source: Authors' calculation using Stata

The analysis of the impact of investment in R&D activities on the profitability of pharmaceutical companies has shown that there is a positive relationship, i.e., that it affects the profitability of companies, and thus improves their competitiveness.

The results obtained from the analysis of 30 companies in the pharmaceutical industry confirm the results of previous studies (Hanel 2002; Schumacher et al. 2016; Wang 2011; Natasha and Hutagaol 2009; Barna et al. 2010; Rahman and Howlader 2022; Tung and Binh 2022). Specifically, the results show that investment in R&D affects the profitability of companies in the pharmaceutical industry. *Changing R&D models in research-based pharmaceutical companies* by Schumacher et al. (2016) emphasizes that research-based pharmaceutical companies need to be aware of the factors that influence the rate of innovation, R&D costs, and probability of success. Accordingly, they should define their strategies and carefully determine the amount of investment in R&D activities. Also, the results of Hanel's study entitled *Effects of R&D Spillovers on the Profitability of Firms* on a sample of 278 companies show that R&D has a direct, positive effect on profitability, especially in industries with effective patent protection. Wang (2011) and Natasha and Hutagaol (2009) reach similar results on the positive relationship between R&D and market performance. In his paper *Clarifying the effects of R&D on performance: evidence from the high technology*

*industries* Wang (2011) finds not only the optimal effect that a certain level of R&D corresponds to maximum performance but also indicates the minimum required level of R&D needed for company development and its performance to be effective. In their study, The analysis of R&D impact on the publicly listed companies' performance in Indonesia Natasha and Hutagaol (2009) conclude that there is a link between R&D and company business development and market performance. The study by Barna et al. (2010) confirmed the positive impact of R&D expenditures on performance of Romanian enterprises for the period 2003-2008. Rahman and Howlader (2022) investigated the impact of R&D expenditure on firm performance and firm value considering 22 pharmaceutical companies in Bangladesh from 2015 to 2019. Their results determined a significant and positive impact of R&D expenditure on firm market performance and firm value. The research by Tung and Binh (2022) confirmed the positive impacts of R&D investments on revenues, profits, ROA, and ROE, as well as that firms with high R&D, outperform those with low R&D in terms of profit, revenue and ROA.

Analyzing pharmaceutical companies and their specifics and their investments in R&D activities, it can be noticed that it is very important for pharmaceutical companies to focus on R&D activities and continuously harmonize their business strategy. It is so because unforeseen circumstances can occur that can endanger human health, and in such a situation, the development of new drugs is necessary. An example is the current pandemic caused by the COVID-19 virus, where it was necessary to develop vaccines and drugs in a very short time in order to help people. If pharmaceutical companies did not have an adequate amount of R&D at that time, and a well-established business strategy, they would not be able to react in a timely manner and provide medicines and vaccines. The study by Biswas (2022) pointed to the fact that R&D investments can lower value erosion for stakeholders during a severe crisis period. The favorable accounting performance indicates that engaging in R&D activities and the intensity of R&D activities can improve firms' resilience during a crisis period.

### **Conclusion**

Investment in R&D activities allows companies to generate future growth and should, therefore, be treated as capital expenditure. This means that companies must remain consistent and treat cumulative R&D costs as assets. R&D costs accumulate after tax and over time create depreciable research assets. Companies that set aside a certain amount for R&D activities can ensure product diversification and refine different R&D concepts. Therefore, companies need to



set an adequate investment strategy for R&D activities that will allow them to achieve productivity and sustainability.

The research objective was to test the impact of investment in R&D activities on the profitability of pharmaceutical companies through net income, earnings before interest and tax, and earnings per share. The panel regression analysis of 30 pharmaceutical companies in the period from 2010 to 2020 was conducted, and there is a strong positive correlation between investment in R&D activities and net income and earnings before interest and tax (R&D investment has the greatest impact on net income and earnings before interest and tax, i.e., the increase in the amount of investment in R&D activities increases net income). There is a positive strong correlation with EPS. The obtained results suggest that investing in R&D, i.e., in the creation of knowledge and innovation, makes a strong contribution to company performance.

Investment in R&D activities allows companies to achieve the desired performance growth (Chung et al. 2019). Based on the conducted analysis, it is evident that pharmaceutical companies need to pay attention to the strategy of investing in R&D activities. Besides, companies should choose an R&D strategy which differs from the industry's dominant R&D strategy to enhance performance (Mavroudi et al. 2023). In this way, companies will be able to rationally use funds for this purpose while properly recording and disclosing the amount of expenditure on R&D. Also, the research can be extended to other sectors to determine the R&D sector with the greatest influence or the sector that is most dependent on continuous allocations for R&D (Boiko 2022).

The practice has shown that R&D costs are best treated as period costs at the expense of performance, because they are not included in performance costs, but are considered period costs. In this way, accurate information on the company's costs and performance can be obtained. The study limitations are primarily reflected in a limited sample of only 30 companies, so future research could cover a larger sample.

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## EVALUATING TURNAROUND STRATEGIES AND ORGANIZATIONAL PERFORMANCE IN A SMALL BUSINESS—A STUDY OF EKO SUPPORT SERVICE LIMITED

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### **Abstract**

Numerous associations today experience authoritative decay sooner or later in their life cycles as a result of both outside and inside factors. Much of the time, associations face decline when they neglect to perceive and adjust to outer and interior tensions that compromise the association's presence. The reaction to such circumstances is quite often a significant amount of work to "turn the organization around". This study seeks to examine the effects of turnaround strategies on organizational performance of Eko Support Service Limited. The researcher used a structured questionnaire to collect data. The population of the study was 400 and a sample of 200 respondents was obtained via the Taro Yamane formula. The data collected were analyzed using descriptive statistics such as simple percentages and the relationship between the variables of the model was tested using linear regression analysis. The study found that there is a positive and significant effect of diversification strategy on market share ( $R^2 = 0.127$ , at  $p < 0.05$ ) and the F-Value yielded 9.335. The result of hypothesis 2 also indicates a positive significant effect of retrenchment strategy on profitability ( $R^2 = 0.388$ , at  $p < 0.05$ ) and F-Value yielded 60.793 and lastly, top management re-organization strategy has a significant effect on organizational efficiency ( $R^2 = 0.116$ , at  $p < 0.05$ ) and F-Value yielded 13.034. The study, therefore, concludes top-level management

*have significant roles to play indecision-making and conceptual skill regarding turnaround strategies and their applicability. The study recommends that top management re-organization in terms of structure, people, leadership, and organizational culture should be given priority in times of distress as this has proven to be a measure to improve organization efficiency.*

**Keywords:** *Turnaround strategies, diversification, retrenchment, re-organization*

**JEL Classification:** M10, M16

## Introduction

The ongoing business climate is progressively eccentric and unsteady and can lead a business into fast decay on the off chance that the administration neglects to comprehend the signs of business decline (Mirchandani, 2012; Khandswalla, 2013; Fubara, 2011). Organizations that were innovation-driven wound up in a declining market where capital is scant and financial speculators are saving (Jamal & Salisi, 2021). A huge number of vital collusions and organizations, even among contenders, have been framed as of late. Cutting back, rightsizing, reengineering, and incalculable divestitures procurement and liquidations forever changed the collaborative scene (Nduta&Deya, 2020). This battle for endurance has prompted a restoration of interest in a business circle back and recuperation techniques as firms try to work on their presentation in the slump and spot themselves in the best position to profit from the monetary upswing (Schoenberg, Collie, and Bowman, 2013). There are various reasons that make a firm encounter declining benefit. Among these reasons are financial downturns, creative failures, and imaginative leaps forward by contenders. According to Lussier (2012), numerous associations today experience authoritative downfalls eventually in their life cycles in light of both outer and interior variables. By and large, associations face decline when they neglect to expect, perceive, and adjust to the outside and inward tensions that undermine the association's presence (Sekhar, 2011). To make due and thrive in the cutthroat business climate, associations need to construct and support serviceable methodologies. Generally speaking, key directors accept that such a firm can make due and in the long run recuperate in the event that a deliberate exertion is made over a time of a couple of years to strengthen its unmistakable capabilities; a fabulous system alluded to as circle back (Pearce & Robinson, 2005 as referred to



in Okwisa, Manana & Giheru, 2016). As an elective reaction to seasons of emergency, working circle back techniques are designated to improve a company's possibilities of finishing the danger and accomplishing economical execution recovery.

Turnaround is a course of changing a misfortune making organization into a benefit making organization (Jamal & Salisi, 2021); set of imperative command, long stretch decisions and exercises assigned at the reversal of an evident crisis that compromises the perseverance of a firm (Mintzberg, 2010); thousand procedure of strengthening particular skills (Manana & Giheru, 2016); corporate restoration (Wandera, 2012); set of important, mandate choices and activities expecting to switch a declining business as fast as conceivable through resource decrease, cost reductions and income producing (Carter & Schwab, 2013); a training where associations seek after to speak the endeavors degeneration and raise corporate execution (Brandes, Brege & Brehmer, 2015); techniques pointed towards working on the functional effectiveness of an association that was debilitated or performing ineffectively, assuming that it is in alluring industry (Nnabuiife & Onwuzuligbo, 2015); exercises embraced to stop decline of an association and invigorate up swing of execution markers. A circle back situation is one where an association goes through weakening business working for an exhaustive term so the working focuses are little to the point that the presence of the undertaking is imperiled yet harsh efforts are ready to propel its tasks (Lussier, 2015). To oversee such a circumstance, a "circle back" methodology can be utilized. The circle back procedure falls under the more extensive umbrella of excellent systems. These systems give the key course to exercises and construction a justification for worked with tries composed toward achieving long stretch business objectives (Jamal & Salisi, 2021). Some of the spectacular recoveries have all had one or more of the following strategies to call upon restoring lender confidence, removing failure team, identifying and motivating performers, downsizing redundant assets and non-performing personnel, creating sustainable business strategy, increasing sales through direct customer contact and improved service and value pricing, maintaining creditor confidence with full timely disclosure of operational and financial results and rapid debt pay down, rebuilding the core business and identifying opportunities for sustained growth, focusing the management on key performance issues and creating a successful management team (Ukey & Krishnarao, 2015).



### Statement of Problem

Most associations face a significant decrease in execution sooner or later in their reality. The reaction to such circumstances is quite often a significant amount of work to "turn the organization around" (Nduta&Deya, 2020). It is the assessment of what is required most in a circle-back circumstance that some obvious system for directing all hierarchical activities with the goal that scant assets are not utilized in useless ways. A firm might be supposed to be in decline when it encounters an asset misfortune adequate to think twice about practicality. Business organizations at certain points of their existence experience dwindling profits, change in customer loyalty, high operating and overhead costs, high employee turnover and other challenges perhaps from intense and fierce competition faced in the market that threatens its existence and as such are on the verge of extinction. At this point, organizations become confused, disturbed, and frustrated as they do not know what to do or which best strategy will take them out of this dilemma and help them recover from the verge of extinction. A turnaround strategy is a consolidation or compendium of various strategies or contingent strategies that business organizations can apply when facing challenges or its going concern is being threatened to help rejuvenate and resuscitate it back to life. Top administration should protect a declining firm by quickly responding through techniques and strategies to external and internal factors causing decline to a point of significant recuperation.

The hole in circle back procedures research prompting the scientist's concern is that issues in circle back viewpoints are not similarly explored. Past exploration feature the examination of circle back in worldwide nations (Diana, Robert & Gieheru, 2016; Schoenberg, Collier & Bowman, 2013; Nduta & Deya, 2020; Wandera, 2018; Muzny& Simba, 2019; Sije, Omwenga & Iravo, 2016; Ghazzawi, 2018; Jamal & Salisu, 2021; Okello, 2017) and to the best of the researcher's knowledge, just a few have been carried out locally (Ugoani & Ugoani, 2020; Ukaidi, 2018; Durosaro, Sofoluwe, Oduwaiye, Kayode & Ogundele, 2015; Nnabuife, 2015) with the majority focused on the manufacturing industry. However, this study is focused on the service sector. Also, of the above studies that related turnaround strategy to performance, none was specific as to what aspect of performance they are studying as clearly stated by this study.

### Research Objectives

The principal objective of conducting this study is to examine the effects of turnover strategy on organization performance.

The secondary objectives are:

- i. To identify the effect of diversification strategy on market share.
- ii. To identify the effect of retrenchment strategy on profitability.
- iii. To identify the effect of top management re-organization strategy on cost efficiency.

### Research Hypotheses

Ho1: The diversification strategy does not lead to an increase in the market share.

Ho2: Retrenchment strategy does not have a significant effect on profitability

Ho3: Top management re-organization strategy on organization efficiency

### Literature Review

#### Turnaround Strategy

A circle-back method is a lot of critical commands, long stretch decisions, and exercises zeroed in on the reversal of an obvious crisis that compromises the perseverance of a firm (Mintzberg, 2010). A firm is supposed to be in decline when it encounters an asset misfortune adequate to make it think twice about suitability. The turnaround technique falls under the more extensive umbrella of fantastic procedures. These methods give the fundamental bearing to exercises and construction a justification for creating tries facilitated toward achieving long stretch business targets. turnaround administration is important when a business worth saving is fizzling. An association merits saving in the event that it will decidedly answer extra assets put into it and show supportable vertical swing in execution pointers and stays an enduring going concern. Nonetheless, if, in spite of the extra assets, it proceeds to disintegrate and staying a going concern is dubious, then it does not merit saving (Okafor, 2016). turnaround techniques are exercises that attempt to stop the decay of an association and invigorate the vertical swing of execution pointers. A reasonable level of investment overview or investigation of any association would show the present status of well-being, monetary or otherwise. It shows the issues of the association and the causes and suggests likely arrangements. It shows assuming the organization will be productive over the long haul when the reason for the decay would have been disposed of. The turnaround system is, for the most part, characterized as the method involved with changing a misfortune-making organization into a benefit-making organization (Jamal & Salisi, 2021). Anastasia (2015) states that partnerships might play out this procedure in certain cases, for example, when the business is encountering slump occasions.

This procedure is a strategy for corporate restoration. A turnaround situation is one where an association goes through a decaying business working for an extensive span so the working focuses are little to the point that the presence of the endeavor is jeopardized yet harsh efforts are ready to propel its tasks (Lussier, 2015). To oversee such a circumstance, a circle-back technique can be utilized. Brandes, Brege, and Brehmer (2015) depict a circle-back plot as a training where associations seek to chat about the undertaking's degeneration and ascend in corporate execution.

### **Diversification Strategy**

Affiliations could choose to extend to persevere through the components of the business environment (Nyangiri & Ogollah, 2015); for improvement (Su& Tsang, 2015); to increase benefit (Karimi, 2013; Yigit and Tur, 2012); to develop capability in the use of resources and set out hypothesis open entryways (Emel & Yildirim, 2016; Hasby, Buyung & Hasbudin, 2017); to achieve economies of scale to explore market decisions and possibly open entryways (Sindhu, Haz, Ali, & Ali, 2014); and as a circle back technique (Harrigan, 2012). Krivikapic et al. (2017) assume that affiliations widen to have what is going on keep watch, while, Akewushola (2015) believes that an extension method engages a relationship to consume its excess resources for monetary use. This is one more structure that can be utilized as an improvement tool as well as a way of thinking in a circle. It applies when declining affiliations decide to take another path to better themselves by presenting new and irrelevant enhancements, expanding into new business areas, particularly overall business areas, focusing on and developing creative work, consolidating and acquiring, and creating new things to serve their own necessities through switch/forward blend, same thing more clients, and some more (Sirmon et al., 2007 as suggested in Muzny and Simba, 2019). This will eventually spur execution improvement due to capacity, especially in the utilisation of available assets, some of which may be dormant, but when used will provide good, and prudent, results. It is acknowledged that affiliations might make combined efforts via their turn of events. Supportive energy is formed by sharing assets, resources, cutoff points, and capabilities, which can either drive down operating expenses or allow the business to charge a premium since it may detach its duties by leveraging its assets (Slatter& Lovett, 2009). Furthermore, Wernerfelt (2014) argued that the various asset restrictions guaranteed by a corporation determine the kind of business areas to join.

### **Retrenchment Strategy**

As indicated by Jamal and Salisi (2021), insurance is the reduction of resources and expenses. It unites the decrease of completed things and stock, the decrease of the number of specialists, the decrease of selling, selling, general, and authoritative costs, the downfall of plant, property, and hardware costs, and the reduction of creative work costs (inventive work) (Schmitt & Raisch, 2013). As indicated by David (2013), firms use safeguarding when an alliance is arranged through cost and resource reductions to help with declining execution. Protection incorporates unloading areas and designs, cutting the number of laborers, knocking off item contributions, stopping unimportant associations, and closing down obsolete assembling plants. The previous thesis has exhibited the way that safeguarding reasoning could incite firm execution in two ways: (I) resource security and (ii) cost conservation (Lim et al., 2013). Resource conservation infers the net decrease of resources, like shutting plants, stripping regard, and diminishing supplies of property, hardware, and stock (Lim et al., 2013). In the interim, cost conservation suggests the net reduction of through and through costs like selling, general, and administrative (SGA) costs interest costs, and various expenses (Lim et al., 2013). A preservation framework is a common system required by relationships to stand up to horrendous financial execution (Ung et al., 2018). It is operationalized to diminish the impact of adversity by selling assets and taking out tasteless fixed costs. Although usually constrained by associations, protection is rarely inspected as a trial investigation (Lik-Jing, 2018). Gibson and Billings (2010 as alluded to in Nduta and Deya (2020) conceptualized revolutionary cost diminishes joined with asset diminishes were proposed for firms in more outrageous circle-back conditions. Divestiture is where the affiliation disposes of a whole item offering or a couple of things, especially on the affirmation that they gobble up the affiliation resources as opposed to building. Divestiture has similarly been a convincing circle-back technique as it discards the cost of natural surroundings, allowing the relationship to zero in on the advantage of making experiences and item contributions. Cost-cutting decisions are most certainly problematic (Wernefelt, 2014).

### **Top Management Re-organization**

Great biological factors could impact definitive recovery insistently. Changes in coordinating systems, decentralizing, human resource organizing, and various leveled culture is a piece of the sub-strategies of patching up. Besides, a couple of macroeconomic biological changes in like manner add to a circle back (Muzny and

Simba, 2019). Jamal and Salisi (2021) We suggest that frameworks be picked with due thought to the particular emergency circumstance, small assets, time pressure, and other applicable factors like explanations behind impact, the strategies for routine exercises, and the expense of the change. Recreating frameworks is depicted by Gatekeeper (2010) as a corporate methodology by which firms secure affiliations having issues, turn that relationship around, and therefore sell them at a benefit. Improvement, obviously, manages every individual's issue in the business. It includes modifying, re-staffing, re-skilling, and coming back power revitalisation to yield additionally created drive, the board, various leveled development, legitimate course of action, and culture (Muzny & Simba, 2019). Pretorius (2009, as referred to in Okwisa et al., 2016), made a case for including different levels of character thoughts in comeback research and identified seven circle-back subjects, which included: top organisational change-this suggests breaking away from the past and suggests that managerial exercises are not limited by history. There is the possibility of creating another person; asset reconfiguration, which could consolidate acquiring and combining. It implies a choice in progressive character; legal remaking might incorporate progressive overhaul, business process reengineering, group-based structure, and financial remaking, such as a change in the organization's capital development to alleviate pressure from commitment repayments. The most well-known strategy for rebuilding anticipates a critical role in attaining the goals of holding or growing a person. The most significant modifications in serious and improvement techniques, attention capacities, area changes, object or market alterations, and strategy changes have the capacity to grow a person. As a result, it should be a choice; important changes in enlisting include worker and boss protection, predetermined retirement plans, and a move from extremely tough specialists to legally restricted workers. To control them, chiefs must be aware of the impact of large changes in assistance on survivors and saved laborers, and judgments must be made in contexts where government-supervised retirement is not available. Accepting essential preservation cycles should safely guard the individual's balance in a good way and earth-shattering change, which includes participative change, reinforcing, change expert projects, mindset change, and culture change, significant changes can rethink or change the ebb and flow character or make another person. For affiliation-wide changes that are likely to be considerable and last a long period in the organisation, the cost of significant modifications should be assessed against the typical results (Wandera, 2018).

## Theoretical Framework

### Resource Based View Theory

Penrose (1959) was quick to direct attention to the asset-based view hypothesis. The hypothesis centers around a company's assets: the board, firm creation, open doors, and techniques for circle back. This hypothesis surveys the legitimate connection between a company's assets and capacities and the upper hand. The theory shows a comprehension of a firm's resources and how they can be productively utilized to lead to an increase in profitability and organizational growth. Wernerfelt (1984) proposed the argument of resources as the determinants of a firm's competitive edge over other firms. Presenting valuable and rare resources as important, a theory also argues that improving these resources and re-aligning them is the most important determinant of how the firm would compete in the market with other firms. This theory mostly focuses on the Divestment of corporates as an expansion strategy since it is assumed that many organizations hold pools of resources that are not fully utilized and can be utilized for diversification (Mahoney & Pandian, 1992). Organizations with extra resources can divest into other markets through mergers and acquisitions entering the new market and providing unique products. The theory is therefore relevant to this study as it supports the second objective of this research which is divestment strategies by explaining how an organization can use its extra resources which are not fully utilized to diversify to new markets by buying out existing businesses forming mergers or entering new markets and ensuring successful turnaround and good performance. The resource-based view (RBV) of the company as front line proposed by Barney in 1991 is a high-level conjecture that emphasises the relationship between an organization's internal resources, method, direction, and execution. According to the resource-based perspective, the primary origins and drivers of enterprises' widespread displays are essentially related to the features of their resources and restrictions, which are crucial and costly to replicate (Casson, 2012). There are growing concerns that fundamental resources are distributed differently among organisations and that these inequalities remain over time. According to the resource-based view (RBV), any firm is fundamentally a pool of resources and constraints that determine the firm's methodology and execution; and if all organisations in the market have a comparable pool of resources and capacities, all organisations will make a comparable value, and thus no high ground is open in the business. The justification for the resource-based perspective is that successful firms will find their future value in the expansion of clear and distinct



constraints, which may sometimes be plain or slippery in nature. As a consequence, the organization's exceptional resources and talents are or should be depicted as the core of philosophy (Serra et al., 2013).

### **Contingency Theory of Structural Adaptation to Regain Fit Theory**

This theory contends that functionalist speculation and quantitative techniques can make sense of the primary change. The primary transformation to recapture fit theory subsumes a few original works in the underlying possibility hypothesis, for example, on divisionalization changes because of changing techniques and on changes from unthinking to natural designs in light of mechanical and market changes in the climate. In this manner, the primary possibility hypothesis has consistently contained thoughts regarding elements (Collard, 2011). The speculation expresses that an affiliation simply remains part-fit momentarily until the abundance of resources from the fit-based better show produces improvement. These additional plausibility factors, similar to measures or development, drive the relationship to rebel with its ongoing development. The way that they substitute with each other makes them, in this view, fit and protester in each short articulation. A relationship in fit will overall endeavor into a radical, which impels essential change into the fit, which then prompts further endeavor into a dissident. This cycle repeats exactly the same thing over the long term. As the affiliation moves among fit and free thinkers, so it has come about in higher and lower execution, independently. Every time moving into protester produces progressive extensions in probability, and every time moving into wellness delivers consistent developments in structure. As a result, these increases compound over time, eventually transforming a local, neighborhood, and undiversified association into a bigger, geographically broad, and extended affiliation (Donaldson, 2008). Chen and Huang (2009) explain this link in terms of fit value, improved execution, and the creation of excess resources, which motivates augmentation. The use of the basic fit notion assists organisations in managing their resources more profitably in order to reduce practical expenses while also responding effectively to regular hazards and new entryways. The connection is better able to match its current position as long as the key fit is still firmly connected to the realigning and patching up structure, particularly after any little alterations to the smaller-than-expected and full-scale environments. Systems, processes, capacity, market structure, solicitation, technique, and a variety of other things may all be affected by environmental forces. Consequently, the connection has to be consistently realigned and updated to take into account its current position. Gakure et al. (2012)



understand how effective framework execution necessitates the creation of a fit taking into account the connection between external conditions and internal constraints. All affiliations going through the circle-back process need an alteration in order to realign themselves and fit into the supportive environment, hence this theory holds true for all affiliations going through the process. Leaders of organisations who are struggling with execution often have to go from a fit to a non-fit state due to difficulties and various hurdles (Uzel et al., 2015). The use of this theory will enable the circle of executives to not be content with their current state but instead to take advantage of what is happening to improve, modernise, reduce costs, and redo to cushion themselves for survivability and consistency in endeavors, giving them a high ground and sensible extraordinary execution for a long time.

### **Game Theory**

Game theory is the study of rational decision-making in situations where outcomes are important (Camerer, 2010). According to the game theory, strategy is the art of outflanking an opponent while assuming the opponent has a comparative advantage. This is performed by rules that determine which player should begin the game at each snapshot depending on the prior activities of various players. Firms that succeed have frameworks tailored to their industry's environmental conditions. Shaprio (2009) used game theory reasoning to comprehend explicit decisions made by productive companies in concentrated organisations. These include efforts for true money, interests in imaginary assets, vital information control, network conflict, and others. According to Shapiro (2009), these components constitute an important strategy to acting choose the improvement of state-subordinate elements or execution outcomes. Weidinger and Platts (2012) make sense of "game speculation," a collection of ideas focused on themes of difficulty and combat. A simple game attempts to show what occurs when two persons are given mobility choices in which they may gain or lose based on what others do or do not do. As such, the strategies used by all people usually determine the final outcome of a game. According to Huber (2010), such game guesses might supply useful counsel to chiefs in cultivating an extent of outcomes by contemplating options and presenting the benefits and drawbacks of each and every decision. Because of the reliance on outcomes, the speculation retains repositioning elements.

### **Empirical Review**

Wandera (2018) led a concentration on "Circle Back Techniques and Execution of State-Claimed Sugar Organizations in Kenya". The review embraced a clear exploration plan and delineated irregular testing among the 197 respondents who filled in as the example size. A closed-poll was utilized as the exploration instrument. The review inferred that conservation, expansion, and modernization methodologies introduced immaterial outcomes to hierarchical execution; however, the connection studies showed a moderate positive relationship to authoritative execution for every one of the free factors under study. Nyagiloh and Kilika (2020) led a concentrate on "Hypothetical Survey of Circle Back Methodology and its Hierarchical Results". The review recommends a coordinated hypothetical structure for use in connecting circle back procedure and corporate execution while perceiving the meaning of the job of association based on learned encounters and hierarchical qualities. Nduta and Deya (2020) analyzed the impact of circle-back methodologies on the exhibition of firms in the flight business in Kenya. The review embraced a clear exploration plan. All organizations in the flight business were contemplated, and 3 chiefs from each firm filled in as the designated populace. 105 was the example size determined through the Krejcie and Morgan recipe. The investigation discovered that the Conservation Methodology, Divestment Technique, and Business Cycle Re-designing impact the exhibition of firms in the Flight Business. Daina, Robert, and Gichera (2016) conducted an investigation of circle-back procedures on association execution. The scientists looked to survey the circle-back methodologies for financial development at Uchumi Grocery Store. The review embraced a case approach to get an inside and out look at the result of the execution of turnaround techniques. The population for the review was 311, and the review took on a basic irregular examination. The review reasoned those procedures made by top supervisors impacted the strength of the organization's market position generally. Muzny and Simba (2019) inspected the impact of circle-back procedures on hierarchical execution. The objective populace consisted of 35 ranking staff engaged in the essential decision-production of the Coast Improvement Authority. They utilized a poll as the exploration instrument, and unmistakable measurements were utilized to help the clarification. The review presumed that the conservation system empowered the foundation to move its hierarchical design from what it was presently to what it must be to support an upper hand and fulfill clients' necessities.

### Research Methodology

The review adopted a quantitative strategy and utilized an elucidating study research plan. Through quantitative information examination, the quantitative methodology will support the elicitation of reactions to the review questions. This technique examines the hypothetical or speculative structures that give answers to the exploration study's inquiries. The review's population is the staff of Eko Backing Administration Restricted, which has a population of 400 staff (Source: HR Division). Self-developed polls were utilized as the exploration instrument in this review. Extricating essential information from the review's population was utilized. It was done by the representatives of Eko Backing Administration Restricted to acquire the data expected to finish the examination. Master judgment was utilized to decide the legitimacy of this review's content. The scientist utilized content legitimacy to decide the appropriateness of the language utilized in the examination instrument and the review targets, while the specialist utilized face legitimacy to guarantee to gauge. The unwavering quality test embraced in this exploration is the Cronbach Alpha, utilized to test the dependability of the instrument with a coefficient alpha of 0.693, 0.823, and 0.735 for the three speculations. The trial of dependability estimates the inside consistency of the estimation sizes of the things for every one of the factors for essential information examination. A straightforward examination method was utilized to control the exploration instrument. Notwithstanding, in this examination, the example size was resolved by utilizing the Yamane (1967) example size assurance equation to show up at 200 staff.

$$N = \frac{N}{1+N(e^2)}$$

Where:

n- Sample size

N- Total population

e- Margin of error

### Data Analysis and Interpretation

#### Regression Summary for Hypothesis 1

Variable(s)	Coefficient	t-value	p-value
Constant	16.649	11.154	0.000
Diversification strategy	0.437	4.055	0.003
F-stat=9.335 P-value=(0.003)			R <sup>2</sup> =0.127

Source: SPSS (2022)

The outcomes in the table above reveal that broadening fundamentally affects a piece of the pie. This can be found in the relapse coefficient and the likelihood esteem ( $B = 0.437$ ,  $P 0.05$ ). This suggests that a unit change in broadening will prompt a 0.437 change in the piece of the pie. The coefficient of assurance ( $R^2$ ) of 0.127 demonstrates that the expansion technique represents a 12.7% variety in a piece of the pie. In this manner, the invalid speculation will be dismissed while the elective theory will be acknowledged.

**Regression Summary for Hypothesis 2**

Variable(s)	Coefficient	t-value	p-value
Constant	7.064	4.151	0.000
Retrenchment Strategy	0.664	7.797	0.000
F-stat= 60.793 P-value=(0.000)			$R^2 = 0.388$

Source: SPSS (2022)

The outcomes in the table above reveal that the conservation technique fundamentally affects benefit. This can be derived from the relapse coefficient and the likelihood coefficient ( $B = 0.664$ ,  $P 0.05$ ). This suggests that a unit change in conservation will prompt a 0.664 change in productivity. The coefficient of assurance ( $R^2$ ) of 0.388 shows that the conservation methodology represents a 38.8% variation in productivity. In this manner, the invalid speculation will be dismissed while the elective speculation will be acknowledged.

**Regression Summary for Hypothesis 3**

Variable(s)	Coefficient	t-value	p-value
Constant	9.800	6.988	0.000
Re-organization strategy	0.311	3.610	0.000
F-stat=13.034 P-value=(0.000)			$R^2=0.116$

Source: SPSS (2022)

The outcomes in the table above reveal that the re-association methodology essentially affects association effectiveness. This can be found from the relapse

coefficient and the likelihood esteem ( $B = 0.311$ ,  $P 0.05$ ). This suggests that a unit change in re-association will prompt a 0.311 change in hierarchical productivity. The coefficient of assurance ( $R^2$ ) of 0.116 shows that the re-association technique represents an 11.6% variety in association proficiency. Subsequently, the invalid speculation will be dismissed while the elective speculation will be acknowledged.

### Conclusion and Recommendation

Various strategies executed by top management that help rejuvenate a firm from point of loss to profitability are regarded as turnaround strategies. It switches reasons for trouble, settles the monetary emergency, and longs to accomplish a quick improvement in monetary execution, recapture partner support, and defeat inward requirements and horrible industry qualities. This study further concludes that top-level management have significant roles to play as the decision-making and conceptual skill regarding turnaround strategies and their applicability is in their hands.

Thus, the study recommends that;

- i. The firm should implement a diversification strategy by having a substantial change in its business definition either related or unrelated so as to expand its customer base and market share
- ii. Reduction in unnecessary costs especially fixed costs and assets should be emphasized in order to minimize the proportion of cost in relation to revenue in the firm. Thus, increasing the organization's profitability level
- iii. Top management re-organization in terms of structure, people, leadership, and organization culture should be given priority in times of distress as this has proven to be a measure to improve organizational efficiency

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# EXPLORING THE RELATIONSHIP BETWEEN ECONOMIC CONVERGENCE AND SALARY LEVELS IN DEVELOPING COUNTRIES: A CASE STUDY OF AZERBAIJAN

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## **Abstract**

*The purpose of this paper is to examine the relationship between wage levels and economic convergence in developing countries. Although the topic was approached from a broader perspective at the beginning of the article, more specific factors were mentioned in the continuation. Here, the economic growth in many countries of the world, the rate of salary level, changes in the level of welfare of the population, and the economic convergence trends of those countries are examined.*

*Although Azerbaijan was chosen as the main research object to analyze the issue more concretely, as mentioned above, the general aspects of the developing countries of the world are studied. This will lead to a comparison of the experience of Azerbaijan and the world in this field and, as a result, a more accurate analysis.*

*The article talks about the factors that have a greater influence on the salary levels and economic convergences of developing countries. Analyses are made, results are obtained and recommendations are made.*

*This article contains useful information about the economy of Azerbaijan and other countries of the world for those studying this topic.*

**Keywords:** *economic convergence, wage, Azerbaijan, salary level, economic growth, integration*

**JEL Classification:** *O11*

### **Introduction**

In general, economic growth, material well-being, economic approach and other factors form a closed circle in the interaction. This means that when one of them is affected, the entire circulation is affected. This article deals more with external factors affecting that cycle. For example, an increase in the country's GDP will lead to an increase in the wage level. This, in turn, will lead to the improvement of the material well-being of the population. As a result, this increase will show itself in all links of this chain. Thus, increased demand will also increase product prices. This will lead to the inflation of the economy.

Because the increase in the population's income will lead to an increase in demand. As we know, demand and price are directly proportional. Rising prices are one of the first signs and causes of direct inflation.

Thus, the increase in the salary level of the population has advantages as well as disadvantages. So, this will lead to a decrease in the purchasing power of the national currency and, ultimately, to inflation. All these are the main factors that should be taken into account to analyze the country's economic convergence.

Also, local and foreign direct investments, state support for entrepreneurship, applied concessions, subsidies and other measures indirectly affect the improvement of the population's standard of living. In general, these or other economic indicators can be divided into the following two groups according to the wage level and the impact on economic convergence:

1. Direct influencing factors
2. Indirect influencing factors

More detailed information about them is given in the later parts of the article. It is impossible to imagine the country's economic development without the integration process. This has proven itself throughout history in world experience. Even in the first ancient state institutions, foreign trade relations with other countries were established. However, history shows that countries that have better trade relations with other countries have become economically more powerful than others. Although in ancient times material resources had a greater influence on a country's share of trade, nowadays intellectual resources gain value almost faster.

## **A theoretical approach to the concept of economic convergence or integration**

As mentioned above, the establishment of economic relations between the countries dates back to before our era. Throughout history, the economy has been divided, and new areas have emerged. Newly emerging areas have been formed according to the demand of the day. Nevertheless, for emerging fields, the discovery of new markets or organization of new ones has been one of the most important issues facing the economy. Today, this process has found its solution through integration.

In the process of world economic integration, two tendencies are manifested:

1. International convergence;
2. Regional convergence.

There are many meanings of the word integration, which means that different systems or parts and elements of the system interact and adapt. This article will talk about economic integration, its history, causes, types, and economic importance.

Economic integration is the creation of new mutual economic relations between enterprises, countries, international and local organizations, as well as other economic participants, or the expansion and strengthening of existing relations.

There are two main reasons for the emergence of economic integration. These are the following [21.1]:

1. Political reasons
2. Economic reasons

This article analyzes more the economic aspects of integration, so a few brief examples of political reasons can be given. In practice, the main reason for using economic integration is more political. For example, in 1867, the main goal of creating an economic organization under the name "Zollverein" or "German Customs Union" was to unite all of Germany under Prussian leadership after only 4 years. In addition, it is possible to cite as an example the United Kingdom's offer of the "Imperial Free Trade" agreement in order to recreate or restore its broken relations with its colonies.

The economic reason is to increase production, material well-being, and productivity by increasing trade relations between the participants. The economic reason is to increase production, material well-being, and productivity by increasing trade relations between the participants. The most established example of economic integration in the 21st century is the European Union. [21.2]

The stages of economic integration vary depending on the level of depth as follows:

**Concession Trade Zone.** The first stage of integration, the Concession Trade Zone, involves the reduction or elimination of tariffs on certain types of products between the parties.

**Free Trade Zone.** At this stage, member states agree to eliminate tariffs, other duties on certain products, and import and export quotas. This economic union is more attractive for economically close countries. This stage of integration is not very efficient for states competing with each other.

**Customs Union.** This is the general tariff system applied by participants in the Free Trade Zone to others.

**Common Market.** The Common Market is the removal of barriers and tariffs to ensure the free movement of products, as well as capital and production services. This level of integration is the stage of transition to the "Single Market" and ensures the unhindered movement of all production resources between participants.

**Economic Union.** Economic Union is a type of economic integration in which common market and customs union are implemented together. Within the Union, member countries carry out general regulation of production, free movement of all resources is ensured. That is, the free movement of labor, capital, and other goods and services and other factors of production is ensured. In this union, the member countries have a single foreign trade policy.

**Economic and Monetary Union.** This is the 5th stage of integration. Along with the Single Economic Policy, the Single Currency Policy is implemented in the Economic and Monetary Union. This, in turn, leads to the formation of the Monetary Union for the transition to full economic integration.

**Full Economic Integration.** Full Economic Integration is the last stage of the integration process. Here, member states behave almost like participants of a single economy. Because here they sign an agreement to act equally in most areas of the economy. From the outside, Full Economic Integration also looks like a kind of federative organization. An example of this is the United States of America. Because all the states in the USA have autonomy, but they have uniform foreign economic policies. [21.3]

The best example of integration was the European Economic Cooperation (EEC), which was established in 1958 on the basis of the Treaty of Rome of 6 countries of Western Europe, later this union expanded, the composition of this union was 9 countries in 1973, 12 countries in 1980-82, in 1992 it consisted of 15 countries. According to the Maastricht Agreement of November 1, 1993, the EU became the European Union. [6.1]

**Advantages And Disadvantages Of The Integration Process.** In general, all these lead to the strengthening of the GDP, national income, economic power, welfare level of the population, and in general, the state's economy and general power of the member countries of the organization.

But despite all this, why are not all countries members of a single organization?

There are many reasons for this. But one of the main reasons is that in each of these stages of economic integration, member countries lose their economic independence more. Because in order to join any of these integration stages, countries adapt their foreign policies to the general policy of the organization. And while becoming a member of the organization, they agree that they will not conduct foreign policy alone in certain areas.

Therefore, some countries do not intend to participate in the deeper levels of the integration process.

### **A theoretical approach to the concept of wages**

Salary is the compensation amount agreed between the employee and the employer for the performance of certain work based on the established schedule. Salary can also be called a kind of labor compensation. [16.1]

In world experience, wages vary due to the influence of many indicators. Factors affecting the level of wages can be divided into the following three groups according to the degree of influence.

1. Micro factors
2. Macro factors
3. Global factors

**Micro factors** refer to factors within the workplace. This includes working hours, type and amount of work, type of workplace, duties and responsibilities within the enterprise, etc. For example, when analyzing the salary level at the micro level, it is necessary to take into account whether the salary is our work or our time.

**Macro factors.** At the macro level, the country's economic income, GDP, GNI, legislation, devaluation, inflation, the country's integration into the world, subsidies, state support for small and medium enterprises and large business stimulation programs and other factors can affect the wage level.

**Global factors** can have a wider range of influence. For example, the global economic crisis, pandemic, world wars, energy crisis, global warming, terrorism, polarization of the countries of the world and other factors are among the factors that have a global impact on the wage level. These factors are called Global Effects



because they can affect wage levels in two or more countries at the same time. Even global factors can be classified according to their regional and secular effects. While regional influence factors affect only regional countries, secular factors affect all countries of the world. For example, terrorism is a regional factor, and a pandemic like Covid-19 is a secular factor.

The wage payment system can be chosen independently by employers. These systems may vary by country and company. According to the legislation of the Republic of Azerbaijan, there are currently 3 systems of salary payment in the country. These are the following:

1. It's our job
2. It's our time
3. Other

In the “Our Job” wage system, the wages of employees depend on the volume and amount of work they do. Here, the salary is calculated based on the unit or fixed mass of the work done. The wage calculated per product is agreed upon in the contract between the employee and the employer. Those who work hard get paid more, those who work less get paid less. The advantage of this system is that it motivates employees to work harder. The disadvantage is that it leads to discrimination, inequality and, in some cases, exploitation of workers.

In “Our Time wage system” employees are paid according to their working hours, the total number of hours they work in a week. Here, the salary is calculated per hour and multiplied by the total number of hours worked during the month. The amount of hourly wages is agreed between the employee and the employer and is specified in the employment contract.

Although the “Our Time wage systems” seems more humane than the “Our Job” wage system, this system also sometimes leads to the exploitation of workers by the owners. [3.1]

Currently, there are many “Other wage systems” in the world. For example, the following can be shown:

1. Tariff-free payment system
2. Variable position salary system
3. Salary calculated on the basis of commission, etc.

For example, **the system of accord payment of wages**. Here, the salary is paid for the full execution of the relevant work within a predetermined time frame.

The salary includes the following:

1. Monthly position salary
2. Salary supplements



### 3. Awards

Position salary is the main part of salary. It is determined according to the qualification of the employee, the difficulty of the work, the importance of the work performed and the duties.

Salary supplements are incentive supplements paid for additional work or overtime hours as a supplement to the monthly position salary.

Rewards are material funds paid by the employer based on the salary system to increase the productivity and motivation of the employee, the quantity and quality of work. These include vouchers, gifts, prizes and so on. [3.2]

### **Analysis of the relationship between economic convergence and wage level in general and in the case of Azerbaijan**

Within the borders of Azerbaijan, wage relations are regulated by the legislation of the Republic of Azerbaijan. In 2001, in accordance with the new era of socio-economic relations, the Labor Law and the concept of demographic development in Azerbaijan, and in 2001, the Labor Law and "Concept. The new era of the population due to socio-economic relations of demographic development" etc. [2.1]

As mentioned above, like all other countries, Azerbaijan started to integrate with the world from the first years of its independence in order to maintain and strengthen its independence. He made an effort to establish new relations with foreign countries and to strengthen and expand existing relations. He used all his resources and opportunities to become a member of international organizations, which is the fastest way of integration. After regaining our independence (on October 18, 1991), the international economic organizations with which we obtained the first cooperation relations can be classified as follows:

- Organization of the Islamic Conference (OIC) - 1991
- International Monetary Fund and International Bank for Reconstruction and Development - 1992;
- Economic Cooperation Organization (ECO) - 1992;
- World Trade Organization (former WTO) observer status - 1993;
- Black Sea Economic Cooperation Organization (COEC) - 1993;
- Commonwealth of Independent States (CIS) - 1993;
- Council of Europe – 2001

In 2002, the average monthly income per person was 43.9 manats, which was 19.0 percent more than in the last year of the 20th century. In order to ensure financial stability in the economy, the minimum wage was increased twice in 1994 and once in 1995 based on the decrees of the country's president. [2.2]

The role of Heydar Aliyev, the national leader of the Azerbaijani people, in all this rise is an undeniable fact.

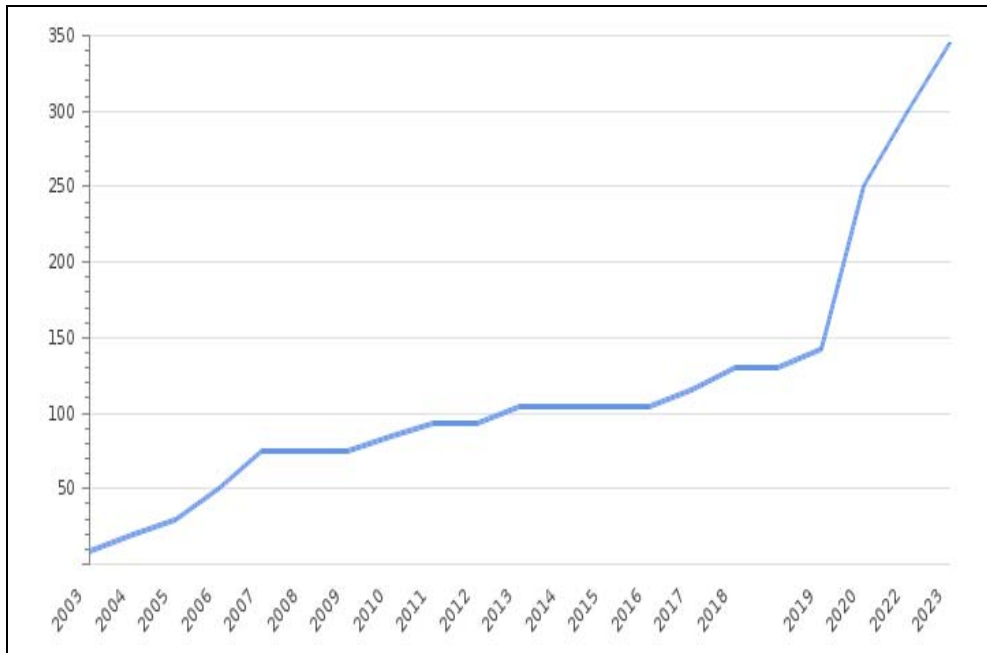
Academician Ramiz Mehdiyev writes: “Heydar Aliyev's tireless and consistent policy, which serves the interests of the country, is based on the strategic interests of the state, is comprehensively thought out, distinguished by its own duties and principles, is valid even today in all directions”. (R. Mehdiyev Azerbaijan: demands of globalization, Baku, 2005, p. 335).

Since 2003, the process of Azerbaijan's integration and development has begun to develop more rapidly. As an example, we can look at the changes in the economic indicators of Azerbaijan in the period of 2004-2009.

The growth dynamics of the minimum wage in Azerbaijan over the past 20 years is clearly shown in the table below:

N	Growth year	Growth rate	Amount after increment
1	2010	13.3%	85
2	2011	10%	93.5
3	2013	12.2%	105
4	2017	10.4%	116
5	2018	12%	130
6	2019	92.3%	250
7	2022	20%	300
8	2023	15%	345

To better visualize these changes and the magnitude of the growth rate over the years, its dynamics can be presented in another form:



In general, in 2004-2009, GDP in the Republic of Azerbaijan increased 2.8 times in real terms. In dollar terms, this means US\$43.0 billion. GDP per capita increased by 120% in 2009 compared to 2004 and reached 4874.1 US dollars. During these years, money income has increased by 100% in real terms, the average wage has increased by 3 times, the value of the minimum pension by 3.8 times, per capita income by 1.85 times, and the minimum wage by 6.3 times.

2004-2009 trade turnover increased by 2.8 times, exports by 3.9 times, non-oil exports by 140%. During these years, 32,886 new enterprise buildings and about 840,000 new jobs were opened. As a result of the targeted measures, the poverty level was reduced from 44.7% to 11% during the relevant period. [20.1]

This growth continues to date. So, despite all the global repercussions, even during the Covid-19 pandemic, economic development continues in Azerbaijan. This is the result of Azerbaijan's high-level strategic development plans. At a time when the pandemic has almost completely stopped economic development in some countries or caused an economic crisis, although it has reduced the speed of economic development in Azerbaijan, Azerbaijan is also on the list of countries least affected by the pandemic.

Despite the fact that the pandemic is still ongoing, as a result of the revival of the global economy, the economic indicators of Azerbaijan have started to rise faster. If we take into account the indicators of recent years, we can clearly see this.

As of April 1, 2022, the number of salaried workers in Azerbaijan increased by 65,300 people or 4.1 percent to 1,646,100 people compared to the same month of 2021. Of them, 911,700 people work in the state, and 734,400 people work in the non-state sector.

20% of wage earners are in education, 18% in commerce, 13% in industry, 8% in health and social services, 8% in construction, 7% in public administration and social protection and security, 5% in transport and warehousing, 3 percent were engaged in professional, scientific and technical activities, 3% in agriculture, forestry and fishing, 2% in financial and insurance activities, and 13% in other areas of the economy. [20.2]

In January-March of that year, the average monthly nominal salary of the country's population working for wages increased by 29 percent compared to the corresponding period of the previous year and was 744.5 manats. The average monthly nominal salary of employees working in the professional, mining industry, information and communication, financial and insurance activities, scientific and technical fields, as well as transport and warehousing sectors of the economy is expressed in higher numbers than in other sectors.

During the months of January-August last year, the average monthly nominal salary of the salaried population increased by 15% compared to the corresponding period of 2021 and reached 829 manats. During that period, the salary level of workers in the oil sector was 3,485.5 manats, while the allowance in the non-oil sector was 778.1 manats. At the same time, the wages of employees working in state enterprises were 780.1 manats, and the wages of workers in private enterprises were 884.5 manats. [20.3]

## Conclusion

Looking at all of the above, it is possible to clearly observe how economic convergence, in general, economic integration affects the income of the country's population and improves material well-being indirectly.

The modern theory of interregional mutual economic relations, or the mutual activity of regional economies, reflects the location of production and production factors, interregional economic relations, distribution relations, as well as integration relations. [15.1]

Today, the state of Azerbaijan considers integration into the world community one of the priority directions of national development. He is trying hard to define his place and role in the new world order. Azerbaijan consistently carries out intensive political training in the direction of determining its optimal economies in the world economy and politics in the 21st century. [7.1]

Studying Azerbaijan as a case study is also important. Because Azerbaijan is a young country. Considering that it is rich in natural resources and has wide potential, it is seen that there is a great need for its economic investigation.

Thus, the rapid development of a state with 30 years of independence draws the world's attention to this. As a result, foreign investments increase, investors participating in the local market increase their investment volumes, and new investors try to get a share of this market.

Thus, the number of participants in the economy increases, new jobs are opened, and within the framework of increased competition, an increase in wage levels is also felt. Because employers offer higher wages to attract more professionally qualified personnel. This leads to the improvement of the material well-being of the local population.

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## INCOME INEQUALITY, CLIENTELISM AND GOVERNANCE: IMPLICATIONS FOR SOCIOECONOMIC DEVELOPMENT IN WEST AFRICA

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### Abstract

*Genuine redistribution of income is usually not commonplace in underdeveloped democracies. Instead, politicians in these democracies often target private, excludable and reversible benefits at the poor in exchange for electoral support. This electoral strategy often results in a situation where maintenance of political power or re-election becomes the focus of public policies instead of public welfare. This study investigated the main and interaction effects of income inequality and clientelism on government effectiveness in West African Countries from 1996 to 2020. The study objectives were achieved using pooled mean group (PMG) approach of the panel autoregressive distributed lag (ARDL) estimation technique and the Dumitrescu Hurlin panel causality test. Findings from the study revealed that clientelism enhances government effectiveness at higher levels of income inequality but inhibits government effectiveness at lower levels income inequality. The study findings also revealed positive relationship and uni-directional causality between income inequality and clientelism. The study concluded that government effectiveness which thrives on lower levels of*



*income inequality and clientelism is beneficial to socioeconomic development; and that socioeconomic development and government effectiveness is interdependent and mutually reinforcing.*

**Keywords:** *Inequality, Clientelism, Development, Governance, West Africa, ARDL*

**JEL Classification:** H41, H42,I31, D31

## 1. Introduction

Despite possession of abundant human and non human resources, the developmental benefits of such natural endowment rarely reach the underprivileged majority in West African countries. Scholars and policy makers often attribute this undesirable outcome to governance, defined as the manner in which political power is exercised in the management of a country's socioeconomic resources for development (World Bank, 1992). Theoretically, political power is granted to democratic governments by the people through free and fair elections which are held periodically. This ideal of democracy ensures healthy electoral competition in which politicians or political parties strive to attract votes by delivering public services and implementing pro-masses policies more efficiently than their rivals. Thereby producing politicians and by extension governments with the intrinsic motivation to serve the public (Muli, 2020).

However, the aforementioned scenario is usually not obtainable in West African countries where institutions are not strong enough to uphold the ideals of true democracy. particularly, according to the 2021 democracy index West African countries are made up of 12.5% of flawed democracies; 50% hybrid regimes and 37.5% authoritarian regimes (Economist Intelligence Unit, 2022). Consequently, the electoral process in about 88% of these supposed West African democracies are undermined by different forms of antidemocratic electoral strategies. Particularly, clientelism, defined as a kind of implicit or explicit quid pro quo in which goods and or services are exchanged for political support (Hicken et, al, 2022) is one of the most common form antidemocratic electoral strategies used by politicians or political parties.

Clientelism in West African countries often takes the form of vote buying and or patronage (Kramon, 2017). On the one hand, vote buying is often directed towards mobilization of supporters of a political party and swing voters in a forthcoming election. (Rauschenebach & Paula, 2019). Patronage on the other

hand usually entails the use of state resources to reward individuals who are instrumental to bringing a political party or candidate to government (Hale, 2014). Regardless of divergent views on its legality, clientelism has been a popular and effective electoral strategy in many democracies across the world (Berenschot & Aspinall, 2020). For instance, it is legal for loyalist of the incumbent political parties to be appointed as heads of a number of commissions and agencies in West African countries. Similarly, vote buying and other forms of clientelist voter mobilization are prevalent in West African countries (Ojoye, 2019; Aikins, 2022). Prevalence of clientelism is further intensified by increased monetization of the electioneering process. For instance, the combined price for expression of interest and nomination forms required by the ruling All Progressives Congress for all five political positions in the forthcoming 2023 general elections in the largest democracy in West Africa is ₦182 million (Adenekan, 2022). Such exorbitant monetary cost is definitely on the high side in a country with a minimum wage of ₦30, 000.

On the one hand, many studies in the clientelism literature agree that the underprivileged majority at the bottom of income distribution are usually the prime target of clientelism. These studies suggested that high income inequality create conducive environment for clientelism (Robinson & Verdier, 2013; Markussen, (2011); Wang and Kolev (2018); Obradović & Filic, 2019). On the other hand, other studies in the clientelism literature have argued that prevalence of clientelism erode the accountability mechanism which periodic, free and fair elections instil in democracy (Berenschot & Mulder, 2019). Consequently, these studies have linked clientelism in its various forms to various undesirable outcomes of governance such as economic inefficiencies, dearth of public goods, diversion of public funds and bias towards pro-elite public policies (Robinson & Verdier, 2013; Buquet & Piñeiro 2016; Wood (2018); Kurer, (2019); Enejoh & Ekele, 2021; Lindberg et. al., 2022).

However, other studies either suggested that good governance is possible amidst clientelism (Sugiyama & Hunter 2013; Peters & Bianchi, 2020) or that the effect of clientelism on governance depends on other factors such as the character of the networks that facilitate clientelist exchange, the benefits politicians offer for votes and degree to which politicians and political parties control the distribution of state resources (Berenschot & Aspinall (2020); Gonzalez-Ocantos & Oliveros, (2019); Yildirim, & Kitschelt (2020). Although extant studies have established a link between income inequality and clientelism; and a link between clientelism and governance, empirical evidences on the effect of the level of income inequality on the relationship between clientelism and governance are relatively scarce.

Consequently, the effect of the level of income inequality on the relationship between clientelism and governance remains unclear. Investigating the link among these variables will give a better understanding of challenges to governance in West African countries.

Consequently, this study investigated the main and interaction effects of income inequality and clientelism on government effectiveness in West African Countries from 1996 to 2020. The study objectives were achieved using pooled mean group (PMG) approach of the panel autoregressive distributed lag (ARDL) estimation technique and the Dumitrescu Hurlin panel causality test. The study measured governance as government effectiveness, income inequality as GINI coefficient; clientelism as the average of control of corruption and voice and accountability score; and socioeconomic development as human development index. The remainder of this paper is respectively dedicated to empirical evidences of the effect of income inequality on clientelism; the effect of clientelism on governance; construction of an appropriate proxy for clientelism, data description, model specification and estimation technique; result presentation; and conclusion and policy implications.

## 2. Literature Review

The public choice theory and the agency theory propounded respectively by Buchanan and Tullock (1962) and Jensen and Meckling (1976) provide a better understanding how income inequality interact with clientelism to exacerbate government ineffectiveness in West African democracies. The agency theory explains any type of relationship in which an individual (the principal) in pursuit of his own interest authorises another individual (the agent) to act on his behalf. However, due to information asymmetry and inability of the principal to scrutinize the agent's action, the likelihood that the agent will pursue his own selfish interest at the expense of the principal's is inherent in principal-agent relationship. Consequently, such relationship often requires an effective mechanism which minimizes or punishes such opportunistic tendency. However, the ability of the agent to corrupt this mechanism will result in a situation where the agent prioritises his own interest over his principal's interest with impunity. This problem is further exacerbated if the agent acts on behalf of multiple principals who pursue individual interest rather than common interest.

The public choice theory explains the mechanism through which the agent jettisons principal's interest for individual interests in a multi principal problem where the agent represents many principals with different objectives. Although the principals usually have incentives to pursue self interest, pursuit of such interest

often results in inefficient decision or policies which jeopardises their common interest. Specifically, the benefit of such inefficient decisions is often concentrated among privileged minority who are able to engage in collective action, while the cost is borne by the underprivileged majority who may not be able to engage in collective action. This situation eventually results in the agent's implementation of various inefficient policies which ultimately worsen his effectiveness.

Empirical studies abound on the link among income inequality and clientelism influence governance. Robinson and Verdier (2013) developed a standard probabilistic voting model which explains why income redistribution in the form of public sector employment is often inefficient. Findings from the study revealed that attaching public-sector employment to the political success of a politician often leads to inefficiencies in the supply of other public goods. The study also revealed that high inequality and low productivity usually make such clientelist exchange attractive to politicians in developing countries. The clientelist exchange is further exacerbated by high government involvement in the economy, high inequality and prioritisation of money over political ideology.

Similarly, Wang and Kolev (2018) investigate whether clientelism is more rampant in ethnically highly fragmented societies using multilevel mixed effect models and ordinary least square regression to estimate dataset of 450 parties in eight competitive party systems. Findings from the study revealed that politicians in countries characterised by economic unequal but politically relevant ethnic groups are more likely to rely on clientelist strategies to augment votes. However, the success of such strategies often depends on party's ties to ethnic social networks and ability to rely on ethnic organisations. Several other studies also found positive effect of income inequality on clientelism (Obradović & Filic, 2019)

Lindberg et. al., (2022) studied the relationship among clientelism, corruption and rule of law using cross-country panel data for 134 countries for the period 1900 to 2018. The study distinguished between vote buying and non-programmatic party linkage. Findings from the study revealed inverse relationship between political clientelism and governance outcomes (political corruption and rule of law). The study also revealed that non-programmatic party linkages as a form of clientelism is more inimical to governance than vote buying.

Enejoh and Ekele (2021) studied political clientelism as a challenge to good governance in Nigeria using descriptive survey research design to analyse the data of 400 registered voters in Kogi State, Nigeria. Findings from the study suggested a significant negative relationship between political clientelism and good governance. The study concluded that political clientelism inhibits good governance

in Nigeria and recommended fortification of the country's democratic institutions for promotion of a just, fair and democratic society. Several other studies also support these findings (Robinson & Verdier, 2013; Buquet & Piñeiro 2016; Wood (2018); Kurer, O. 2019). However, some other studies concluded that good governance is possible in the presence of clientelism (Sugiyama & Hunter 2013; Peters & Bianchi, 2020).

### 3. Methodology

#### 3.1. Measuring Clientelism

Given the multidimensional nature of clientelism; this section deals with the development of a measure of clientelism. The literature on clientelism can be broadly divided into studies which measures clientellism using primary data-based techniques which assign the dummy variable 1 to question which supports clientelism and 0 otherwise (Weitz-Shapiro 2012; Corstange, 2018) and studies which measured clientelism with secondary data such as corruption, rule of law, government ownership of newspapers (Manow, 2002; Keefer, 2007). However, the clientelism is a multidimensional concept whose dimensions are difficult to fully capture (Rana et. al., 2018). Although, corruption alone cannot capture clientelism (Muno, 2013) corruption remains a major and popular indicator of clientelism. Despite his criticism of corruption as a sole measure of corruption, Muno (2013) recognised clientelism as a form of corruption in which public power/resources are use for private political gain.

Following Muno (2013) definition, we developed clientelism reduction, a proxy for clientelism by averaging a country's yearly performance in control of corruption (measuring the extent to which public power is used for private gain and capture of the state by elites and private interest) and voice and accountability (measuring the extent to which a citizens are able to participate in selecting their government, freedom of expression, freedom of association, and a free media). The two indicators of clientelism reduction ranges from -2.5 (weak performance) to 2.5 (strong performance). Similarly, clientelism reduction ranges from -2.5 (weak performance) to 2.5 (strong performance).

In order to ascertain the reliability of control of corruption and voice and accountability as indicators of clientelism, we calculated the Cronbach's alpha which helps to determine whether a collection of items (indicators) consistently measures the same characteristics. We obtained a Cronbach's alpha of 0.73 which shows that control of corruption and voice and accountability are reliable indicators

of clientelism. Consequently, we calculate clientelism reduction as the average of control of corruption and voice and accountability score in a year.

$$\text{Clientelism Reduction}_t = \frac{\text{Control of Corruption}_t + \text{Voice and Accountability}_t}{2} \quad (1)$$

Such that a country with a strong control of corruption score of 2.5 and a strong voice and accountability score of 2.5 in a particular year would have a strong clientelism reduction score of  $\frac{2.5+2.5}{2} = 2.5$  that year. Conversely, a country with a weak control of corruption score of -2.5 and a weak voice and accountability score of -2.5 in a particular year would have a weak clientelism reduction score of  $\frac{-2.5-2.5}{2} = -2.5$  that year. Finally, a country with a weak control of corruption score of -2.5 and a strong voice and accountability score of +2.5 or vice versa in a particular year would have an average clientelism reduction score of  $\frac{-2.5+2.5}{2} = 0$  that year.

### 3.2. Data Description and Source

This study analysed annual panel data of 11 West African countries spanning from 1996 to 2020. Specifically the West African countries included in the study are Republic of Benin, Ivory Coast, Ghana, Guinea, Gambia, Mali, Mauritania, Niger, Senegal, Sierra Leone and Togo. The Period of study and country inclusion was determined by data availability. Besides its appropriateness for the study objective, the choice of panel study was informed by the need to augment available data. The data analysed were sourced from World Governance Indicators, and World Income Inequality Database and Human Development Report published by World Bank, UNU-WIDER and United Nations. The descriptions of the variables estimated are presented in Table 1.

**Table 1: Variable Description**

Variable	Proxy	Definition	Range
Governance (GOV)	Government Effectiveness	Quality of public/civil services; the degree of its independence from political pressures; the quality of policy formulation and implementation; and the	-2.5(weak) to 2.5 (strong)



Variable	Proxy	Definition	Range
		credibility of the government's commitment to such policies.	
Socioeconomic Development (HDI)	Human Development Index	Average achievement in long and healthy life, knowledge and decent standard of living	0(weak) to 1 (strong)
Income Inequality (INE)	GINI	Degree of inequality in the distribution of Income	0 (weak) to 100 (strong)
Clientelism (CLI)	Clientelism Reduction	Average score in upholding of democratic values (especially the extent to which citizens are able to participate in selecting their government) and in curbing the use of public power for private gain, and capture of the state by elites and private interest.	-2.5(Weak) to 2.5 (Strong)

**Note: Authors compilation**

### 3.3. Theoretical Framework and Model Specification

The empirical model for this study is based on agency theory and public choice theory. Following agency theory, we assume that clientelism undermines the accountability mechanism entrenched in a democracy by periodic, free and fair elections. Consequently, incumbent politician or political party who are supposed to be agents of the public pursue their own self-interest (political power or re-election) at the expense of public welfare (socioeconomic development). The incumbent politician or political party pursues self interest by prioritising provision of discretionary private goods and pork barrel projects in exchange for political support in the next election. We assumed that income inequality is a precondition for the sustenance and effectiveness of such clientelist exchange since voters need to be perpetually materially dependent on the political party or politician they support. Based on the public choice theory, we assumed that such pursuit of selfish interest will result in an anti-development government which formulates and implements inefficient policies. Consequently we specify the implicit model for this study as:

$$GOV = f(\ln INE, CLI, INE * CLI, \ln HDI) \quad (2)$$



### 3.4. Estimation Technique

This study utilised the pooled mean group (PMG) version of the panel autoregressive distributed lag (ARDL) estimation technique popularised by Pesaran et. al., (1999). The PMG estimation approach constrains long-run equilibrium relationship to be the same across groups but allow short run estimates to differ freely across group. The Fisher augmented Dickey-Fuller and Im, Pesaran and Shin Panel unit root tests were used to ensure that the study variables are either integrated of order zero [I(0)] or order one [I(1)] as required by the ARDL estimation technique. The Wald test of coefficient restriction was used to determine the appropriateness of the long run homogeneity assumption of the PMG estimation approach for the study. The Pearson langrangian multiplier test was used to ensure absence of cross sectional dependence in the model and ascertain the appropriateness of the adopted unit root tests which do not account for cross sectional dependence. The Pedroni cointegration test was used to ascertain longrun relationship among the studied variables. The Jarque-Bera test was used to ascertain the normality of the residuals. The reparameterised ARDL model is specified as:

$$\begin{aligned} \Delta GOV_{it} = & \sum_{k=1}^{p-1} \lambda_{ik} \Delta GOV_{i,t-k} + \sum_{k=0}^{q-1} \alpha_{ik} \Delta \ln INE_{i,t-k} + \sum_{k=0}^{q-1} \beta_{ik} \Delta CLI_{i,t-k} + \\ & \sum_{k=0}^{q-1} \theta_{ik} \Delta INE * CLI_{i,t-k} + \sum_{k=0}^{q-1} \pi_{ik} \Delta \ln HDI_{i,t-k} + \phi_i GOV_{i,t-1} + a_i \ln INE_{it} + b_i CLI_{it} + \\ & c_i INE * CLI_{it} + d_i \ln HDI_{it} + \mu_i + \varepsilon_{it} \end{aligned} \quad (3)$$

Where:

GOV is government effectiveness, lnINE is the natural log of income inequality; CLI is clientelism reduction; lnHDI is the natural log of socioeconomic development; p is the maximum lag of the explained variable GOV; q is the maximum lag of the explanatory variables;  $\lambda_{ik}, \alpha_{ik}, \beta_{ik}, \theta_{ik}, \pi_{ik}$  are the short run coefficients;  $\phi_i$  measures the speed of adjustment to long run equilibrium;  $a_i, b_i, c_i, d_i$  are long run coefficients;  $\mu_i$  is group specific fixed effect error term; and  $\varepsilon_{it}$  is the error term.

## 4. Result and Discussion

### 4.1 Descriptive Statistics

Table 2 presents the summary of descriptive statistics for the study variables during the study period. The average government effectiveness score of West African countries is about -0.738 while the maximum government effectiveness score by a West African country is about 0.160. Given a maximum possible government effectiveness score of +2.5, these statistics implies that governments of West African countries still have a lot to do in terms of effectiveness. The standard deviation value of government effectiveness (0.396) shows that the governance effectiveness score of West African countries falls within 1 standard deviation of mean government effectiveness score. This implies that the government effectiveness values of West African countries are concentrated around mean government effectiveness score.

**Table 2: Descriptive Statistics**

STATISTIC	GOV	INE	CLI	HDI
Mean	-0.738	54.484	-0.534	0.444
Median	-0.727	55.290	-0.575	0.455
Maximum	0.160	66.293	0.279	0.632
Minimum	-1.553	35.792	-1.324	0.243
Std. Dev.	0.396	4.218	0.399	0.078
Observations	275	275	275	275

**Source: Authors' computation 2022**

The average income inequality score of West African countries during the study period is 54.484 while the maximum income inequality score scored by a West African country during the study period is 66.293. Given a possible maximum income inequality score of 100, these statistics show that that income distribution in West African countries can be described as more unequal than equal. The standard deviation of income inequality (4.218) shows that income inequality in West African countries falls outside 3 standard deviation of the mean value of income inequality. This implies that the income inequality values of West African countries are spread out over a wider range of values.

The average clientelism reduction score of West African countries during study the period is about -0.534 while the highest clientelism reduction score score by a West African country during the study period is about 0.279. Given a maximum possible clientelism reduction value of +2.5; this statistics shows that more is still desired of West African governments in terms of clientelism reduction. The Standard deviation value of clientelism (0.399) shows that clientelism reduction scores of West African countries falls within 1 standard deviation of the mean value of clientelism. This implies that the clientelism values of West African countries are concentrated around the mean value of clientelism.

The average socioeconomic development score of West African countries during the study period is about 0.444 while the best performance in any West African country in a single year is about 0.632. Given a minimum possible value of 1, West African countries still have a long way to go in socioeconomic development. The Standard deviation of socioeconomic development (0.078) shows that socioeconomic development score of West African countries falls within 1 standard deviation of the mean value of socioeconomic development. This implies that the socioeconomic development values of West African countries are concentrated around the mean value of socioeconomic development.

#### 4.2 Unit Root Test

Table 3 presents the result of the Fisher augmented Dickey-Fuller (Fisher ADF) and Im, Pesaran and Shin panel unit root tests. The probability values of the test statistics shows that null hypothesis of unit root at levels or first difference can be rejected at 5% level of significance. These results show that the variables under study are either integrated of order zero  $I(0)$  or order one  $I(1)$  as required by the Panel ARDL estimation technique.

**Table 3: Unit Root Tests Result**

Variable	Im, Pesaran and Shin			Fisher ADF		
	Statistic	Probability	I(d)	Statistic	Probability	I(d)
GOV	-7.101	0.000*	I(1)	93.072	0.000*	I(1)
lnINE	-1.700	0.044**	I(0)	42.166	0.006*	I(1)
CLI	-7.461	0.000*	I(1)	98.370	0.000*	I(1)
INE*CLI	-7.534	0.000*	I(1)	99.423	0.000*	I(1)

InHDI	-2.110	0.017**	1(1)	43.368	0.004*	I(1)
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Note: \* Significant at 1%; : \*\* Significant at 5%

### 4.3 Cointegration Test

Table 4 presents the result of the Pedroni residual cointegration test. The probability values of six out of the eleven test statistic reject the null hypothesis of no cointegration at 5% level of significance. This results revealed evidences of long run relationship among the variables under stud.

**Table 4: Pedroni Residual Cointegration Test**

Null Hypothesis: No Cointegration				
Statistic	Statistic	Probability	Weighted Statistic	Probability
Panel v	0.953	0.170	0.242	0.404
Panel rho	-1.796	0.036**	-1.733	0.041**
Pane PP	-6.201	0.000*	-6.956	0.000*
Panel ADF	0.169	0.567	-1.742	0.040**
Group Rho	-1.069	0.142		
Group PP	-8.187	0.000*		
Group ADF	-0.434	0.331		

Note: \* Significant at 1%; : \*\* Significant at 5%

### 4.4 Long run Effects of Inequality, Clientelism and Socioeconomic Development on Governance.

Table 5 presents the panel ARDL estimates of the long run effects of inequality, clientelism, socioeconomic development on governance in West African countries and the speed of adjustment to longrun equilibrium governance. The probability values of the long run coefficients shows that all explanatory variables are statistically significant at 1% significane level. The coefficient of the natural log of income inequality (-2.153) represents the main effect of income inequality on government effectiveness. It implies that 1% decrease in income inequality will result in about 0.021 unit increase in government effectiveness. This finding agrees with studies which found negative effect of income inequality on governance

indicators (Robinson & Verdier, 2013; Markussen, 2011; Wang and Kolev (2018); Obradović & Filic, 2019).

**Table 5: Panel ARDL Estimates of Long run Effects and Speed of Adjustment**

Dependent Variable: GOV Fixed Regressor: Constant Selected Model: ARDL(3,3,3,3,3)					
Variable	Coefficient	Standardised Coefficient	Standard Error	t- Statistic	Probability
InINE	-2.153	-0.454	0.460	-4.671	0.000*
CLI	8.547	8.594	0.742	11.511	0.000*
INE*CLI	-0.134	-7.549	0.013	-9.962	0.000*
InHDI	1.377	0.650	0.179	7.692	0.000*
ECT(-1)	-0.733		0.280	-2.610	0.010*
INE <sub>critical</sub>	63.784				

**Note:** \* Significant at 1%; : \*\* Significant at 5%

The coefficient of clientelism reduction (8.547) represents the main effect of clientelism reduction on government effectiveness. It implies that 1 unit improvement in clientelism reduction will increase government effectiveness by about 8.547 units. This finding agree with Kurer (2019), Enejoh and Ekele (2021) and Lindberg et. al., (2022) but disagrees with Sugiyama and Hunter (2013); Peters and Bianchi (2020). This finding also agrees with the a priori expectation that clientelism will result in an ineffective government which formulate and implement inefficient policies. Furthermore, this finding validates control of corruption and voice and accountability as indicators of clientelism.

The critical value of income inequality (63.784) implies that the effect of clientelism on government effectiveness will be negative at income inequality levels lower than 63.784; positive at income inequality levels higher than 63.784. This further implies that effective governance is possible amidst high income inequality and clientelism however such government effectiveness is anti-development as it usually prioritise selfish political gain over public welfare. Specifically, such government effectiveness is usually directed towards the supply of excludable and reversible private goods and pork barrel projects which enhances augment political power or enhances re-election at the expense of public welfare(socioeconomic development). Conversely, government effectiveness achieved at low levels of income inequality and clientelism is pro-development

since it usually prioritises public welfare over selfish political gains. This implies that government effectiveness is not an end in itself but a means to an end which is the maximization of public welfare.

The coefficient of the interaction of income inequality and clientelism (-0.134) is the interaction effect of income inequality and clientelism on government effectiveness. It implies that the negative effect of clientelism on pro-development government effectiveness is increased by 0.134 for every 1 unit reduction in income inequality which occurs below the critical income inequality level. Conversely, for every 1 unit reduction in income inequality which occurs above the critical income inequality level; the positive effect of clientelism on anti-development government effectiveness is decreased by 0.134. However, clientelism has no effect on government effectiveness at the critical income inequality level. This finding agrees with studies which concluded that the effect of clientelism on governance depends on other factors (Berenschot & Aspinall (2020); Gonzalez-Ocantos & Kitschelt (2020)). Furthermore, this finding agrees with the a priori expectation that high income inequality provides environment conducive for clientelism and that clientelism result in ineffective governance.

The coefficient of natural log of socioeconomic development (1.377) implies that 1% increase in human development will result in about 0.013 unit increase in government effectiveness. This finding agrees with Fagbemi et. al., (2021) which concludes that improvements in socioeconomic conditions of the masses facilitate government effectiveness through increased political participation and awareness. The standardise coefficients of the explanatory variables shows that clientelism and interaction of income inequality and clientelism respectively are the top two variables with the greatest long run effect on government effectiveness in west Africa during the study period. The standardised coefficients also reveal socioeconomic development to have greater long run effect on government effectiveness than income inequality. The coefficient of the error correct term (-0.733) implies that about 77.3% of deviations from long run equilibrium is corrected yearly.

#### 4.5. Diagnostics Tests

Table 6 presents the results of cross-sectional dependence test, Wald test of coefficient restriction and residual normality test. The test results show that null hypotheses of cross sectional independence and residual normality cannot be rejected at 5% level of significance. Conversely, the null hypothesis, long run coefficients equals zero was rejected at 1% level of significance. This implies that

the ARDL model is free from cross sectional dependence; homogeneity assumption is appropriate; and residuals are normally distributed.

**Table 6: Diagnostic Tests**

Test	Statistic	Value	Probability
Cross-sectional Dependence	Pearson LM	-1.121	0.261
Wald (Coefficient Restriction)	F	397.020	0.000*
Residual Normality	Jarque-Bera	2.477	0.289

**Note:** The null hypotheses of the tests are cross-sectional independence; Longrun coefficients equals zero and normal distribution respectively. \* Significant at 1%

#### 4.6 Causality Test

Table 7 presents the result of the Dumitrescu Hurlin panel causality test. The test result revealed evidence of unidirectional causality from clientelism to government effectiveness. This result implies that clientelism is a crucial determinant of government effectiveness in West African countries. Similarly, the study revealed uni-directional causality from socioeconomic development to income inequality, which implies that socioeconomic development is crucial for reduction of income inequality in West African countries. Finally, the result reveals evidence of bi-direction causality between human development and government effectiveness. This implies that human development and government effectiveness are interdependent and mutually reinforcing in West African Countries. This finding agree with Fagbemi et. al., (2021).

**Table 7: Dumitrescu Hurlin Panel Causality Test**

Null Hypothesis	W-Stat	Zbar-Stat	Probability	Decision	Causality
logINE → GOV	4.255	0.772	0.440	Accept	No
GOV → logINE	4.814	1.317	0.187	Accept	
CLI → GOV	8.434	4.838	0.000*	Reject	Unidirectional
GOV → CLI	4.176	0.695	0.486	Accept	
logHDI → GOV	6.976	3.420	0.000*	Reject	Bidirectional
GOV → logHDI	6.609	3.063	0.002*	Reject	



Null Hypothesis	W-Stat	Zbar-Stat	Probability	Decision	Causality
CLI → logINE	5.189	1.681	0.092	Accept	No
logINE → CLI	5.052	1.548	0.121	Accept	
logHDI → logINE	7.044	3.485	0.000*	Reject	Unidirectional
logINE → logHDI	3.454	-0.006	0.994	Accept	
logHDI → CLI	5.090	1.584	0.113	Accept	No
CLI → logHDI	3.308	-0.149	0.881	Accept	

Note: → does not homogeneously cause; \* Significant at 1%.

### 5. Policy Implications and Conclusion

In a bid to contribute to the frontiers of knowledge, this study investigated the main and interaction effects of income inequality and clientelism on government effectiveness in 11 West African countries from 1996 to 2020. The study objective was achieved using the pooled mean group approach to the autoregressive distributed lag technique and Dumitrescu Hurlin Panel Causality Test. This study argued that clientelism enhances government effectiveness at higher levels of income inequality but inhibits government effectiveness at lower levels income inequality. Consequently, we opine that government effectiveness can be achieved both at higher levels and lower levels of income inequality and clientelism. However, government effectiveness which thrives on higher levels of income inequality and clientelism is inimical to socioeconomic development, since such government effectiveness is usually directed towards formulation and implementation of policies which enhances political power and re-election at the expense of public welfare.

Conversely government effectiveness which thrives on lower levels of income inequality and clientelism is beneficial to development, since such government effectiveness often prioritise public welfare over political power or re-election. Hence, government effectiveness is not an end itself but a means to an end which is maximization of public welfare or socioeconomic development. This study also provides evidence that supports the fact that income inequality and clientelism must move in the same direction to achieve government effectiveness; and that socioeconomic development and government effectiveness are interdependent and mutually reinforcing. In sum, reduction in income inequality reduces clientelism which in turn yields pro-development governance. Consequently, West African

governments which are serious about drastic reduction of clientelism and socioeconomic development will have to formulate and implement effective policies which truly redistribute income away from the rich to the poor masses.

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Appendices

Interaction Analysis

Given the long-run regression equation

$$GOV = -2.153lnINE + 8.547CLI - 0.134INE * CLI + 1.377lnHDI$$

Then total effect of change in government effectiveness (GOV) on income inequality (INE) equals the main effect of informality on income inequality plus the interaction effect of informality on income inequality.

$$\delta logGOV / \delta CLI = 8.547 - 0.134INE = 0$$

The critical income inequality (INE) level can be obtained by solving for INE

$$INE = 8.547 / 0.134 = 63.784$$

The critical income inequality level (63.784) after which the partial derivative of government effectiveness (GOV) with respect to clientelism reduction (CLI) changes from positive to negative or vice versa. Specifically, clientelism (CLE) has positive effect on government effectiveness at income inequality levels above the critical income inequality. Conversely, clientelism (CLE) has negative effect on government effectiveness at income inequality levels below the critical income inequality level. Note that clientelism reduction (CLI) is the inverse of clientelism (CLE). This is shown in Table 8.

Table 8: Interaction Effect of Income Inequality and Clientelism on Government Reduction in West Africa

Income Inequality Level	INE	$\delta logGOV / \delta CLI = 8.547 - 0.134 * INE =$	Remarks
Highest	↑ 100	$8.547 - 0.134 * 100 = -4.853$ At the highest level of income inequality clientelism have positive effect on government effectiveness.	↑INE → ↑ CLE → ↑GOV or ↑INE → ↓ CLE → ↓GOV
2unit Above Critical Level	↑ 65.784	$8.547 - 0.134 * 65.784 = -0.268$ The positive effect of clientelism on government effectiveness increase by 0.134	↑INE → ↑CLE → ↑GOV or ↑INE → ↓ CLE → ↓GOV

Income Inequality Level	INE	$\delta \log \text{GOV} / \delta \text{CLI} = 8.547 - 0.134 * \text{INE} =$	Remarks
Unit Above Critical Level	↑ 64.784	<b>8.547 - 0.134 * 64.784 = -0.134</b> Clientelism has a positive effect of 0.134 on government effectiveness	↑INE → ↑CLE → ↑GOV or ↑INE → ↓ CLE → ↓GOV
Critical	63.784	<b>8.547 - 0.134 * 63.784 = 0</b> Clientelism has no effect on government effectiveness.	
Below Critical Level	↓ 62.784	<b>8.547 - 0.134 * 62.784 = 0.134</b> Clientelism has negative effect of 0.134 on government effectiveness.	↓ INE → ↓ CLE → ↑GOV Or ↓ INE → ↑ CLE → ↓GOV
Below Critical Level	↓ 61.784	<b>8.547 - 0.134 * 61.784 = 0.268</b> The negative effect of clientelism on government effectiveness increase by 0.134	↓ INE → ↓ CLE → ↑GOV Or ↓ INE → ↑ CLE → ↓GOV
Lowest	↓ 0.000	<b>8.547 - 0.134 * 0.000 = 8.547</b> At lowest level of income inequality clientelism have negative effect of <b>8.547</b> on government effectiveness.	↓ INE → ↓ CLE → ↑GOV Or ↓ INE → ↑ CLE → ↓GOV

Note: CLI is clientelism reduction and CLE is clientelism; increase in CLI implies decrease in CLE and vice versa; The bold remarks shows that income inequality and clientelism have to move in the same direction for government effectiveness to be achieved.

**Table 9: Panel ARDL Estimates of Short run Effects and Speed of Adjustment**

Dependent Variable: GOV				
Fixed Regressor: Constant				
Selected Model: ARDL(3,3,3,3,3)				
Variable	Coefficient	Standard Error	t-Statistic	Probability
ECT(-1)	-0.733305	0.280955	-2.610046	0.0105
D(GOV(-1))	0.092716	0.161757	0.573179	0.5679
D(GOV(-2))	0.167436	0.127789	1.310257	0.1933
Dln(INE)	-3.172699	5.141672	-0.617056	0.5387
Dln(INE(-1))	10.38074	8.202304	1.265588	0.2088
Dln(INE(-2))	-5.801695	6.239773	-0.929793	0.3548
D(CLI)	-0.353571	4.593864	-0.076966	0.9388
D(CLI(-1))	-1.243944	6.939705	-0.179250	0.8581
D(CLI(-2))	0.101366	4.849583	0.020902	0.9834
D(INE*CLI)	0.004875	0.079378	0.061418	0.9512
D(INE*CLI(-1))	0.023469	0.123424	0.190149	0.8496
D(INE CLI(-2))	0.000780	0.086807	0.008989	0.9928
Dln(HDI)	-1.175222	2.853954	-0.411787	0.6814
Dln(HDI(-1))	-0.368401	2.832103	-0.130080	0.8968
Dln(HDI(-2))	-4.376104	1.551327	-2.820877	0.0058
C	7.316627	2.890187	2.531541	0.0130

## SENSITIVITY ANALYSIS BETWEEN LAGRANGE MULTIPLIERS AND CONSUMER BUDGET: UTILITY MAXIMIZATION CASE

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**Abstract:** *In this paper sensitivity analysis between Lagrange multipliers and the total budget is discussed. The method of Lagrange multipliers is a very useful and powerful technique in multivariable calculus. In mathematical economics, utility is the vital concept that increases or decreases the overall happiness of consumers. This study tries to discuss the utility maximization policy of an organization by considering two constraints: budget constraint and coupon constraint. In this article, an attempt has been taken to achieve the best result through the application of the scientific method of optimization.*

**Keywords:** Budget, Lagrange multipliers, sensitivity analysis, utility maximization

**JEL Classification:** B41, C02, C51, C61, C67, D11, F63, G15



## 1. Introduction

In the 21<sup>st</sup> century mathematical modeling in economics becomes an essential part to investigate optimization policy. Mathematical modeling in economics is considered as the application of mathematics in economics [Samuelson, 1947; Carter, 2001]. For the sustainable of an industry, utility maximization strategy is essential. The property of a commodity that enables to satisfy human necessities is called utility [Bentham, 1780]. It directly influences the demand and supply of the organizations [Fishburn, 1970]. The concept of utility was developed in the late 18<sup>th</sup> century by the English moral philosopher Jeremy Bentham (1748-1832) and English philosopher John Stuart Mill (1806-1873) [Bentham, 1780; Gauthier, 1975].

Two American scholars: mathematician John V. Baxley and economist John C. Moorhouse have analyzed an example of utility maximization subject to a budget constraint from a somewhat wider perspective. They have provided a mathematical formulation for nontrivial constrained optimization problem with special reference for the application in economics [Baxley & Moorhouse, 1984].

In this article, we have tried to form a mathematical formulation of economic model for maximizing utility function subject to two constrains, such as budget constraint and coupon constraint. The method of Lagrange multipliers is considered as a device for transforming a constrained problem to a higher dimensional unconstrained problem [Islam et al., 2010]. In this study, we have worked with the determinant of  $6 \times 6$  Hessian matrix and  $6 \times 10$  Jacobian matrix. We have operated the article with 16 variables, such as four price vectors, four types of coupon numbers, four commodity variables, two Lagrange multipliers, one total budget variable, and one total coupon variable. In the study mathematical calculations are displayed in some details.

## 2. Literature Review

In any research, literature review is an introductory section, which highlights previous researches in the same field [Polit & Hungler, 2013]. In 1928, two American scholars; mathematician Charles W. Cobb (1875-1949) and economist Paul H. Douglas (1892-1976), have worked on production functions [Cobb & Douglas, 1928]. Later in 1984, another two American professors; mathematician John V. Baxley and economist John C. Moorhouse, have given the utility maximization structure with sufficient mathematical techniques [Baxley & Moorhouse, 1984].

Pahlaj Moolio and his coauthors have given reasonable interpretation of the Lagrange multipliers and examined the behavior of the firm by analyzing comparative static results [Moolio et al., 2009]. Notable mathematician Jamal Nazrul Islam and his coauthors have analyzed utility maximization and other optimization problems by considering reasonable interpretation of the Lagrange multipliers [Islam et al., 2009a,b, 2011]. Qi Zhao and his coauthors have proposed for multi-product utility maximization as a general approach to the recommendation driven by economic principles [Zhao et al., 2017]. Young researcher Lia Roy and her coworkers have discussed cost minimization policy of an industry, where they have provided detail mathematical formulation [Roy et al., 2021]. Haradhan Kumar Mohajan has explored utility maximization model for Bangladeshi consumers [Mohajan, 2021a]. In a published book, he and his coauthors have discussed a series of optimization problems for the social welfare [Mohajan et al., 2013].

Devajit Mohajan and Haradhan Kumar Mohajan have discussed a profit maximization problem in an industry, where they have used four variable inputs, such as capital, labor, principal raw materials, and other inputs [Mohajan & Mohajan, 2022a]. On the other hand, Jannatul Ferdous and Haradhan Kumar Mohajan have briefly solved a profit maximization problem [Ferdous & Mohajan, 2022]. In another paper, they have calculated utility maximization policy of an organization [Mohajan & Mohajan, 2022b; Mohajan, 2022].

### 3. Methodology of the Study

Research is an essential and influential device to the professors to lead the academic world [Pandey & Pandey, 2015]. Methodology is a guideline that tries to describe the types of research and the types of data [Somekh & Lewin, 2005]. Research methodology is the science and philosophy behind all researches and it provides the principles for organizing, planning, designing and conducting a good research [Remenyi et al., 1998; Legesse, 2014]. It tries to create new knowledge basis on the existing knowledge [Goddard & Melville, 2001].

In this study we have used  $6 \times 6$  bordered Hessian matrix and  $6 \times 10$  Jacobian matrix, and we have also used four commodities  $b_1$ ,  $b_2$ ,  $b_3$ , and  $b_4$ , and two Lagrange multipliers  $\lambda_1$  and  $\lambda_2$ . We have tried to provide mathematical calculations and results very clearly [Mohajan, 2017b, 2018a, 2020]. In this study we have depended on the utility maximization related mathematical secondary data

sources. The data are collected from the secondary data sources, such as from published research papers, books and handbooks of famous authors, internet, websites, etc. [Mohajan, 2017a, 2018b].

#### 4. Objective of the Study

The leading objective of this paper is to discuss sensitivity analysis between Lagrange multipliers and total budget of consumers during the utility maximization and economic analysis. The other supplementary objectives are as follows:

- to develop the bordered Hessian and Jacobian,
- to provide the sensitivity results properly, and
- to display the mathematical calculations in some details.

#### 5. An Economic Model

To study sensitivity analysis we consider four commodities:  $A_1$ ,  $A_2$ ,  $A_3$ , and  $A_4$ . Let the consumers in the society wants to purchase  $b_1$ ,  $b_2$ ,  $b_3$ , and  $b_4$  amounts from these four commodities  $A_1$ ,  $A_2$ ,  $A_3$ , and  $A_4$ , respectively. The utility function for these four commodities can be written as [Islam et al., 2010; Mohajan & Mohajan, 2022b],

$$u(b_1, b_2, b_3, b_4) = b_1 b_2 b_3 b_4. \quad (1)$$

The budget constraint of the consumers is,

$$B = p_1 b_1 + p_2 b_2 + p_3 b_3 + p_4 b_4 \quad (2)$$

where  $p_1$ ,  $p_2$ ,  $p_3$ , and  $p_4$  are the prices of per unit of commodities  $b_1$ ,  $b_2$ ,  $b_3$ , and  $b_4$ , respectively. Now the coupon constraint is,

$$K = k_1 b_1 + k_2 b_2 + k_3 b_3 + k_4 b_4, \quad (3)$$

where  $k_1$ ,  $k_2$ ,  $k_3$ , and  $k_4$  are the coupons necessary to purchase a unit of commodity of  $b_1$ ,  $b_2$ ,  $b_3$ , and  $b_4$ , respectively.

Using (1), (2), and (3) we can express Lagrangian function  $U(b_1, b_2, b_3, b_4, \lambda_1, \lambda_2)$  as [Baxley & Moorhouse, 1984; Ferdous & Mohajan, 2022],

$$U(b_1, b_2, b_3, b_4, \lambda_1, \lambda_2) = b_1 b_2 b_3 b_4 + \lambda_1 (B - p_1 b_1 - p_2 b_2 - p_3 b_3 - p_4 b_4) + \lambda_2 (K - k_1 b_1 - k_2 b_2 - k_3 b_3 - k_4 b_4). \quad (4)$$

Lagrangian function (4) is a 6-dimensional unconstrained problem that maximizes utility functions; where  $\lambda_1$  and  $\lambda_2$  are two Lagrange multipliers.

Now taking first and second order and cross-partial derivatives in (4) we obtain [Islam et al. 2009a,b; Mohajan & Mohajan, 2022d];

$$B_1 = p_1, B_2 = p_2, B_3 = p_3, B_4 = p_4. \\ K_1 = k_1, K_2 = k_2, K_3 = k_3, K_4 = k_4. \quad (5)$$

$$U_{11} = 0, U_{12} = U_{21} = b_3b_4, U_{13} = U_{31} = b_2b_4, \\ U_{14} = U_{41} = b_2b_3, U_{22} = 0, U_{23} = U_{32} = b_1b_4, \\ U_{24} = U_{42} = b_1b_3, U_{33} = 0, U_{34} = U_{43} = b_1b_2, U_{44} = 0. \quad (6)$$

Now we consider the bordered Hessian [Mohajan, 2021a; Mohajan & Mohajan, 2022c],

$$|H| = \begin{vmatrix} 0 & 0 & -B_1 & -B_2 & -B_3 & -B_4 \\ 0 & 0 & -K_1 & -K_2 & -K_3 & -K_4 \\ -B_1 & -K_1 & U_{11} & U_{12} & U_{13} & U_{14} \\ -B_2 & -K_2 & U_{21} & U_{22} & U_{23} & U_{24} \\ -B_3 & -K_3 & U_{31} & U_{32} & U_{33} & U_{34} \\ -B_4 & -K_4 & U_{41} & U_{42} & U_{43} & U_{44} \end{vmatrix}. \quad (7)$$

We use  $p_3 = p_1$  and  $p_4 = p_2$ , i.e., amount of a pair of prices are same, and  $k_3 = k_1$  and  $k_4 = k_2$ , i.e., a pair of coupon numbers are same. Now we consider that in the expansion of (7) every term contains  $p_1p_2k_1k_2$ , then from (7) we can derive [Mohajan & Mohajan, 2022e];

$$|H| = -2p_1p_2k_1k_2 < 0. \quad (8)$$

For  $b_1, b_2, b_3, b_4, \lambda_1$ , and  $\lambda_2$  in terms of  $p_1, p_2, p_3, p_4, k_1, k_2, k_3, k_4, B$ , and  $K$  we can calculate sixty partial derivatives, such as  $\frac{\partial \lambda_1}{\partial p_1}, \frac{\partial \lambda_2}{\partial p_1}, \dots, \frac{\partial \lambda_1}{\partial k_1}$ ,

$\frac{\partial \lambda_2}{\partial k_1}, \dots, \frac{\partial b_1}{\partial p_1}, \dots, \frac{\partial b_1}{\partial k_1}, \dots, \frac{\partial \lambda_1}{\partial B}, \dots, \frac{\partial \lambda_1}{\partial K}$ , etc., [Islam et al., 2011; Mohajan,

2021c]. Now we consider  $6 \times 6$  Hessian and Jacobian matrix as [Mohajan, 2021b; Mohajan & Mohajan, 2022a];

$$J = H = \begin{pmatrix} 0 & 0 & -B_1 & -B_2 & -B_3 & -B_4 \\ 0 & 0 & -K_1 & -K_2 & -K_3 & -K_4 \\ -B_1 & -K_1 & U_{11} & U_{12} & U_{13} & U_{14} \\ -B_2 & -K_2 & U_{21} & U_{22} & U_{23} & U_{24} \\ -B_3 & -K_3 & U_{31} & U_{32} & U_{33} & U_{34} \\ -B_4 & -K_4 & U_{41} & U_{42} & U_{43} & U_{44} \end{pmatrix} \quad (9)$$

which is non-singular at the optimum point  $(b_1^*, b_2^*, b_3^*, b_4^*, \lambda_1^*, \lambda_2^*)$ . Since the second order conditions have been satisfied, so the determinant of (9) does not vanish at the optimum, i.e.,  $|J| = |H|$ ; and we apply the implicit-function theorem.

We have total 16 variables in our study, such as  $\lambda_1, \lambda_2$ ,  $b_1, b_2, b_3, b_4$ ,  $p_1, p_2, p_3, p_4$ ,  $k_1, k_2, k_3, k_4$ ,  $B$ , and  $K$ . By the implicit function theorem, we can write [Moolio et al., 2009; Islam et al., 2010];

$$\begin{pmatrix} \lambda_1 \\ \lambda_2 \\ b_1 \\ b_2 \\ b_3 \\ b_4 \end{pmatrix} = \mathbf{G}(p_1, p_2, p_3, p_4, k_1, k_2, k_3, k_4, B, M). \quad (10)$$

Now the  $6 \times 10$  Jacobian matrix for  $\mathbf{G}$ , regarded as  $J_G$  is given by [Mohajan, 2021a; Mohajan & Mohajan, 2022a],



$$J_G = \begin{bmatrix} \frac{\partial \lambda_1}{\partial p_1} & \frac{\partial \lambda_1}{\partial p_2} & \frac{\partial \lambda_1}{\partial p_3} & \frac{\partial \lambda_1}{\partial p_4} & \frac{\partial \lambda_1}{\partial k_1} & \frac{\partial \lambda_1}{\partial k_2} & \frac{\partial \lambda_1}{\partial k_3} & \frac{\partial \lambda_1}{\partial k_4} & \frac{\partial \lambda_1}{\partial B} & \frac{\partial \lambda_1}{\partial K} \\ \frac{\partial \lambda_2}{\partial p_1} & \frac{\partial \lambda_2}{\partial p_2} & \frac{\partial \lambda_2}{\partial p_3} & \frac{\partial \lambda_2}{\partial p_4} & \frac{\partial \lambda_2}{\partial k_1} & \frac{\partial \lambda_2}{\partial k_2} & \frac{\partial \lambda_2}{\partial k_3} & \frac{\partial \lambda_2}{\partial k_4} & \frac{\partial \lambda_2}{\partial B} & \frac{\partial \lambda_2}{\partial K} \\ \frac{\partial b_1}{\partial p_1} & \frac{\partial b_1}{\partial p_2} & \frac{\partial b_1}{\partial p_3} & \frac{\partial b_1}{\partial p_4} & \frac{\partial b_1}{\partial k_1} & \frac{\partial b_1}{\partial k_2} & \frac{\partial b_1}{\partial k_3} & \frac{\partial b_1}{\partial k_4} & \frac{\partial b_1}{\partial B} & \frac{\partial b_1}{\partial K} \\ \frac{\partial b_2}{\partial p_1} & \frac{\partial b_2}{\partial p_2} & \frac{\partial b_2}{\partial p_3} & \frac{\partial b_2}{\partial p_4} & \frac{\partial b_2}{\partial k_1} & \frac{\partial b_2}{\partial k_2} & \frac{\partial b_2}{\partial k_3} & \frac{\partial b_2}{\partial k_4} & \frac{\partial b_2}{\partial B} & \frac{\partial b_2}{\partial K} \\ \frac{\partial b_3}{\partial p_1} & \frac{\partial b_3}{\partial p_2} & \frac{\partial b_3}{\partial p_3} & \frac{\partial b_3}{\partial p_4} & \frac{\partial b_3}{\partial k_1} & \frac{\partial b_3}{\partial k_2} & \frac{\partial b_3}{\partial k_3} & \frac{\partial b_3}{\partial k_4} & \frac{\partial b_3}{\partial B} & \frac{\partial b_3}{\partial K} \\ \frac{\partial b_4}{\partial p_1} & \frac{\partial b_4}{\partial p_2} & \frac{\partial b_4}{\partial p_3} & \frac{\partial b_4}{\partial p_4} & \frac{\partial b_4}{\partial k_1} & \frac{\partial b_4}{\partial k_2} & \frac{\partial b_4}{\partial k_3} & \frac{\partial b_4}{\partial k_4} & \frac{\partial b_4}{\partial B} & \frac{\partial b_4}{\partial K} \end{bmatrix} \quad (11)$$

$$= -J^{-1} \begin{bmatrix} -b_1 & -b_2 & -b_3 & -b_4 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & -b_1 & -b_2 & -b_3 & -b_4 & 0 & 1 \\ -\lambda_1 & 0 & 0 & 0 & -\lambda_2 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\lambda_1 & 0 & 0 & 0 & -\lambda_2 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\lambda_1 & 0 & 0 & 0 & -\lambda_2 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\lambda_1 & 0 & 0 & 0 & -\lambda_2 & 0 & 0 \end{bmatrix} \quad (12)$$

The inverse of Jacobian matrix is,  $J^{-1} = \frac{1}{|J|} C^T$ , where  $C = (C_{ij})$ , the matrix of cofactors of  $J$ , and  $T$  indicates transpose, then (12) becomes [Mohajan, 2017a; Islam et al., 2009b, 2011],

$$J_G = -\frac{1}{|J|} C^T \begin{bmatrix} -b_1 & -b_2 & -b_3 & -b_4 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & -b_1 & -b_2 & -b_3 & -b_4 & 0 & 1 \\ -\lambda_1 & 0 & 0 & 0 & -\lambda_2 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\lambda_1 & 0 & 0 & 0 & -\lambda_2 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\lambda_1 & 0 & 0 & 0 & -\lambda_2 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\lambda_1 & 0 & 0 & 0 & -\lambda_2 & 0 & 0 \end{bmatrix}. \quad (13)$$

Now 6×6 transpose matrix  $C^T$  can be represented by,

$$C^T = \begin{bmatrix} C_{11} & C_{21} & C_{31} & C_{41} & C_{51} & C_{61} \\ C_{12} & C_{22} & C_{32} & C_{42} & C_{52} & C_{62} \\ C_{13} & C_{23} & C_{33} & C_{43} & C_{53} & C_{63} \\ C_{14} & C_{24} & C_{34} & C_{44} & C_{54} & C_{64} \\ C_{15} & C_{25} & C_{35} & C_{45} & C_{55} & C_{65} \\ C_{16} & C_{26} & C_{36} & C_{46} & C_{56} & C_{66} \end{bmatrix}. \quad (14)$$

Using (14) we can write (11) as a 6×10 Jacobian matrix [Mohajan & Mohajan, 2022b];

$$J_G = -\frac{1}{|J|} \begin{bmatrix} -b_1 C_{11} - \lambda_1 C_{31} & -b_2 C_{11} - \lambda_1 C_{41} & -b_3 C_{11} - \lambda_1 C_{51} & -b_4 C_{11} - \lambda_1 C_{61} & -b_1 C_{21} - \lambda_2 C_{31} \\ -b_1 C_{12} - \lambda_1 C_{32} & -b_2 C_{12} - \lambda_1 C_{42} & -b_3 C_{12} - \lambda_1 C_{52} & -b_4 C_{12} - \lambda_1 C_{62} & -b_1 C_{22} - \lambda_2 C_{32} \\ -b_1 C_{13} - \lambda_1 C_{33} & -b_2 C_{13} - \lambda_1 C_{43} & -b_3 C_{13} - \lambda_1 C_{53} & -b_4 C_{13} - \lambda_1 C_{63} & -b_1 C_{23} - \lambda_2 C_{33} \\ -b_1 C_{14} - \lambda_1 C_{34} & -b_2 C_{14} - \lambda_1 C_{44} & -b_3 C_{14} - \lambda_1 C_{54} & -b_4 C_{14} - \lambda_1 C_{64} & -b_1 C_{24} - \lambda_2 C_{34} \\ -b_1 C_{15} - \lambda_1 C_{35} & -b_2 C_{15} - \lambda_1 C_{45} & -b_3 C_{15} - \lambda_1 C_{55} & -b_4 C_{15} - \lambda_1 C_{65} & -b_1 C_{25} - \lambda_2 C_{35} \\ -b_1 C_{16} - \lambda_1 C_{36} & -b_2 C_{16} - \lambda_1 C_{46} & -b_3 C_{16} - \lambda_1 C_{56} & -b_4 C_{16} - \lambda_1 C_{66} & -b_1 C_{26} - \lambda_2 C_{36} \end{bmatrix}$$



$$\begin{bmatrix}
 -b_2C_{21} - \lambda_2C_{41} & -b_3C_{21} - \lambda_2C_{51} & -b_4C_{21} - \lambda_2C_{61} & C_{11} & C_{21} \\
 -b_2C_{22} - \lambda_2C_{42} & -b_3C_{32} - \lambda_2C_{52} & -b_4C_{22} - \lambda_2C_{62} & C_{12} & C_{22} \\
 -b_2C_{23} - \lambda_2C_{43} & -b_3C_{33} - \lambda_2C_{53} & -b_4C_{23} - \lambda_2C_{63} & C_{13} & C_{23} \\
 -b_2C_{24} - \lambda_2C_{44} & -b_3C_{34} - \lambda_2C_{54} & -b_4C_{24} - \lambda_2C_{64} & C_{14} & C_{24} \\
 -b_2C_{25} - \lambda_2C_{45} & -b_3C_{35} - \lambda_2C_{55} & -b_4C_{25} - \lambda_2C_{65} & C_{15} & C_{25} \\
 -b_2C_{26} - \lambda_2C_{46} & -b_3C_{36} - \lambda_2C_{56} & -b_4C_{26} - \lambda_2C_{66} & C_{16} & C_{26}
 \end{bmatrix} \cdot \quad (15)$$

Now we analyze the nature of Lagrange multiplier  $\lambda_1$  when total budget  $B$  of the consumers increases. Taking  $T_{19}$ , (i.e., term of 1<sup>st</sup> row and 9<sup>th</sup> column) from both sides of (15) we get [Islam et al., 2011; Mohajan & Mohajan, 2022e],

$$\begin{aligned}
 \frac{\partial \lambda_1}{\partial B} &= -\frac{1}{|J|} [C_{11}] \\
 &= -\frac{1}{|J|} \text{Cofactor of } C_{11}
 \end{aligned}$$

$$= -\frac{1}{|J|} \begin{vmatrix}
 0 & -K_1 & -K_2 & -K_3 & -K_4 \\
 -K_1 & U_{11} & U_{12} & U_{13} & U_{14} \\
 -K_2 & U_{21} & U_{22} & U_{23} & U_{24} \\
 -K_3 & U_{31} & U_{32} & U_{33} & U_{34} \\
 -K_4 & U_{41} & U_{42} & U_{43} & U_{44}
 \end{vmatrix}$$



$$\begin{aligned}
 &= -\frac{1}{|J|} \left\{ K_1 \begin{vmatrix} -K_1 & U_{12} & U_{13} & U_{14} \\ -K_2 & U_{22} & U_{23} & U_{24} \\ -K_3 & U_{32} & U_{33} & U_{34} \\ -K_4 & U_{42} & U_{43} & U_{44} \end{vmatrix} - K_2 \begin{vmatrix} -K_1 & U_{11} & U_{13} & U_{14} \\ -K_2 & U_{21} & U_{23} & U_{24} \\ -K_3 & U_{31} & U_{33} & U_{34} \\ -K_4 & U_{41} & U_{43} & U_{44} \end{vmatrix} \right. \\
 &+ K_3 \left. \begin{vmatrix} -K_1 & U_{11} & U_{12} & U_{14} \\ -K_2 & U_{21} & U_{22} & U_{24} \\ -K_3 & U_{31} & U_{32} & U_{34} \\ -K_4 & U_{41} & U_{42} & U_{44} \end{vmatrix} - K_4 \begin{vmatrix} -K_1 & U_{11} & U_{12} & U_{13} \\ -K_2 & U_{21} & U_{22} & U_{23} \\ -K_3 & U_{31} & U_{32} & U_{33} \\ -K_4 & U_{41} & U_{42} & U_{43} \end{vmatrix} \right\} \\
 &= -\frac{1}{|J|} \left[ K_1 \left\{ \begin{vmatrix} U_{22} & U_{23} & U_{24} \\ -K_1 U_{32} & U_{33} & U_{34} \\ U_{42} & U_{43} & U_{44} \end{vmatrix} - U_{12} \begin{vmatrix} -K_2 & U_{23} & U_{24} \\ -K_3 & U_{33} & U_{34} \\ -K_4 & U_{43} & U_{44} \end{vmatrix} + U_{13} \begin{vmatrix} -K_2 & U_{22} & U_{24} \\ -K_3 & U_{32} & U_{34} \\ -K_4 & U_{42} & U_{44} \end{vmatrix} \right. \right. \\
 &- U_{14} \left. \begin{vmatrix} -K_2 & U_{22} & U_{23} \\ -K_3 & U_{32} & U_{33} \\ -K_4 & U_{42} & U_{43} \end{vmatrix} \right\} - K_2 \left\{ \begin{vmatrix} U_{21} & U_{23} & U_{24} \\ -K_1 U_{31} & U_{33} & U_{34} \\ U_{41} & U_{43} & U_{44} \end{vmatrix} + U_{13} \begin{vmatrix} -K_2 & U_{21} & U_{24} \\ -K_3 & U_{31} & U_{34} \\ -K_4 & U_{41} & U_{44} \end{vmatrix} \right. \\
 &- U_{14} \left. \begin{vmatrix} -K_2 & U_{21} & U_{23} \\ -K_3 & U_{31} & U_{33} \\ -K_4 & U_{41} & U_{43} \end{vmatrix} \right\} + K_3 \left\{ \begin{vmatrix} U_{21} & U_{22} & U_{24} \\ -K_1 U_{31} & U_{32} & U_{34} \\ U_{41} & U_{42} & U_{44} \end{vmatrix} + U_{12} \begin{vmatrix} -K_2 & U_{21} & U_{24} \\ -K_3 & U_{31} & U_{34} \\ -K_4 & U_{41} & U_{44} \end{vmatrix} \right. \\
 &- U_{14} \left. \begin{vmatrix} -K_2 & U_{21} & U_{22} \\ -K_3 & U_{31} & U_{32} \\ -K_4 & U_{41} & U_{42} \end{vmatrix} \right\} - K_4 \left\{ \begin{vmatrix} U_{21} & U_{22} & U_{23} \\ -K_1 U_{31} & U_{32} & U_{33} \\ U_{41} & U_{42} & U_{43} \end{vmatrix} + U_{12} \begin{vmatrix} -K_2 & U_{21} & U_{23} \\ -K_3 & U_{31} & U_{33} \\ -K_4 & U_{41} & U_{43} \end{vmatrix} \right. \\
 &- U_{13} \left. \begin{vmatrix} -K_2 & U_{21} & U_{22} \\ -K_3 & U_{31} & U_{32} \\ -K_4 & U_{41} & U_{42} \end{vmatrix} \right\} \left. \right]
 \end{aligned}$$



$$\begin{aligned}
 &= -\frac{1}{|J|} \left\{ -K_1^2 U_{23} U_{24} U_{34} \quad -K_1^2 U_{23} U_{24} U_{34} \quad -K_1 K_2 U_{12} U_{34}^2 \quad +K_1 K_4 U_{12} U_{23} U_{34} \right. \\
 &+ K_1 K_3 U_{12} U_{24} U_{34} \quad +K_1 K_2 U_{13} U_{24} U_{34} \quad -K_1 K_3 U_{13} U_{24}^2 \quad +K_1 K_4 U_{13} U_{23} U_{24} \\
 &+ K_1 K_2 U_{14} U_{23} U_{34} \quad -K_1 K_3 U_{14} U_{23} U_{24} \quad -K_1 K_4 U_{14} U_{23}^2 \quad -K_1 K_2 U_{12} U_{14} U_{34} \\
 &+ K_1 K_2 U_{14} U_{23} U_{34} \quad +K_1 K_2 U_{13} U_{24} U_{34} \quad -K_2^2 U_{13} U_{14} U_{34} \quad +K_2 K_4 U_{12} U_{13} U_{34} \\
 &+ K_2 K_3 U_{13} U_{14} U_{24} \quad -K_2 K_4 U_{24} U_{13}^2 \quad -K_2^2 U_{13} U_{14} U_{34} \quad +K_2 K_3 U_{12} U_{14} U_{34} \\
 &-K_2 K_3 U_{23} U_{14}^2 \quad +K_2 K_4 U_{13} U_{14} U_{23} \quad +K_1 K_3 U_{12} U_{24} U_{34} \quad -K_1 K_3 U_{13} U_{24}^2 \\
 &+ K_1 K_3 U_{14} U_{23} U_{24} \quad +K_2 K_3 U_{12} U_{14} U_{34} \quad -K_3 K_4 U_{34} U_{12}^2 \quad -K_3^2 U_{12} U_{14} U_{24} \\
 &+ K_3 K_4 U_{12} U_{13} U_{24} \quad +K_1 K_4 U_{12} U_{23} U_{34} \quad +K_1 K_4 U_{13} U_{23} U_{24} \quad -K_1 K_4 U_{14} U_{23}^2 \\
 &+ K_2 K_4 U_{12} U_{13} U_{34} -K_3 K_4 U_{34} U_{12}^2 \\
 &+ K_3 K_4 U_{12} U_{14} U_{23} \quad -K_4^2 U_{12} U_{13} U_{23} \quad -K_2 K_4 U_{24} U_{13}^2 \quad +K_2 K_4 U_{13} U_{14} U_{23} \\
 &+ K_3 K_4 U_{12} U_{13} U_{24} \\
 &\left. -K_4^2 U_{12} U_{13} U_{23} \right\} \\
 &= -\frac{1}{|J|} \left\{ -2k_1^2 b_1^3 b_2 b_3 b_4 \quad -k_1 k_2 b_1^2 b_2^2 b_3 b_4 \quad +k_1 k_4 b_1^2 b_2 b_3 b_4^2 \quad +k_1 k_3 b_1^2 b_2 b_3^2 b_4 \right. \\
 &-k_1 k_2 b_1^2 b_2^2 b_3 b_4 \quad -k_1 k_3 b_1^2 b_2 b_3^2 b_4 \quad +k_1 k_4 b_1^2 b_2 b_3 b_4^2 \quad +k_1 k_2 b_1^2 b_2^2 b_3 b_4 \quad -k_1 k_3 b_1^2 b_2 b_3^2 b_4 \\
 &-k_1 k_4 b_1^2 b_2 b_3 b_4^2 \quad -k_1 k_2 b_1 b_2^2 b_3^2 b_4 \quad +k_1 k_2 b_1^2 b_2^2 b_3 b_4 \quad +k_1 k_2 b_1^2 b_2^2 b_3 b_4 \quad -k_2^2 b_1 b_2^3 b_3 b_4 \\
 &+k_2 k_4 b_1 b_2^2 b_3 b_4^2 \quad +k_2 k_3 b_1 b_2^2 b_3^2 b_4 \quad -k_2 k_4 b_1 b_2^2 b_3 b_4^2 \quad -k_2^2 b_1 b_2^3 b_3 b_4 \quad +k_2 k_3 b_1 b_2^2 b_3^2 b_4 \\
 &-k_2 k_3 b_1 b_2^2 b_3^2 b_4 \quad +k_2 k_4 b_1 b_2^2 b_3 b_4^2 \quad +k_1 k_3 b_1^2 b_2 b_3^2 b_4 \quad -k_1 k_3 b_1^2 b_2 b_3^2 b_4 \quad +k_1 k_3 b_1^2 b_2 b_3^2 b_4 \\
 &+k_2 k_3 b_1 b_2^2 b_3^2 b_4 \quad -k_3 k_4 b_1 b_2 b_3^2 b_4^2 \quad -k_3^2 b_1 b_2 b_3^3 b_4 \quad +k_3 k_4 b_1 b_2 b_3^2 b_4^2 \quad +k_1 k_4 b_1^2 b_2 b_3 b_4^2 \\
 &+k_1 k_4 b_1^2 b_2 b_3 b_4^2 \quad -k_1 k_4 b_1^2 b_2 b_3 b_4^2 \quad +k_2 k_4 b_1 b_2^2 b_3 b_4^2 \quad -k_3 k_4 b_1 b_2 b_3^2 b_4^2 \quad +k_3 k_4 b_1 b_2 b_3^2 b_4^2 \\
 &\left. -k_4^2 b_1 b_2 b_3 b_4^3 \quad -k_2 k_4 b_1 b_2^2 b_3 b_4^2 \quad +k_2 k_4 b_1 b_2^2 b_3 b_4^2 \quad +k_3 k_4 b_1 b_2 b_3^2 b_4^2 \quad -k_4^2 b_1 b_2 b_3 b_4^3 \right\}
 \end{aligned}$$

$$\begin{aligned} \frac{\partial \lambda_1}{\partial B} = & -\frac{1}{|J|} \left\{ -2k_1^2 b_1^3 b_2 b_3 b_4 \quad -2k_2^2 b_1 b_2^3 b_3 b_4 \quad -k_3^2 b_1 b_2 b_3^3 b_4 \quad -2k_4^2 b_1 b_2 b_3 b_4^3 \right. \\ & + 2k_1 k_4 b_1^2 b_2 b_3 b_4^2 + 2k_2 k_3 b_1 b_2^2 b_3^2 b_4 \\ & \left. + 2k_2 k_4 b_1 b_2^2 b_3 b_4^2 + k_3 k_4 b_1 b_2 b_3^2 b_4^2 \right\}. \end{aligned} \quad (16)$$

Using  $b_1 = b_2 = b_3 = b_4 = 1$  in (16) we get,

$$\frac{\partial \lambda_1}{\partial B} = -\frac{1}{|J|} \left\{ -2k_1^2 - 2k_2^2 - k_3^2 - 2k_4^2 + 2k_1 k_4 + 2k_2 k_3 + 2k_2 k_4 + 2k_3 k_4 \right\}. \quad (17)$$

Using  $k_3 = k_1$  and  $k_4 = k_2$  in (17) we get,

$$\frac{\partial \lambda_1}{\partial B} = (k_1 - k_2)(3k_1 - 2k_2). \quad (18)$$

If  $k_1 < \frac{2}{3}k_2$  or  $k_1 > k_2$  in (18) we get,

$$\frac{\partial \lambda_1}{\partial B} > 0. \quad (19)$$

Inequality (19) indicates that if the total budget of the consumers' increases, the level of marginal utility will also increase. Therefore, in this situation the consumers will collect the coupons such that,  $k_1 > k_2$  or  $k_1 < \frac{2}{3}k_2$ . Depending on the consumers' demand, the organization should take attempts to increase the production level.

If  $\frac{2}{3}k_2 < k_1 < k_2$  in (18) we get,

$$\frac{\partial \lambda_1}{\partial B} < 0. \quad (20)$$

Inequality (20) indicates that if the total budget of the consumers' increases, the level of marginal utility will decrease. Therefore, in this situation the consumers will collect the coupons such that,  $\frac{2}{3}k_2 < k_1 < k_2$ . Depending on the consumers' demand, the organization should take attempts to decrease the production level.

In this study we observe that,  $\frac{\partial \lambda_1}{\partial B} \neq 0$ . Therefore, from (18) we see that,

$k_1 \neq k_2$  and  $k_1 \neq \frac{2}{3}k_2$ ; consequently, also  $k_3 \neq k_4$  and  $k_3 \neq \frac{2}{3}k_4$  in this model.

Now we analyze the nature of Lagrange multiplier  $\lambda_2$  when total budget  $B$  of the consumers increases. Taking  $T_{29}$ , (i.e., term of 2<sup>nd</sup> row and 9<sup>th</sup> column) from both sides of (15) we get [Islam et al., 2010; Mohajan & Mohajan, 2022e],

$$\begin{aligned} \frac{\partial \lambda_2}{\partial B} &= -\frac{1}{|J|} [C_{12}] \\ &= -\frac{1}{|J|} \text{Cofactor of } C_{12} \\ &= \frac{1}{|J|} \begin{vmatrix} 0 & -K_1 & -K_2 & -K_3 & -K_4 \\ -B_1 & U_{11} & U_{12} & U_{13} & U_{14} \\ -B_2 & U_{21} & U_{22} & U_{23} & U_{24} \\ -B_3 & U_{31} & U_{32} & U_{33} & U_{34} \\ -B_4 & U_{41} & U_{42} & U_{43} & U_{44} \end{vmatrix} \\ &= \frac{1}{|J|} \left\{ K_1 \begin{vmatrix} -B_1 & U_{12} & U_{13} & U_{14} \\ -B_2 & U_{22} & U_{23} & U_{24} \\ -B_3 & U_{32} & U_{33} & U_{34} \\ -B_4 & U_{42} & U_{43} & U_{44} \end{vmatrix} - K_2 \begin{vmatrix} -B_1 & U_{11} & U_{13} & U_{14} \\ -B_2 & U_{21} & U_{23} & U_{24} \\ -B_3 & U_{31} & U_{33} & U_{34} \\ -B_4 & U_{41} & U_{43} & U_{44} \end{vmatrix} \right. \\ &\quad \left. + K_3 \begin{vmatrix} -B_1 & U_{11} & U_{12} & U_{14} \\ -B_2 & U_{21} & U_{22} & U_{24} \\ -B_3 & U_{31} & U_{32} & U_{34} \\ -B_4 & U_{41} & U_{42} & U_{44} \end{vmatrix} - K_4 \begin{vmatrix} -B_1 & U_{11} & U_{12} & U_{13} \\ -B_2 & U_{21} & U_{22} & U_{23} \\ -B_3 & U_{31} & U_{32} & U_{33} \\ -B_4 & U_{41} & U_{42} & U_{43} \end{vmatrix} \right\} \end{aligned}$$



$$\begin{aligned}
 &= \frac{1}{|J|} \left[ K_1 \left\{ -B_1 \begin{vmatrix} U_{22} & U_{23} & U_{24} \\ U_{32} & U_{33} & U_{34} \\ U_{42} & U_{43} & U_{44} \end{vmatrix} - U_{12} \begin{vmatrix} -B_2 & U_{23} & U_{24} \\ -B_3 & U_{33} & U_{34} \\ -B_4 & U_{43} & U_{44} \end{vmatrix} + U_{13} \begin{vmatrix} -B_2 & U_{22} & U_{24} \\ -B_3 & U_{32} & U_{34} \\ -B_4 & U_{42} & U_{44} \end{vmatrix} \right. \right. \\
 &\quad \left. \left. - U_{14} \begin{vmatrix} -B_2 & U_{22} & U_{23} \\ -B_3 & U_{32} & U_{33} \\ -B_4 & U_{42} & U_{43} \end{vmatrix} \right\} \right. \\
 &\quad \left. - K_2 \left\{ -B_1 \begin{vmatrix} U_{21} & U_{23} & U_{24} \\ U_{31} & U_{33} & U_{34} \\ U_{41} & U_{43} & U_{44} \end{vmatrix} + U_{13} \begin{vmatrix} -B_2 & U_{21} & U_{24} \\ -B_3 & U_{31} & U_{34} \\ -B_4 & U_{41} & U_{44} \end{vmatrix} - U_{14} \begin{vmatrix} -B_2 & U_{21} & U_{23} \\ -B_3 & U_{31} & U_{33} \\ -B_4 & U_{41} & U_{43} \end{vmatrix} \right\} \right. \\
 &\quad \left. + K_3 \left\{ -B_1 \begin{vmatrix} U_{21} & U_{22} & U_{24} \\ U_{31} & U_{32} & U_{34} \\ U_{41} & U_{42} & U_{44} \end{vmatrix} + U_{12} \begin{vmatrix} -B_2 & U_{21} & U_{24} \\ -B_3 & U_{31} & U_{34} \\ -B_4 & U_{41} & U_{44} \end{vmatrix} - U_{14} \begin{vmatrix} -B_2 & U_{21} & U_{22} \\ -B_3 & U_{31} & U_{32} \\ -B_4 & U_{41} & U_{42} \end{vmatrix} \right\} \right. \\
 &\quad \left. - K_4 \left\{ -B_1 \begin{vmatrix} U_{21} & U_{22} & U_{23} \\ U_{31} & U_{32} & U_{33} \\ U_{41} & U_{42} & U_{43} \end{vmatrix} + U_{12} \begin{vmatrix} -B_2 & U_{21} & U_{23} \\ -B_3 & U_{31} & U_{33} \\ -B_4 & U_{41} & U_{43} \end{vmatrix} - U_{13} \begin{vmatrix} -B_2 & U_{21} & U_{22} \\ -B_3 & U_{31} & U_{32} \\ -B_4 & U_{41} & U_{42} \end{vmatrix} \right\} \right] \\
 &= \frac{1}{|J|} \left\{ -2B_1K_1U_{23}U_{24}U_{34} - B_2K_1U_{12}U_{34}^2 + B_4K_1U_{12}U_{23}U_{34} + B_3K_1U_{12}U_{24}U_{34} \right. \\
 &\quad + B_2K_1U_{13}U_{24}U_{34} - B_3K_1U_{13}U_{24}^2 + B_4K_1U_{13}U_{23}U_{24} + B_2K_1U_{14}U_{23}U_{34} \\
 &\quad + B_3K_1U_{14}U_{23}U_{24} - B_4K_1U_{14}U_{23}^2 - B_1K_2U_{12}U_{34}^2 + B_1K_2U_{14}U_{23}U_{34} \\
 &\quad + B_1K_2U_{13}U_{24}U_{34} - B_2K_2U_{13}U_{14}U_{34} - B_4K_2U_{12}U_{13}U_{34} + B_3K_2U_{13}U_{14}U_{24} \\
 &\quad - B_4K_2U_{13}^2U_{24} - B_2K_2U_{13}U_{14}U_{34} + B_3K_2U_{12}U_{14}U_{34} - B_3K_2U_{14}^2U_{23} \\
 &\quad + B_4K_2U_{13}U_{14}U_{23} - B_1K_3U_{12}U_{24}U_{34} - B_1K_3U_{13}U_{24}^2 + B_1K_3U_{14}U_{23}U_{24} \\
 &\quad \left. + B_2K_3U_{12}U_{14}U_{34} - B_4K_3U_{12}^2U_{34} - B_3K_3U_{12}U_{14}U_{24} + B_4K_3U_{12}U_{13}U_{24} \right\}
 \end{aligned}$$

$$\begin{aligned}
 & + B_1 K_4 U_{12} U_{23} U_{34} + B_1 K_4 U_{13} U_{23} U_{24} - B_1 K_4 U_{14} U_{23}^2 + B_2 K_4 U_{12} U_{13} U_{34} \\
 & - B_3 K_4 U_{12}^2 U_{34} + B_3 K_4 U_{12} U_{14} U_{23} \\
 & - B_4 K_4 U_{12} U_{13} U_{23} - B_2 K_4 U_{13}^2 U_{24} + B_2 K_4 U_{13} U_{14} U_{23} + B_3 K_4 U_{12} U_{13} U_{24} \\
 & - B_4 K_4 U_{12} U_{13} U_{23} \}
 \end{aligned}$$

$$= -\frac{1}{|J|} \{ -2p_1 k_1 b_1^3 b_2 b_3 b_4 - p_2 k_1 b_1^2 b_2^2 b_3 b_4 + p_4 k_1 b_1^2 b_2 b_3 b_4^2 + p_3 k_1 b_1^2 b_2 b_3^2 b_4$$

$$\begin{aligned}
 & + p_3 k_1 b_1^2 b_2^2 b_3 b_4 - p_3 k_1 b_1^2 b_2 b_3^2 b_4 + p_4 k_1 b_1^2 b_2 b_3 b_4^2 + p_2 k_1 b_1^2 b_2^2 b_3 b_4 + p_3 k_1 b_1^2 b_2 b_3^2 b_4 \\
 & - p_4 k_1 b_1^2 b_2 b_3 b_4^2 - p_1 k_2 b_1^2 b_2^2 b_3 b_4 + 2p_1 k_2 b_1^2 b_2^2 b_3 b_4 - p_2 k_2 b_1^2 b_3^2 b_4 - p_4 k_2 b_1^2 b_2^2 b_3 b_4^2 \\
 & + p_3 k_2 b_1 b_2^2 b_3^2 b_4 - p_4 k_2 b_1 b_2^2 b_3 b_4^2 - p_2 k_2 b_1 b_2^3 b_3 b_4 + p_3 k_2 b_1 b_2^2 b_3^2 b_4 - p_3 k_2 b_1 b_2^2 b_3^2 b_4 \\
 & + p_4 k_2 b_1 b_2^2 b_3 b_4^2 - p_1 k_3 b_1^2 b_2 b_3^2 b_4 - p_1 k_3 b_1^2 b_2 b_3^2 b_4 + p_2 k_3 b_1 b_2^2 b_3^2 b_4 \\
 & - p_4 k_3 b_1 b_2 b_3^2 b_4^2 - p_3 k_3 b_1 b_2 b_3^3 b_4 + p_4 k_3 b_1 b_2 b_3^2 b_4^2 + p_1 k_4 b_1^2 b_2 b_3 b_4^2 + p_1 k_4 b_1^2 b_2 b_3 b_4^2 \\
 & - p_1 k_4 b_1^2 b_2 b_3 b_4^2 + p_2 k_4 b_1 b_2^2 b_3 b_4^2 - p_3 k_4 b_1 b_2 b_3^2 b_4^2 + p_3 k_4 b_1 b_2 b_3^2 b_4^2 - p_4 k_4 b_1 b_2 b_3 b_4^3 \\
 & - p_2 k_4 b_1 b_2^2 b_3 b_4^2 + p_2 k_4 b_1 b_2^2 b_3 b_4^2 + p_3 k_4 b_1 b_2 b_3^2 b_4^2 - p_4 k_4 b_1 b_2 b_3 b_4^3 \}
 \end{aligned}$$

$$\frac{\partial \lambda_2}{\partial B} = -\frac{1}{|J|} \{ -2p_1 k_1 b_1^3 b_2 b_3 b_4 - 2p_2 k_2 b_1 b_2^3 b_3 b_4 - p_3 k_3 b_1 b_2 b_3^3 b_4 - 2p_4 k_4 b_1 b_2 b_3 b_4^3$$

$$\begin{aligned}
 & + (p_4 k_1 + p_1 k_4) b_1^2 b_2 b_3 b_4^2 + p_1 k_2 b_1^2 b_2^2 b_3 b_4 + p_3 k_1 b_1^2 b_2 b_3^2 b_4 + (p_3 k_2 + p_2 k_3) b_1 b_2^2 b_3^2 b_4 \\
 & + p_3 k_4 b_1 b_2 b_3^2 b_4^2 \}. \tag{21}
 \end{aligned}$$

$$\frac{\partial \lambda_2}{\partial B} = -\frac{b_1 b_2 b_3 b_4}{|J|} \{ -2p_1 k_1 b_1^2 - 2p_2 k_2 b_2^2 - p_3 k_3 b_3^2 - 2p_4 k_4 b_4^2 + (p_4 k_1 + p_1 k_4) b_1 b_4$$

$$\begin{aligned}
 & + p_1 k_2 b_1 b_2 + p_3 k_1 b_1 b_3 \\
 & + (p_3 k_2 + p_2 k_3) b_2 b_3 + p_3 k_4 b_3 b_4 \}. \tag{22}
 \end{aligned}$$

Now we use  $p_3 = p_1$ , and  $p_4 = p_2$  where pair of prices are same, and  $k_3 = k_1$ , and  $k_4 = k_2$ , i.e., two types of coupon numbers are same,  $|J| = |H| = -2p_1 p_2 k_1 k_2$ .

Now we use  $b_3 = b_1$ , and  $b_4 = b_2$ , then (22) becomes;



$$\frac{\partial \lambda_2}{\partial B} = \frac{b_1^2 b_2^2}{2 p_1 p_2 k_1 k_2} \left\{ -2 p_1 k_1 b_1^2 - 4 p_2 k_2 b_2^2 + 2(p_2 k_1 + 2 p_1 k_2) b_1 b_2 \right\}. \quad (23)$$

We put  $b_1 = b_2 = 1$  then (23) becomes [Mohajan & Mohajan, 2022b];

$$\frac{\partial \lambda_2}{\partial B} = \frac{1}{2 p_1 p_2 k_1 k_2} \left\{ -2 p_1 k_1 - 4 p_2 k_2 + 2 p_2 k_1 + 4 p_1 k_2 \right\}. \quad (24)$$

Now we use,  $k_1 = k_2 = k$  in (24), and then we get,

$$\frac{\partial \lambda_2}{\partial B} = \frac{1}{p_1 p_2 k} (p_1 - p_2). \quad (25)$$

where  $p_1, p_2, k > 0$ . Now if  $p_1 > p_2$  in (25) we get,

$$\frac{\partial \lambda_2}{\partial B} > 0. \quad (26)$$

Inequality (26) indicates that if the total budget of the consumers' increases, the level of marginal utility will also increase. Therefore, in this situation the consumers will find that,  $p_1 > p_2$ , in the commodity market. The organization should take attempts to increase the production level, depending on the consumers' demand.

Now if  $p_1 < p_2$  in (25) we get,

$$\frac{\partial \lambda_2}{\partial B} < 0. \quad (27)$$

Inequality (27) indicates that if the total budget of the consumers' increases, the level of marginal utility will decrease. Therefore, in this situation the consumers will find that,  $p_1 < p_2$ , in the commodity market. The organization should take attempts to decrease the production level, depending on the consumers' demand.

From (25) we see that,  $\frac{\partial \lambda_2}{\partial B} \neq 0$ , so that,  $p_1 \neq p_2$ , i.e., the prices of two commodities  $b_1$  and  $b_2$  are not equal. It seems that these are different goods.

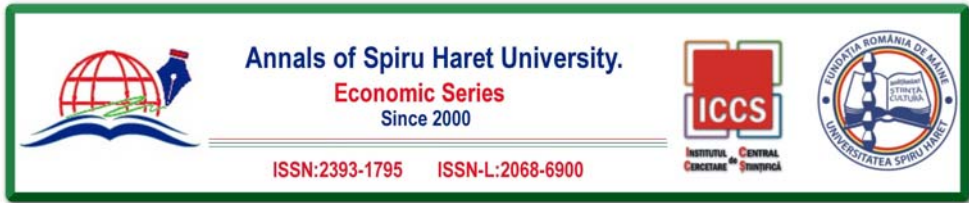
## 6. Conclusions

In this study we have tried to discuss sensitivity analysis between Lagrange multipliers and total budget during utility maximization investigation. We have applied four commodity variables and we have tried to run the mathematical calculations efficiently using two constraints: budget constraint and coupon constraint. In this study we have observed that the Lagrange multipliers are very useful both for the consumers and producers.

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## THE ROLE OF WORKPLACE FRIENDSHIP IN CULTURAL INTELLIGENCE AND QUALITY OF WORK-LIFE: A CROSS-SECTIONAL STUDY

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### Abstract

*The purpose of this study is to examine the effect of cultural intelligence (CI) and workplace friendship (WPF) on the quality of work-life (QWL) of individual workers and to examine whether WPF mediates the relationship between CI and QWL between employees of the same nationality, but of different ethnic groups working in government-owned organisations. A cross-sectional study was conducted among 161 employees using self-report measures. Data analysis was performed using two statistical procedures (the Harman single factor test and the correlation matrix) to assess the presence of a common-method variance (CMV) bias in the data collected for this study. Theoretical propositions and empirical observations offered plausible explanations for WPF's mediating role in the CI-QWL relationship. The present study confirms the reliability and, to some extent, the validity of the measures in a developing economy context. However, this study also builds empirical evidence that age and gender are fewer differentiating factors in employees' work attitudes and behaviour.*

**Keywords:** *cultural intelligence, workplace friendship, quality work-life, social capital theory, public organisations employees*

**JEL Classification:** J24, I30, M10

## Introduction

The humanistic perspective on workplace organising draws attention beyond the structural imperative to the need for employees' socio-psychological well-being to drive the organisation's effective functioning. Consequently, the humanistic organisation theorists' thesis, both in its founding scope and extensions, concerns employee quality of work-life (QWL). The QWL focusses on the value of human experience in the workplace. QWL describes the perception and experience of employees about their work environment, which involves their perception of physical and psychological well-being obtained from their work (Moda et al., 2021). As Singh (2011) presented, QWL emphasises the value of worker rights and industrial democracy, focussing on advancing organisational processes, such as coordination, communication, motivation, and personnel development.

The concept of QWL is not a new entrant in the literature on corporate behaviour. It has attracted much research interest (Alzamel et al., 2020; Perangin-Angin et al., 2020; Risla & Ithrees, 2018) substantially because people now spend a significant amount of their entire lives in work settings. Therefore, work organisations should contribute meaningfully to the whole life experience of employees. The exposition of how much proper work settings accomplish this need for the employee is mainly in QWL. QWL is becoming a phenomenon of empirical and practical interest, as the emerging body of knowledge has identified it with several positive attitudes and behaviours. For example, QWL positively influences organisational commitment, job satisfaction, employee innovation, job involvement, work engagement, and job performance (Alzamel et al., 2020; Perangin-Angin et al., 2020; Risla & Ithrees, 2018). Similarly, QWL has been broadly reported to be inversely associated with harmful employee work behaviour, such as intentions to leave (Alzamel et al., 2020). This necessarily maintained the long-existing need for empirical interest in QWL.

Workforce diversity refers to variations in the composition of employees based on personal and background factors. Contemporary work organisations are characterised by demographic diversity, including ethnic, cultural, and religious differences (Robbins et al., 2018). The fundamental disposition and situations that employees need to function effectively in demographically diverse work settings are cultural intelligence (CI) and workplace friendship (WPF). CI refers to the ability to succeed in complex cross-cultural environments through knowledge, cognition, motivation, and behaviours (Yari et al., 2020). CI improves individual



performance (Perangin-Angin et al., 2020; Risla and Ithrees, 2018) and gives a competitive advantage (Tu et al., 2020). Similarly, WPF is conceptualised as nonexclusive workplace relationships that involve mutual trust, commitment, reciprocal linking, and shared interests or values (Choi & Ko, 2020). WPF predicts job satisfaction (Yavuzkurt & Kıral, 2020), work motivation, well-being (Craig & Kuykendall, 2019), and work stress (Ratasuk, 2020) in an organisationally desirable direction.

These various CI and WPF outcomes influence how employees perceive and interpret their organisation's experience, principally informing QWL. They are essential measures of employee perceived and experienced QWL (Bora, 2017). The above indicates that the needs of CI and WPF in contemporary and culturally diverse work settings have implications for QWL. However, there is a lack of studies on the relationship between CI, WPF, and QWL. Some studies focus on how CI or WPF relates to a specific element, such as job satisfaction (Perangin-Angin et al., 2020; Risla & Ithrees, 2018) and organisational commitment (Risla & Ithrees, 2018) that formed QWL. In other words, the existing literature lacks studies that examine how CI or WPF relates to QWL as a composite. Studies examining QWL would provide results and knowledge that imply several other works' attitudes and behaviour components of QWL. Considering all of the above, the lack of studies that examined CI or WPF with QWL is a research gap that should be addressed.

Nigeria is a federation of six geopolitical zones of 36 states and a federal capital territory. The federation has more than 250 ethnic identities (Çancı & Odukoya, 2016; CIA, 2016). However, the number of ethnic groupings remains unknown (Osaghae & Suberu, 2005). The principle of "federal character" was enshrined into the 1999 constitution to accommodate the various states and the federations' varied cultures. The principle required the federal and the constituent states to ensure that their governing structures were not dominated by persons from a few states or ethnic or other sectional groups. The principle was designed to check inequality and marginalisation (Onimisi et al., 2018) and reflect the country's linguistic, religious, ethnic, and geographic diversity in all public service institutions. Implementing the federation principle in Delta State has led to a mixture of people from the four main ethnic groups (Igbo, Urhobo, Ijaw, and Itsekiri) within the state in all government-owned establishments. Therefore, this principle brings together employees of different cultural backgrounds. However, in the face of this reality in the public sector, the literature on CI tends substantially towards multinational



corporations (MNCs), expatriates, and privately owned enterprises (Afsar et al., 2020).

Conspicuous, cultural diversity is neither exclusive to MNCs nor privately owned organisations in new work organisations but is a reality in every organisation, including government-owned ones. The need for CI exists for everyone, including leaders and subordinates working in culturally diverse environments. However, existing studies on CI in work settings focus principally on the context of leadership (Nosratabadi et al., 2020; Rütth & Netzer, 2020). The only exception is Isfahani et al. (2013), which examined the effect of CI on employee performance among employees of national cultures. Taking this into account, the purpose of this study is to (1) examine how CI relates to QWL, (2) how WPF associates with QWL, and (3) whether WPF mediates the relationship between CI and QWL between employees of the same nationality, but of different ethnic groups working in government-owned organisations. This study would explain how an employee's ability to function effectively in situations typified by cultural diversity builds friendship and contributes to employee perception and attitude of the work environment and job contents.

## **Theoretical Foundation and Hypotheses**

### **Cultural intelligence and quality of work-life balance**

CI refers to getting used to and functioning successfully in diverse cultural environments (Lee & Hong, 2021). Culturally intelligent individuals can effectively interact and work with people of different cultures. They can function successfully in various cultural settings that could be national, ethnic, or organisational. It entails an individual's ability to gather, interpret, and act upon different cues to function effectively across different cultures or multicultural situations (Liao & Thomas, 2020). Like other forms of intelligence, such as emotional and social, CI is a valuable development aspect through education, training, and experience (Raver & Van Dyne, 2018). Earley and Ang (2003) introduced the concept to disciplines in social and management sciences by offering a model of four dimensions: metacognitive, cognitive, motivational, and behavioural, which is widely adopted in the literature (Cabral et al., 2020; Fan et al., 2020; Wujiabudula & Karatepe, 2020). However, more recently, Thomas et al. (2015) introduced a model of three facets (cultural knowledge, cross-cultural skills, and cultural metacognition) that was adopted in this study as it was theoretically based and, therefore, an improvement on Earley and Ang's (2003) model.

QWL has a history characterised by varied perspectives. QWL has been conceptualised as industrial democracy with increased employee participation in the decision-making process; as an improvement in the psychological aspects of work that improves performance; as secure, healthy, and friendly working conditions; and as an improvement in social relationships at work through autonomous work (Klein et al., 2019). However, QWL refers to how members of a work organisation can satisfy critical personal needs through their organisation's experience (Daniel, 2019). It concerns the quality of the relationship between the worker and the working environment (Adikoeswanto et al., 2020). Even within the approach adopted above, several models have varied factors in QWL (Bora, 2017). However, Van Laar et al.'s (2007) six-factor model comprises job and career satisfaction, general well-being, stress at work, control at work, home-work interface, and working conditions are adopted in this study. It is a synthesis and improvement of several models and measures (Baba & Jamal, 1991; Cole et al., 2005; Mirvis & Lawler III, 1984; Warr et al., 1979). QWL that preceded it.

Several circumstances predispose CI to QWL. For example, studies have found a link between CI and job satisfaction (Takdir et al., 2020) and employee well-being (Chou, 2020). occupational stress (Stokes, 2013), organisational commitment (Risla & Ithrees, 2018), job performance (Afsar et al., 2020), and work-family conflict (He et al., 2019). All these consequences of CI are measures of QWL (Bora, 2017). Several studies have reported that CI positively links cultural adaptability and adjustment (Hu et al., 2020; Naushad & Majid, 2020; Setti et al., 2020). In addition to work adjustment (Malek & Budhwar, 2013) and adaptive selling behaviours (Charoensukmongkol, 2020), more people spend their entire lives in work settings. Employees who can adapt and adapt to various cultures in the organisation are more likely to be satisfied with their job and balance work-life, experience better workplace relationships, and less career stress (Deniz et al., 2015; Giorgi et al., 2020; Karatepe & Karadas, 2016; Tsen & Do, 2018). These outcomes of cultural adaptation, adjustment, and work adaptation are determinants of QWL (Bora, 2017). More so since CI improves individual performance (Afsar et al., 2020; Fan et al., 2020; Hu et al., 2019; Naushad & Majid, 2020; Takdir et al., 2020). Therefore, it is hypothesised that

H<sub>1</sub>. Cultural intelligence positively predicts the quality of work-life balance

### **Workplace friendship and the quality of work-life**

A workplace friendship is an interpersonal relationship that involves mutual commitment, trust, shared values, and interest between individuals at work beyond

mere acquaintanceship but does not include romance (Eriş, 2020; Xiao et al., 2020). The WPF influences the quality of information employees should receive from their workplace, and the information that is available affects the perceived QWL. Nielsen et al. (2000) conceptualised WPF as a dual-dimensional construct of prevalence and opportunity. WPF indicates recognition and social support for the employee, which are elements of a workplace environment that substantially influence perceived QWL. Similarly, studies show that WPF creates a work environment that could influence in a desirable direction many of the components of QWL. The components of QWL such as job satisfaction, work motivation, work stress, insecurity, respect, and trust (Bora, 2017; Sari et al., 2019), well-being (Craig & Kuykendall, 2019), and organisational culture (Bilgin & Kiral, 2019) are influenced by WPF. Similarly, WPF gives social support, and QWL is influenced by the employees' social support from co-workers and the organisation. Based on the nomological network of WPF, it is hypothesised that:

H2: Workplace friendship positively predicts the quality of work-life balance.

### **Workplace friendship as a mediator in the CI and QWL relationship**

Theoretical propositions and empirical observations offered plausible explanations for the mediating role of WPF in the CI and QWL relationship. Social capital theory underpins the proposed mediating role of WPF in the relationship between CI and QWL. The social capital theory proposes that social relationships are resources that can lead to the development and accumulation of human capital (Machalek & Martin, 2015). The basic assumption of the social capital theory is that a person's family, friends, and associates constitute an essential asset that can be turned into capital when needed, leveraged for capital gain, or enjoyed purely for the human interaction it affords (Nanton & Alfred, 2009).

CI enhances exchange and cooperation and builds and bridges connections, creating a friendship network. As Cabral et al. (2020) observed, CI was a significant impetus for external networking behaviour. Therefore, a clear outcome of the CI is social capital, which is defined as the sum of actual or potential resources embedded within, available through, and derived from a network of relationships, associated norms, and trust possessed by an individual that facilitates coordination and cooperation for mutual benefit (Lyu & Ji, 2020; Nahapiet & Ghoshal, 1998). CI helps socialise or make friends, including the positive outcomes associated with the network. Moreover, social capital creates an environment that aligns positively with QWL. Ko (2021) reported that organisational social capital relates to organisational commitment and subjective well-being. The findings

implicate WPF as a potential mediator in the CI and QWL links. For example, CI and WPF are related to job satisfaction, employee well-being, and organisational commitment (Barakat et al., 2015; Craig & Kuykendall, 2019; Rislă & Ithrees, 2018; Yavuzkurt & Kırıl, 2020). All these outcomes are aspects of QWL. Since CI breeds cooperation on which WPF is built, it is most likely that the impact of CI on QWL will pass through WPF. The thesis is that CI creates friendship and, through some characteristics of friendship (e.g., cooperation), impacts the components of QWL. It is hypothesised that

H3: Friendship in the workplace mediates the relationship between CI and QWL.

## Research Methodology

### Sample and design

Participants were sampled from four ethnic groups (Igbo, Urhobo, Ijaw, and Itsekiri) in Delta State, Nigeria. The sample consists of employees of public organisations. Every participant works and resides in a neighbourhood not of their ethnicity. Placing each participant in an alien cultural environment creates a greater likelihood that existing employment relationships are more of friendship than cultural affiliation. The total sample, 161, comprises 40 Igbos, 51 Urhobos, 38 Ijaws, and 34 Itsekeris. Furthermore, 39% were women, 61% were men, 71% were married, 29% were unmarried, and the mean age was 38.30 (SD = 9.87). The research was essentially exploratory and was conducted with a non-experimental design. Sixty-one per cent of the participants hold a first degree or equivalent certificate, 12% hold a postgraduate degree certificate, and 27% hold certificates lower than a first degree but not below a secondary school leaving certificate. Thus, participants are literate, which validates adopting a self-report measure. The sample size met the maximum sample-to-item ratio (5–1) and sample-to-variable ratio (20-to-1), which is widely recommended (Memon et al., 2020).

A convenience sampling technique was used as participants worked in several public organisations within the location of the study. Verbal approval was obtained from the management of the various organisations where the participants work. With the help of the organisations' administrative staff, the research questionnaires were distributed to the participants at their workplaces. Two hundred and one questionnaires were distributed; 174 completed questionnaires were received in three weeks. On physical examination of the returned questionnaires, it was observed that eight copies were not filled appropriately. Therefore, data analysis was performed on the responses of 161 participants. Surveys and non-random

samples are standard features in related studies (Eriş, 2020; Memon et al., 2020). Preliminary data analysis used descriptive statistical procedures that included central tendency and Pearson's moment correlation. Regression analysis (complemented with the PROCESS tool for SPSS (Field, 2018; Hayes, 2018) was used to test hypotheses, as it is used substantially in related studies (Cabral et al., 2020; He et al., 2019). Regression is a parametric statistical test; therefore, the design and preliminary data analysis observed several assumptions associated with its usage. For example, the collected data were independent of each other, which met the separate response requirement. The adopted Likert scale format met the demand for interval scaling, and scatter plots on the data revealed that the variables are linearly related.

### Measures

A 10-item scale developed by Thomas et al. (2015) was used to measure CI. The scale has three dimensions that cover knowledge (2 items), skill (5 items), and metacognitive (3 items). The scale development followed best practises as it is based on theory. It is a refinement of the scales based on Earley and Ang's (2003) four-dimensional model of CI that dominates the literature. Nielsen et al.'s (2000) 12-item scale was adopted for WPF. It has two dimensions: friendship opportunity (6 items) and friendship prevalence (6 items). It appears to be the most widely adopted measure of WPF in the literature. The measure of the quality of work-life related to work was adopted (Easton & Van Laar, 2018) was adopted. It is a 23-item scale of six dimensions that cover job and career satisfaction, general well-being, work stress, work control, home-work interface, and work conditions. The scale has received wide acceptance, as it has been translated and adapted into many languages. The three adopted scales have received satisfactory psychometric properties from their authors and several other users (Bilgin & Kiral, 2019; Dwyer, 2020; Easton & Van Laar, 2018). A five-point Likert scale format ranging from 5-strongly agree, 4-agree, 3-undecided, 2-disagree, and 1-strongly disagree was adopted to generate enough response variability, which gives statistical output validity. All study variables were analysed as one-dimensional constructs due to the few items associated with the dimensions of each CI and QWL scale and evidence of the high association between the dimensions of CI and WPF. Specifically, Barakat et al. (2015) recommended using the latent overall CI measure or one or two CI components. In developing the CI measure (Barakat et al., 2015). Thomas et al. (2015) conceptualised the CI as a single construct with three facets as compensatory.

### **Common-method variance**

Using self-report measures in data collection led to incorporating several procedures into this study design to control common-method variance (CMV). The procedures include (1) having the various items comprising CI, WPF, and QWL presented in alternate order on the research questionnaire. This arrangement prevents similar thoughts from flowing from one item to the other. (2) The participants were ensured of their anonymity and confidentiality in the questionnaire cover letter. It was aimed to reduce evaluation apprehension and improve honesty in response (Cabral et al., 2020).

### **Control variables**

Gender (men = 0, women = 1) and age (number of years reported by the participants) were introduced into the data analysis. Theories acknowledge that these demographics influence behaviour in social settings. Socio-emotional selectivity theory (Cubrich & Petruzzelli, 2020) proposes that age-related motivational shifts change how people interact. In addition, what they expected from their environment offered justification for age as a control variable in this study. Sociocultural theory (Eagly & Wood, 2012) and cognitive and social learning (Bussey & Bandura, 1999) also justified testing age and gender control variables in CI and WPF's relationship with QWL. Age and sex were also included as control variables in several related studies (Cabral et al., 2020; Ratasuk, 2020).

## **Results**

### **Reliability and Validity Analyses**

Two statistical procedures (the Harman single factor test and the correlation matrix) were used as diagnostic tools to assess the presence of CMV bias in the data collected for this study. The observed results of the analyses were satisfactory. Harman's single-factor test revealed that the factors accounted for 93.33% of the total variance, while the first factor accounted for 24.44% of the total variance. Since the first factor did not explain most of the variance, there is insubstantial CMV in the data. For the correlation matrix procedure, the correlation between the constructs was less than 0.9 (see Table 1). These statistics indicate that CMV is not an issue in this study (Martínez-Córcoles & Zhu, 2020; Rodríguez-Ardura & Meseguer-Artola, 2020). In achieving data reliability, Cronbach's alpha for the items selected to represent the variables was derived through an internal



consistency estimate. The observed coefficients and factor loadings for the measuring scales are presented in Table 1. Cronbach's alpha statistics ranged between  $\alpha = 0.71$  to  $\alpha = 0.96$ , indicating sufficient reliability coefficients for the measuring scale (Howitt & Cramer, 2017). The inter-scale correlation was carried out to obtain convergent validity. WPF and CI positively correlate, as expected theoretically. There were positively related. The satisfactory alpha coefficients observed also support the convergence validity of the measuring scales (Field, 2018). Convergent validity is one of the two aspects of construct validity. The other part of the validity of the construct was the discriminant validity, tested with the factor structure (factor loadings). Each item loaded higher in its construct than its cross-loading signifies acceptable discriminant validity; such a pattern of items loading substantiates that the item belonged solely to their factors (Makhijaa & Akbarb, 2019). Adopting scales from the literature enables researchers to achieve content validity (Mirjana et al., 2018).

### Descriptive statistics

Table 1 shows the factor loading and Cronbach's alpha in the variables studied, while Table 2 shows the research variables' mean, standard deviations, coefficient alpha, and zero-order correlation coefficients. On a 5-point Likert scale, the observed means could be adjudged moderate. The correlation coefficients showed that all relationships were positive and significant at 0.05. The highest degree of the relationship was between WPF and QWL. The degree of correlation between the variables was modest, indicating the absence of multicollinearity in the model (Field, 2018).

**Table 1: Factor loading and Cronbach's alpha on the studied variables**

Factor	Factor loadings	$\alpha$
<b>Cultural Intelligence</b>		0.71
I know how cultures around the world are different	0.84	
I can give examples of cultural differences from my personal experience and reading.	0.77	
I enjoy talking with people from different cultures.	0.77	
I can understand the feelings of people from other cultures accurately.	0.75	
I sometimes try to understand people from another culture by imagining how something looks from their perspective.	0.74	
I can change my behaviour to suit different cultural situations and	0.77	



Factor	Factor loadings	$\alpha$
people.		
I accept delays without becoming upset when in different cultural situations and with culturally diverse people.	0.76	
I am aware of cultural knowledge when interacting with someone from another culture.	0.74	
I think a lot about how culture influences my behaviour and how I am culturally different from others.	0.71	
I must plan my course of action in different cultural situations and with culturally diverse people.	0.76	
<b>Workplace Friendship</b>		0.89
I can get to know my co-workers	0.86	
I can work with my co-workers to solve problems collectively.	0.75	
In my organisation, I have the chance to talk informally and visit others	0.82	
Communication among employees is encouraged by my organisation	0.79	
I can develop close friendships at my workplace	0.82	
My organisation tolerates informal talk if the work is completed	0.76	
I have formed strong friendships at work.	0.85	
I socialise with co-workers outside of the workplace	0.69	
I can confide in people at work	0.74	
I feel I can trust many co-workers a great deal	0.87	
Seeing my co-workers is one reason why I look forward to my job.	0.73	
I do not feel that anyone I work with is a true friend <sup>R</sup>	0.77	
<b>Quality of Work Life</b>		0.96
I have a clear set of goals and aims to enable me to do my job	0.78	
I feel able to voice opinions and influence changes in my area of work	0.74	
I can use my abilities at work	0.81	
I feel well now	0.88	
My employer provides adequate facilities and flexibility for me to fit work around my family life	0.67	
My current working hours/patterns suit my circumstances	0.76	
I often feel under pressure at work	0.78	
When I have done an excellent job, it is acknowledged by my line manager	0.81	
Recently, I have been feeling unhappy and depressed	0.87	
I am satisfied with my life	0.67	
I am encouraged to develop new skills	0.76	

Factor	Factor loadings	$\alpha$
I am involved in decisions that affect me in my area of work	0.74	
My employer provides me with what I need to do my job effectively	0.82	
My line manager actively promotes flexible working hours/patterns	0.82	
In most ways, my life is close to ideal	0.78	
I work in a safe environment	0.69	
Generally, things work out well for me	0.76	
I am satisfied with the career opportunities available to me here	0.72	
I often feel excessive levels of stress at work	0.74	
I am satisfied with the training I receive to perform my present job	0.83	
Recently, I have been feeling reasonably happy, all things considered	0.71	
The working conditions are satisfactory	0.77	
I am involved in decisions that affect members of the public in my area of work	0.77	

**Table 2: Mean, SD, and Zero Order Correlation on Research Variables**

	$\bar{x}$	Sd	CQ	WPF	QWL
CQ	3.86	0.50	1		
WPF	3.73	0.50	0.33**	1	
QWL	3.45	0.55	0.32**	0.45 **	1

Legen: Cultural intelligence (CQ), Workplace friendship (WPF), Quality of work-life (QWL), \*\*Correlation is significant at the 0.01 level (2-tailed)

### Hypotheses Testing

The study performed a simple linear regression analysis to test the unmediated pathways between the two independent variables and the criterion variable. Age and sex as control variables were not significantly related to QWL when entered together with CI; age ( $\beta = -0.13, p > 0.10$ ), gender ( $\beta = -0.02, p > 0.73$ ). Similarly, control variables were not significantly related to QWL when entered along with WPF, age ( $\beta = -0.14, p > 0.06$ ), gender ( $\beta = -0.07, p > 0.32$ ). The bivariate relationship between CI and WPF with QWL remained significant after introducing the control variable into the analysis. Therefore, these results ruled out the influence of control variables on the relationship between predictors and criterion variables among public organisation employees.

Table 2 (third row) shows simple regression analyses that predict QWL from CI ( $\beta = 0.32, 95\%$  confidence interval  $[0.19 - 0.52], t = 4.36, p < 0.001$ ). The  $\beta$  value of 0.32 indicated that the association between CI and QWL was modest, positive, and

significant. Since confidence interval statistics exclude zero values, the relationship is statistically significant at a two-tailed 0.05 level. Therefore, from both point and interval estimates, Hypothesis 1 was supported. The ANOVA test,  $F(1, 160) = 19.04$ ,  $p < 0.01$ , indicates that the regression was statistically significant, which implies that QWL can be predicted from CI. The B value of 0.36 means that for every increase of 1 unit in CI, QWL increases by 0.36 units. The observed  $R^2$  signifies that CI explained a 10% variance in QWL. An  $R^2$  of 0.107 indicates a medium effect size (Cohen, 2013). Again, the slight difference between  $R^2$  0.107 and adjusted R 0.101, which is 0.006, indicates good cross-validity; that is, this model has the potential to be applied to other samples.

**Table 3: Simple regression on CQ, WPF with QWL**

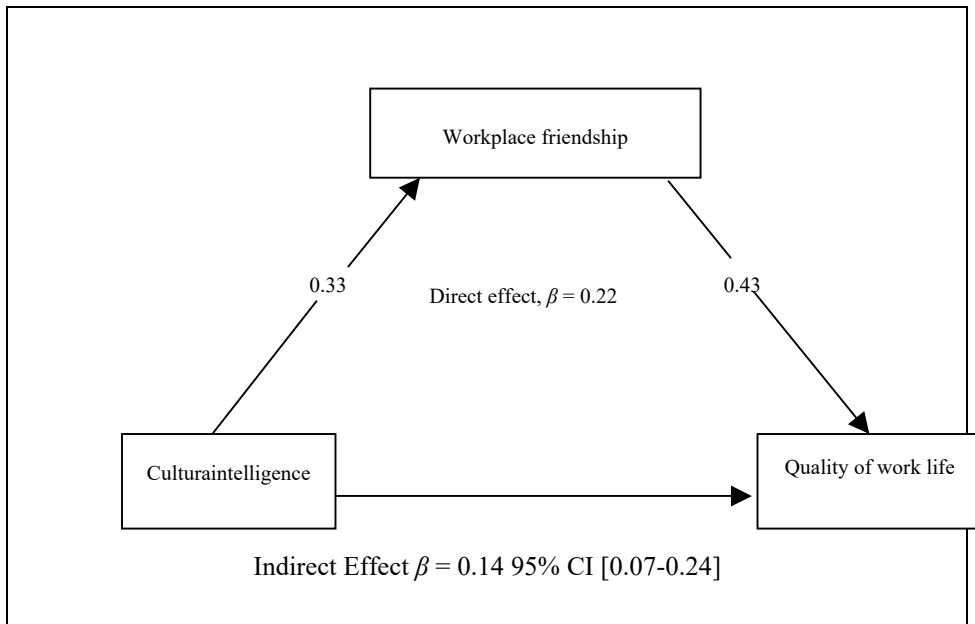
	<i>B</i>	<i>SE</i>	$\beta$	$R^2$	<i>Adj R</i> <sup>2</sup>	<i>T</i>	<i>P</i>	95 % <i>CI</i>	
								LLCI	ULCI
CQ	0.33	0.08	0.32	0.11	0.10	4.36	0.001	0.20	0.53
WPF	0.49	0.07	0.45	0.20	0.19	6.38	0.001	0.34	0.65

Note: CQ = Cultural intelligence, WPF = Workplace friendship, QWL = quality of work-life

Table 3 (fourth row) shows simple regression analyses that predict QWL from WPF ( $\beta = 0.45$ , 95% confidence interval [0.34 -0.65],  $t = 6.38$ ,  $p < 0.001$ ). The  $R$ -value of 0.45 indicates that the association between WPF and QWL is modest, positive, and significant. Since confidence interval statistics exclude zero values, the relationship is statistically significant at a two-tailed 0.05 level. Therefore, from both point and interval estimates, Hypothesis 2 was supported. An analysis of the variance test,  $F(1, 160) = 40.71$ ,  $p < 0.01$ , indicates that the regression was statistically significant, implying that QWL can be predicted from WPF. The observed B value of 0.49 means that for every one-unit increase in CI, QWL increases by 0.49 units. The observed  $R^2$  means that WPF explained a 20% variance in QWL. An  $R^2$  of 0.20 indicates a medium effect size (Cohen, 2013). Again, the slight difference between  $R^2$  0.20 and adjusted  $R^2$  0.19, which is 0.01, indicates good cross-validity; this model can be applied to other samples.

Figure 1 shows the result of the mediation model. The statistics revealed a significant indirect effect of CI on QWL through WPF,  $\beta = 0.14$ , 95%, BCa confidence interval [0.07, 0.24]. The significant effect is expressed because the confidence interval statistics excluded a zero value. Effect size statistics (Index of Mediation) (Preacher and Kelley, 2011) indicate that QWL increases by 0.13 [95% confidence interval, 0.06-0.21] standard deviations for every one standard

deviation increase in CI indirectly through WPF. The  $\beta$  value of 0.43 in the figure indicates the direct effect of WPF on QWL (Multiple regression of CI and WPF on QWL). Table 4 shows the summary of the findings.



**Figure 1: Research model and results of hypotheses testing**

**Table 4: Summary of findings**

Hypothesis	Type of effect	Result
H1: Cultural intelligence positively predicts the quality of work-life	Direct effect	Supported**
H2: Workplace friendship positively predicts the quality of work-life	Direct effect	Supported**
H3: Workplace friendship mediates the relationship between cultural intelligence and quality of work-life	Indirect effect	Supported **

\*\*p < 0.01

## Discussion

This study aimed to explore the effect of CI and WPF on the QWL of individual workers and to examine the mediating role that WPF plays in the relationship between CI and QWL. The study further investigates the existing literature since CI was studied with four different ethnic groups within a nation and employees in a workplace setting. The current literature is built on studies that examined CI in leadership (Nosratabadi et al., 2020; R uth & Netzer, 2020) and among expatriates (Afsar et al., 2020; Guang & Charoensukmongkol, 2020). Jyoti and Kour (2017) noted that existing CI studies were conducted in multinational companies (MNCs), focussing primarily on expatriates.

The three hypotheses tested received confirmation. CI has a positive and significant influence on QWL. CI influences job satisfaction (Takdir et al., 2020) and employee well-being (Chou, 2020). Organisational commitment has been implicated in QWL (Bora, 2017; Risl a & Ithrees, 2018). The observed relationship between CI and QWL is conceivable, as the former variable can create a work environment of mutual understanding and cooperation. Similarly, WPF positively predicted QWL. QWL is characterised by the various elements that WPF and its representations positively influence, such as social support and workers' well-being (Craig and Kuykendall, 2019). WPF indicates recognition and social support. Recognition leads to organisation-based self-esteem, and employees with high self-esteem would be less prone to job stress. Social support has a desirable effect on job autonomy and job satisfaction (Giao et al., 2020; Kim et al., 2019) and employees' subjective and psychological well-being (Peters et al., 2018; Sahai & Mahapatra, 2020).

Furthermore, all of these are involved in perceived QWL. The third hypothesis test revealed that WPF mediates the effect of CI on QWL, implying that CI creates an environment, both within and between individuals, that enhances the shared value and mutual understanding and cooperation reflected in perceived QWL. The descriptive statistics revealed that the participants experienced moderate CI, WPF and QWL. Unsurprisingly, there is no systematic and deliberate programme to improve these variables in the sampled organisations. Based on theory and empirical work, age and sex were proposed to influence the relationship between CI, WPF, and QWL, but data analysis revealed the contrary. Studies on organisational behaviour that do not confirm age and gender as control variables are becoming substantial (Harrison, 2019). This trend could result from equal rights and inclusion agendas and the near absence of differential employment policies based on various demographics.

### Contribution

In various ways, this study contributes to theory and practise. This research pioneered an investigation that combines CI, WPF, and QWL and the CI study among employees of different indigenous cultures. The current study introduced a model into the literature, and its findings serve as a basis for discussing subsequent tests of the model. This study observed that CI and WPF positively influence QWL and that WPF also acts as a mediator mechanism in the CI-QWL relationship. These findings started and provided an understanding that could help guild middle-range theorising on CI and QWL link. Researchers (Mollah, 2019) have discussed the importance of theory building in management, organisational research, and practise. The findings that WPF positively predicts QWL add to the extent studies that have offered support and confirmation to social capital theory, which proposes that the network of relationships possessed by an individual is embedded with resources (Nahapiet & Ghoshal, 1998). The present study also builds empirical evidence that age and gender are fewer differentiating factors in employees' work attitudes and behaviour. This accumulation of knowledge has implications for choosing control variables in organisational behaviour research. Related to the above, this and other related findings (Harrison, 2019) imply various theories (e.g., socioemotional selectivity theory) that propose several demographics as control variables in the relationship between some organisational behaviour variables. Specifically, the findings offered disconfirming aspects of the approaches that suggest such an influence of age and gender on employee work behaviour. The context in which the CI, WPF, and QWL measures were developed was unfamiliar to the present study. However, this study confirms the reliability and, to some extent, the validity of the measures in the Nigerian context. This contribution is most applicable to the CI scale, which is new.

The results of this study have some practical implications. CI and WPF positively influence QWL. Indicates that the two variables contribute to the positive attitudes towards the organisation. In various discussions, positive feelings and thoughts have contributed to positive work behaviour and effective functioning. Organisational practitioners must reflect variables that have been proven effective in strengthening CI and WPF among corporate members. Creating culturally intelligent and quality friendships benefits both the employee and the organisation. It can be archived through recruitment and selection, training, and reasonable rules and policies.

### Limitations and suggestions for future research

One limitation of this research is the reliance on cross-sectional data, as all measures were self-reported and collected at a single point. The possibility of reversed causality and some common-method bias remains despite some researchers' technical measures and verification. Triangulation of the data collection method, longitudinal studies, and possibly quasi-experiments are recommended in future research.

QWL also has various perspectives. The mediation model has one mediator; this is a simple model of limited representation of reality. Therefore, future studies should be theoretically and empirically more inclusive of the mediators examined. However, this study is approached as an attitude related to work context and content satisfaction. This perspective is inclusive; therefore, this study is limited to the factors of the adopted measure. A review of the relatedness of measures developed from this perspective is necessary to provide the information necessary to discuss the findings.

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## REVIVAL OF TOURISM AFTER THE PANDEMIC PERIOD

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### **Abstract:**

*This paper aims to present the effects of the pandemic on national and international tourism. The first part describes tourism in Romania and Arges county. In addition, tourist sights in these locations were also mentioned. Then we statistically analyzed the evolution of tourism in the European Union, Romania, and Arges county during the period 2017-2021; here we exposed the main trends. To realize the research aim, we focused on literature in the field as well as European and national statistics reports. In the end, we arrived at conclusions.*

**Keywords:** *tourism, tourism units, sustainable tourism*

**JEL Classification:** Z30, Z32

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## Introduction

### Literature Review

According to the International Touristic Dictionary<sup>2</sup>, tourism differs from a simple journey because it offers people the possibility to choose the place they want to visit in a country or region, satisfy their own pleasure, and discover new cultures and places. Tourists are seen as people who travel to other places than their birthplaces, for a period of less than 12 months, and for different purposes (to visit new places, to know new cultures and people) except for paid motifs.

Romania lies in the southeastern part of Central Europe, inside and outside the Carpathian mountains, on the inferior course of the Danube river (1075 km), with access to the Black Sea, at a distance which ranges between 1050 Km and 2800 km from the continent limits. Romanian seaside stretches 245km, with Musura river (bordering Ukraine) and Vama Veche (bordering Bulgaria) as extreme points. The capital city is Bucharest. The main ports at the Black Sea are: Constanța and Mangalia; the main ports at the Danube: Moldova Nouă, Orșova, DrobetaTurnu-Severin, Calafat, Corabia, TurnuMăgurele, Zimnicea, Giurgiu, Oltenița, Călărași, Cernavodă, Hârșova, Măcin, Brăila, Galați, Tulcea, Sulina. The airports are: Moldova Nouă, Orșova, DrobetaTurnu-Severin, Calafat, Corabia, TurnuMăgurele, Zimnicea, Giurgiu, Oltenița, Călărași, Cernavodă, Hârșova, Măcin, Brăila, Galați, Tulcea, and Sulina.

Romania has two components that are extremely attractive from the tourism point of view, namely:

1. The natural component, represented by spectacular landscapes, relief variety, favourable climate, factors with therapeutic value, natural factors;
2. The anthropic component, represented by artefacts of the succeeding civilizations, laic and religious art monuments, museums, museum collections, great richness of ethnography, and folk art elements of significant beauty and originality; present achievements of prestige.

All these are elements of great attraction for Romanian tourism, offering a large variety of forms: resorts (sea, mountain, curative), sports hunting and fishing, itinerant cultural tourism, professional tourism, etc.

Specifically, each form of the natural setting has tourism capacity potential. If we take the relief element into consideration, we can say that it rises from plains to

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<sup>2</sup> Neagu Silviu, *Dicționarul turistic internațional*, Sport-turismPublishingHouse, Bucharest, 1980#

hills and mountains, with the exception of the seaside and the Danube Delta which manifest original physical and geographic features.

In recent years, Romania has become a destination preferred by many Europeans (more than 60% of the foreign tourists come from EU member states) and rivals with Bulgaria, Greece, Italy, and Spain. Sea resorts such as Mangalia, Saturn, Venus, Neptun, Olimp, and Mamaia are the top attractions during the summer season. It is to be mentioned that rural tourism also develops, focusing on folk art and traditions. The main attractions are Bran Castle, painted monasteries in the north of Moldavia, wooden churches in Transilvania, and the Merry Graveyard in Săpânța. We can also mention the Danube Delta, Scărișoara, and other breathtaking caves in Apuseni Mountains.

#### **Literature review:**

Sustainable tourism was defined by the English Tourism Council in 2002 as follows: “Sustainable tourism is about managing tourism’s impacts on the environment, communities, and the future economy to make sure that the effects are positive rather than negative for the benefit of future generations. It is a management approach that is relevant to all types of tourism, regardless of whether it takes place in cities, towns, countryside or the coast.”

R. Butler (1993) gave the following definition of sustainable tourism: "tourism which is in a form which can maintain its viability in an area for an indefinite period of time".

Tourism is not limited only to accommodation and hospitality activities, transport, or entertainment (tourist attractions, amusement parks, sports facilities, museums, and so on); it is connected to all functions, processes, and major procedures practised in tourism-related fields. It is also known that the tourism industry implies functions of planning, organization, coordination, training and monitoring evaluation, covering all levels, from international to local ones. Thus, tourism is integrated into the functional unit of the economy (Simoni and Mihai, 2012).

The tourism industry in the context of sustainable development is exacerbated by its sensitivity to change, its multi-sectoral nature, and its marked dependence on the quality of the environment and host communities; “tourism which degrades any elements of host communities and nations threatens its own future” (Manning, 1999: 179).

Eber (1992) offers a supplementary definition referring to the concept under discussion: in the case when tourism has real benefits for all who are implied and it

is sustainable for the long term, one has to guarantee that the resources are not over consumed, natural and human-made environments are protected, tourism is integrated into other activities and offers real benefits to local communities, the inhabitants are implied and included in tourism planning and decision making. Moreover, people and culture should be respected.

In recent years, tourism has become a vital part of the global economy. It is important for countries such as Egypt, Greece, Lebanon, Thailand, Spain, and also for nation islands: Bahamas, Fiji, the Maldives due to the consistent financial support offered by businesses dealing with goods, services, employment, accommodation, hotels, resorts, entertainment, casinos, parks, and transport services of all types (by air, cruises, taxis).

### **Tourism in Argeș county**

One can see that tourism tends to boom in virgin and uncrowded areas. The generosity of nature offered Argeș county a great variety of expressing beauty: from the splendour of the Făgăraș Mountain peaks in the north to the openness of the flat plains of Pitești and Găvanu-Burdea in the south. The mountain area represents a quarter of the territory and offers marvellous attractions: gorges, waterfalls, caves, lakes, marked routes, and possibilities for rock climbing and skiing. Mountain tourism is practiced within Câmpulung and Curtea de Argeș areas.

37 km from Pitești, following the national route DN 7C, there is Curtea de Argeș town, an old capital of the state, known especially for its monastery built in 1517 by an illuminated voivode, Neagoe Basarab, but also for art and architecture monuments. The archaeological vestiges date back to the Neolithic period. The town is attested in 1330 and it is a milestone of numerous historic events.

Following the same route, we reach the Vidraru hydropower and dam. The latter is 166 meters tall and keeps inside a volume of about 800 cubic meters of water, covering over 800 hectares and 14 km. The surroundings offer numerous enchanting places.

Before the Vidraru dam, on the left side of the road, there is Cetățuia hill, 850 meters high with the Poenari Citadel on top, built in the first half of the XIVth century during the reign of Vlad the Impaler.

At a distance of 51 km from Pitești, on route DN 73, Câmpulung municipality developed on the inferior terraces of the Târgului river, in the sub-Carpathian valley bearing the same name. Archaeological artefacts expose its existence backwards in the XIIth century. Later on, it became the capital of the feudal state

and an important commercial centre. The sights include: Town Museum, a catholic church and assembly from the XIVth - XVth century, old crosses, statues, the feudal assembly NegruVodă, including an orthodox monastery and other buildings, dating from 1215.

On the way to Bran Castle, we meet Nămăieşti village, with a cave monastery from the XVIth century, a very interesting sight with well-preserved pictures. Mateiaş mausoleum, raised to celebrate the memory of World War I heroes follows the route further on. Dragoslavele village is the next stop; it is mentioned in 1377 and is well known for the originality of traditional costumes, architecture, and beautiful landscapes. Rucar is also a great point of interest for rural tourism.

Piteşti city is the county capital and also displays old edifices, such as an orthodox church from 1656 with a school; Argeş Museum, great parks, and art galleries.

### **1. Evolution and tendencies in the EU during the Covid pandemic**

Tourism represents the vertebral column of the economy for many member states – four of them are the world's top destinations. Different regions in Europe differ a lot as concern their dependence on tourism activity. The impact is significant for islands, coastal regions, and ultra-peripheral regions as they generally depend on tourism and international transport.

The pandemic puts the EU tourism ecosystem under great pressure. As a consequence of travel restrictions and many other restrictive activities, tourism showed a sharp decline in 2020 in the EU and beyond. OCED (the Organization for Cooperation and Economic Development) estimates the decline between 45% to 70%, depending on the sanitary crisis and the recovery rhythm. The crisis affected mostly small and medium companies which confronted incertitude and faced a lack of liquidity. Jobs are also threatened. Tourism deals were affected to a great extent, with seasonal workers (23 %), many of them young (37% under 35 years old), women (59 %), and foreigners (15% from or outside the EU). We remark that tourism includes an important section of stakeholders belonging to the social economy which contribute to social inclusion.

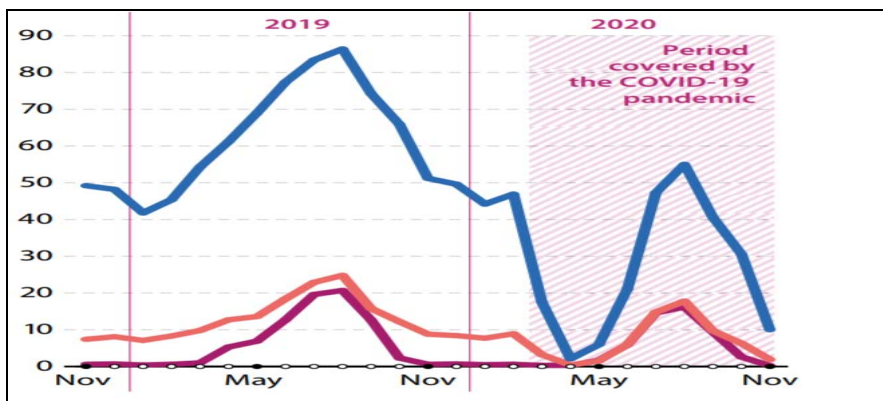
While the number of tourists who came into tourist accommodation units in EU-27 in January and February 2020 was the same as that in January and February 2019, the pandemic dropped this number in March and April as we can see in Figure 1. Concerning the period July-November 2020, there were 41-49 million arrivals, which is less when compared to the equivalent period in 2019, as the statistics show.



**Figure 1. Arrivals in tourist accommodation units January 2019 – December 2020 (millions – EU-27)**

**Source:** Key figures on European business – Statistics illustrated – 2021 edition pdf. p. 87  
<https://ec.europa.eu/eurostat>

The number of international arrivals decreased by 83% during March and April 2020 as compared to the previous year, while for the internal arrivals, the fall reached 81%. The arrivals in hotels and similar units fell by 83%; a great percentage for vacancies was noticed; an 84% fall in units for a short period of accommodation and an 89% fall in campsites, caravan parks, etc.



**Figure 2. Arrivals in tourism units after accommodation types (millions – EU-27)**

**Source:** Key figures on European business – Statistics illustrated – 2021 edition pdf. p. 88  
<https://ec.europa.eu/eurostat>

The number of arrivals in tourist units in EU-27 during 2020 was influenced by internal requests, many tourists chose their native country, rather than a foreign country as holiday destinations. October meets an increase with 31,4%, in tourist units for accommodation service. It is known that 267 million Europeans, representing 62% of the population make at least one pleasure journey a year and 78% of them spend their holidays in their native country or within EU borders.

## 2. Statistics analysis of tourism in Romania and Argeş county between 2017-2021

Many European regions, cities, and towns to a great extent, are based on cultural tourism. Technology contributed to reinventing cultural tourism during the pandemic, by opening new opportunities for creative expression and growing audiences. New tendencies appear: to discover near natural or cultural treasures which were forgotten or hidden; to taste or try locally produced or manufactured goods.

Tourism may gain due to the process of digital transition, offering new methods in managing tourist flows, opportunities, more options, and sustainable usage of limited resources. The usage of analyzing big volumes of data can create and assemble precise segments of the touristic profile and can also contribute to the understanding of tourists' tendencies and needs. Digital instruments can be, too, measures to strengthen citizens' trust that tourism and travel can be safe. This means investments in digital, including cyber security, digital innovation, and also the connection of touristic companies and actors with the present local and regional data space. This fact is of great importance in rural far and ultra-peripheral regions where tourism is fragmented and depends much on the accessibility of information and transport services.

Statistically speaking, during the period 2017-2020, the number of arrivals in the accommodation units is presented below:

**Table 1. Tourists arrivals in accommodation units**

Units accommodation		Years			
		Year 2017	Year 2018	Year 2019	Year 2020
		UM: Number of persons			
Total	Total	12,143,46	12,905,131	13,374,943	6,398,642

Source: data series, <http://statistici.insse.ro/>



From Table 1, we can see that the total number of people who arrived in accommodation units had an ascending trend in 2019; but in 2020, the number of tourists halved.

If we compare October 2020 to October 2021, at the country's borders, the number of foreign visitors increased by 74,8%, and departures abroad of Romanian tourists increased by 42,7% as the National Statistics Institute provides. All the information can be seen below, in Table 2.

**Table 2. Arrivals and spending nights in accommodation units October 2020 – October 2021**

	Arrivals			Spending nights		
	Oct.20	Oct.21	October 2021 compared to October 2020	Oct.20	Oct.21	October 2021 compared to October 2020
Foreign tourists **)	24.7	99	400.8	58.1	218.1	375.4
from which						
- Europe	21.2	75.9	358	48.7	163.8	336.3
- European Union	15.8	58.7	371.5	35.7	123.8	346.8
- Asia	1.1	8.1	736.4	2.4	22.3	929.2
- North America	1.4	7	500	4.3	16.8	390.7
- South America	*	0.6	-	*	1.3	-
- Africa	*	0.6	-	1.1	1.7	154.5

\*) values under 0.5

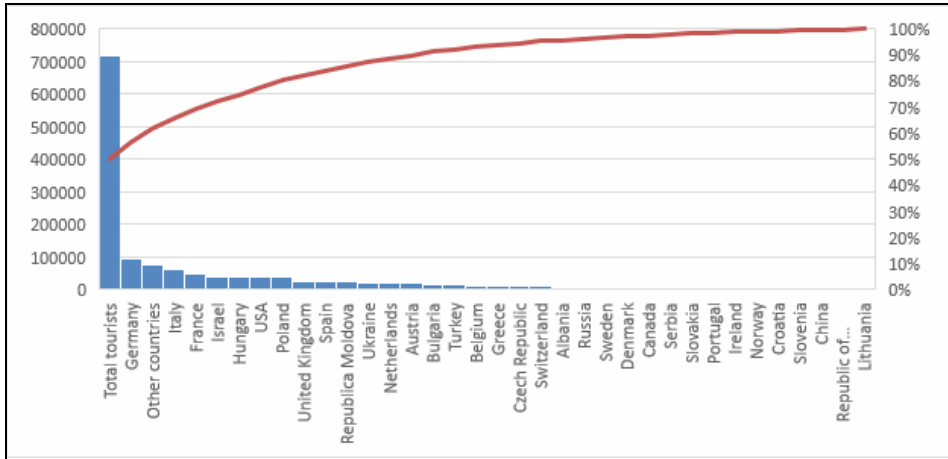
\*\*) taking into account the residence country

Source: data serieswww.insse.ro

We can remark an increase in the number of foreign tourists in Romania in October 2021 as compared to October 2020, namely 74.3 thousand people. Concerning the number of tourists who spent nights in Romania, it also increased by 160 thousand from 218.1 thousand.

If we look at the period 1<sup>st</sup> January – 31<sup>st</sup> October 2021, the number of foreign tourists after their residence country can be noticed in Figure 3, presented below:



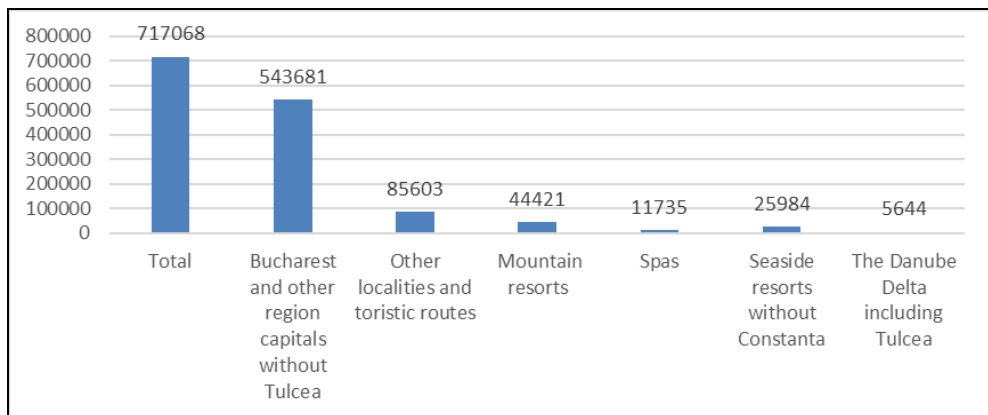


**Figure 3. Arrivals of foreign tourists, after their residence country 01 Jan 2021-31 Oct 2021**

Source: Own data processed from INS (National Institute for Statistics) data series [www.insse/](http://www.insse/)

We notice that a great number of foreign tourists belong to Europeans (76.7% of all foreigners) and 77.3% of these are from the European Union.

Depending on the touristic areas, the arrivals belonging to the same period (1<sup>st</sup> Jan – 31<sup>st</sup> Oct 2021) are shown in Figure 4:



**Figure 4. Total number of foreign tourists' arrivals (1<sup>st</sup> Jan – 31<sup>st</sup> Oct 2021) depending on the touristic area**

Source: Own data processed from INS (National Institute for Statistics) data series [www.insse/](http://www.insse/)

From Figure 4, we can see that out of the total number of foreign tourists (717,068 thousand persons), 543,681 thousand persons came to Bucharest; the second position is taken by the regional capitals and surprisingly, the Danube Delta including Tulcea city is in the last position (5,644 thousand persons).

We can also make another per cent analysis, from the point of view of foreign tourists' distribution: October 2021 as compared to October 2020, according to data shared by the National Institute of Statistics in Romania, as it is exposed in Table 3 below:

**Table 3. Foreign tourists' distribution: October 2021 as compared to October 2020**

	October 2020	October 2021	%
Bucharest and other regional capitals without Tulcea city	78.5	80.4	
Other localities and touristic routes	12.3	12.6	
Mountain resorts	6.6	4.6	
Spas	0.6	1.3	
Seaside resorts without Constanta city	1.5	0.7	
The Danube Delta including Tulcea city	0.5	0.4	

Source: statistics data series [www.insse/](http://www.insse/)

The number of nights spent in touristic units during the period 1<sup>st</sup> January – 31<sup>st</sup> October 2021 reached 18,482.2 thousand, with 40.7% higher than the same period of the year 2020. From the total number of nights spent in the above-mentioned period of 2021, Romanian tourists represented 91.6% and foreign tourists 8.4%. If we focus on the nights spent by the foreign tourists, we can say that the Europeans represent 77.2% of the whole and 76.4% of those are European Union citizens.

The average period of stay was of 2.3 days for Romanian tourists and 2.2 days for foreign tourists. The index of touristic units' usage in the period taken into consideration in 2021 was 27.8%, with slow growth of 2.8% as compared to the same period in 2020. Referring to the types of touristic units, the situation is as follows: hotels 33.6%, villas 26.6%, bungalows 26%, cruise ships 24.3%, touristic houses 20.8%, campsites 20.6%, B&B and tourist stops 19% each, hostels 18.7%, agro-tourism pensions 18.1% and cottages 16.3%.

Referring to Arges county, statistical analyses reveal the following data: tourist arrivals in touristic units during the period 2017-2021 can be seen in Table 4:

**Table 4 Tourist arrivals in touristic units during the period 2017-2021 after types of tourists, macroregions, regions, and counties**

Types of tourist	Macroregions, regions, counties	Years				
		Year 2017	Year 2018	Year 2019	Year 2020	Year 2021
		UM: Number of persons				
Total	TOTAL	12143346	12905131	13374943	6398642	8158355
	Arges	230517	247703	267349	113421	162506
Romanians	TOTAL	9383266	10108509	10691195	5944775	7441287
	Arges	184080	201079	220541	104096	145667
Foreigns	TOTAL	2760080	2796622	2683748	453867	717068
	Arges	46437	46624	46808	9325	16839

Source: data series, <http://statistici.insse.ro/>

From Table 4, we can notice that from a total number of 162.506 tourists who came into Arges county, 145,667 were Romanian tourists and 16,839 were foreigners. The increase in the number of foreign tourists in Arges was to a great extent due to the promoting actions for local products and traditions and natural landscapes.

Table 5 shows touristic structures during the period 2017-2021

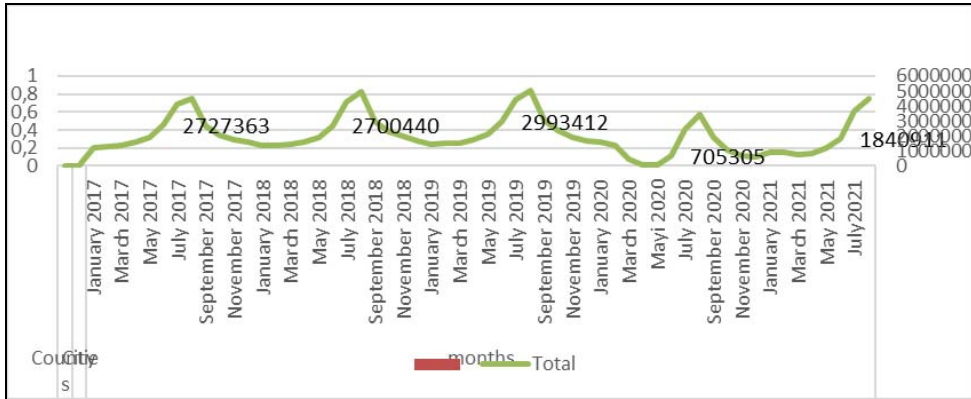
**Table 5. Touristic structures on types and counties**

Counties	Years				
	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021
	UM: Number				
TOTAL	7905	8453	8402	8610	9146
Arges	297	286	296	295	297

Source: data series <http://statistici.insse.ro/>

We mention that the analyzed category has an ascending trend during the period 2017-2021 for both the total number of touristic units and the number of structures of touristic units in Arges county.

Figure 5 presents the number of nights spent in touristic units in Arges county in the mentioned period, 2017-2021:



**Figure 5 Number of nights spent in touristic units in Arges county in the period January 2017- October 2021**

Source: data series, <http://statistici.insse.ro/>

We notice that the greatest number of nights spent in Arges county happened in August every year: 52,260 nights in August 2017, 53,817 nights in August 2018, 62,573 nights in 2019, 27,964 in 2020, and 54.300 nights in August 2021. After a significant fall during 2020, under the pandemic circumstances, 2021 brings an ascending tendency.

The improvement of means of transport also contributed to a great extension of the touristic phenomenon and the development of new forms of tourism. Thus, the increase in the number of personal cars led to the appearance of secondary vacation residences for the upper-medium class population; the multiplication of air transport infrastructure and the appearance of new airlines favoured the inclusion in touristic circuits of new touristic destinations.

There is a tight relation between the development of the tourism and transport industry, in the sense that the increase in the volume in touristic circulation is due to the transport sector development.

Comfort may be an attractive factor, but at the same time, it can determine differentiation in tourists' preferences depending on types of transportation. It is known that young people prefer cars and seniors prefer less tiring means of transport. At the same time, the choosing of a specific means of transport depends on the distance, too. Thus, it is established that auto transport is used for a distance up to 100 km, railway within 100-1,000 km, and air transport is more convenient for longer distances.

In Arges county, during the period 2017-2020, the Romanian tourists' departures abroad, taking into account the means of transport show as follows: from the total number of 9,510 thousand people in 2020, 6,757 thousand preferred transport by land and 2,694 thousand by air. The least used means of transport were by sea: only 23 thousand chose it.

**Table 6. Romanian tourists' departures abroad after means of transport used**

Categories of means of transport	Year 2017	Year 2018	Year 2019	Year 2020
Total	19953	21039	23066	9510
By land	13835	14369	15791	6757
By railway	95	104	116	36
By air	5998	6541	7132	2694
By sea	25	25	27	23

Source: data series, <http://statistici.insse.ro/>

Regarding the evolution of departures abroad, we can see that the number lowered to 13,566 persons as compared to 2019, due to the pandemic restrictions.

### Conclusions:

Tourism represents the economic backbone of many member states of the European Union. The Pandemic has put the EU under great pressure. As a consequence of travel restrictions, tourism activity ceased gradually during the first term of 2020 in the EU and on the entire planet.

If we refer to the EU, the number of tourist arrivals in January and February 2020 was the same with January and February 2019, but the pandemic led to a drastic reduction in March and April 2020. In the period July and October 2020, the evolution of the statistics was similar between 2019 and 2020, but 2020 had fewer arrivals up to 41-49 million (a decrease between 33% and 97%) for each month.

In Romania, spending nights in touristic units in the period January – October 2021 came up to 18,487.2 thousand, with 40.7% more than those in the same period a year before.

Concerning the arrivals of foreign tourists in Romanian touristic units, a great number was represented by Europeans (77.2% of the total number) and 76.4% of those came from the EU.

The average stay was of 2.3 days for Romanian tourists and 2.2 days for foreigners. The indices for touristic units' net usage in the mentioned period, January – October 2021 were also presented above and showed a variety in distribution, with 33.6% in hotels as the greatest per cent and cottages with 16.3% as the lowest per cent.

For Arges county, we can say that after a significant fall in 2020, in 2021 we observe an ascending trend in the number of tourists. From a total number of 162,506 tourists, 145.667 were Romanians and 16,839 were foreigners.

In the period 2017-2020, the departures abroad of the Romanian tourists also showed that more preferred transportation by land and only a quarter preferred transportation by air.

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## ANALYSIS OF AN EFFECTIVE USE OF HUMAN RESOURCES IN TOURISM: A CASE STUDY IN AZERBAIJAN

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### **Abstract**

*Big and successful companies understand the importance of the human factor. Unfortunately, the purpose of some small and not very successful companies is only to make a profit. Many of them do not think about the ways how that profit is made. The abuse of people’s knowledge and skills has never been considered to be correct and never will be considered. The loss of employees’ loyalty is the result of underestimating their personality, desires and needs, which is common especially in the service sector. This article is about human resources and their role in the hotel sector of Azerbaijan. The purpose of the article is to emphasize the importance of the human factor in the development of tourism in Azerbaijan and the importance of investing in human resources in order to achieve quality and competitive advantage. The paper adapts and modifies the human action model to use it in analyzing the effectiveness and success of hotel companies.*

**Key words:** *Human resources, targeted skills, tourism, hospitality.*

**JEL Classification:** Z32

## Introduction

A hotel provides its service and certain aspects of this service. And these aspects should not be forgotten. We will recall the characteristics and products of the hotel industry once again.

Unlike products, services cannot be seen, touched or enjoyed before use. They cannot be sniffed or heard. An employee working in the sales department cannot take the room with himself to a customer in response to the registration order. This means that services are intangible; and this is an important obstacle for their use, because sales must be carried out based on a well-presented usage or purchase experience. Services are carried out at the presence of both the customer and “the producer”, as well as are simultaneously used by the customer.

The indivisibility of services consists in that a hotel product, i.e. service and a tourist who is a consumer, is one of their inseparable parts. A traveling customer directly affects the implementation of adequate services; and this is made possible due to his use of different service groups during the stay in the hotel or his choice of drinks and meals in the restaurant or his enjoyment of other services. Services can not be retained. If hotel service is not used for a while, in the next season, even with the maximum number of tourists, it will not be possible to bring its service to the perfect level. Demand-supply matching is very important for effective use of service potential.

Service differences are revealed due to the human factor, which is subjective, and this is the factor that stands on the basis of quality of the work implemented. Each service is unique. Analogous to an actor's role on the stage, a performance may highly satisfy the customer, but the features and actions during his performance may not be repeated. To put it otherwise, the services performed by the communication of both parties create a unique atmosphere. [6]

The features listed below especially highlight the importance of the human factor in the provision of services and products. The theory and practice confirm the truth of these ideas:

- The hotel sector was established to fulfill needs and wishes of guests and tourists.
  - A guest both contributes to tourism and pays the entrepreneur.
  - The quality of a hotel product is measured by the number of satisfied guests.
  - Word-of-mouth marketing is still considered the most effective marketing.
- [3]

The following questions arise. Whom and what does the satisfaction of guests with the provided services depend on? Also, what factors do the revisit of those guests, visit of their friends, good advertising, good reputation of the hotel, increase in income, quality of the hotel product and level of competition capabilities depend on?

They mainly depend on hotel staff. Especially in recent days, when the number of competitive, luxuriously equipped hotels is increasing day by day, the role of the human factor in this sector is undeniable. The demands and wishes of a contemporary customer are complex; they require adequate service and experience. The famous saying quoted by the World Tourism Organization is confirmed here: Change services according to experience! Memorable moments are not about special restaurant items such as silk mattress covers, pillows – all these are also available in other hotels; rather, it is the behavior, courtesy or lack of courtesy of staff that a guest remembers. [16]

It should be noted that the biggest loss for a hotel is that the guest sees a shortcoming and expresses his dissatisfaction. However, such shortcomings can be removed by the hotel staff with a simple smile or apology, with a small gift or a discount; yet impolite and rude behavior from the employee's side cannot be forgotten. From this, we can conclude that psychological and physical characteristics of persons providing services lead to customer satisfaction or dissatisfaction, regardless of the organizational, technical and technological provisions of service quality.

Thus, in order to obtain quality, the main attention is paid to the personnel providing services, restaurant workers and hotel management. One should not forget that quality is determined on the basis of labor standards. The factors that determine the quality of the staff in a hotel are the following: knowledge, skills, experience, appearance, behavior. This means that service personnel should have certain qualities: education (by degree and area), quality of work, general culture, business culture, natural or acquired rules of courtesy, appropriate personality, nobility, secrecy, sociability, patience, individual attractiveness, relatively good appearance.

### **Literature review**

Productivity is very important in determining the standard of living of any country: for example, the standard of living is measured by the provision of goods and services. At work, productivity can be defined based on the amount of products or services per hour. This, in turn, is directly related to factors such as

physical capital, natural resources, knowledge about technology, and human capital. The focus of this article is human resources and human capital. In literature, we can find different names for the notion of human capital: social capital, human capital, intellectual capital.[9] 'Human capital' is an economic term that refers to the knowledge and skills employees acquire through education, training, and experience. Human resources and human capital are becoming more and more important in the business sector. states that material and human capital make up a company's assets. This can be especially true in the service sector, as this is the sector where people perform the most important function.

Human resources not only play a key role in all areas of socio-economic development, but also form the basis of a successful business. According to Naeem Hayat the education of an employee is a very important component to maintain competitiveness in the service industry. Providing training and additional education to employees is of great importance, especially in the hotel sector.

Marchante and Ortega argue that the discrepancy between the level of education required for a job and the actual level of education that the worker has reveals differences in the performance of hotel staff. Workers with education relevant to their job are considered to be more effective workers than uneducated workers; and highly educated workers are considered to be much more effective than uneducated ones [7]The level of education appropriate to job requirements leads to productivity at work and business success of the companies in the general hotel sector.

In addition to the level of education, the productivity and competitiveness of hotels also depend on the specific skills of their employees. Sheldon and Gee prepared training courses that teach the most important skills for staff. Both employees and entrepreneurs agree that human relationships, communication and polite behavior are very important. But there is no agreement among scholars with regard to the question of whether the characteristics such as sales, operations, and computer skills, as well as local workers and their culture, which is the last on the list, are important.[3] Since the above-mentioned knowledge and skills constitute the basis of successful development in the contemporary business sector, knowledge of foreign languages and of communication technologies can also be regarded as primary prerequisites for entering the hotel sector.

We can state with certainty that human resources are the main factor in order to be able to compete in the market. Podolny & Baron suggest that social capital is a major advantage for a company in the competition and activity. Also, the role and importance of human resources in the business sector has influenced the reforms in

some organizations, and recently we are increasingly encountering the term “knowledge organizations”. [10] The concept of a learning organization applies to an enterprise which consists of individuals, employees who are constantly learning something new; and the company itself is an advancing and developing enterprise. This process is carried out mutually: individuals improve their positions in productivity and competition by developing their knowledge and skills, and the company, in turn, tries to improve conditions in which the employees acquire individual skills and new knowledge. An innovative company has the ability to acquire and create new knowledge and skills, adapt them to the business sector and its goals.

In times when there are common difficulties, it is very important to create a company that can be adapted for new changes. But this can be possible when there are quality and rich human resources. Such companies develop teamwork and relationships in the business sector.

Improving the responsibilities of employees is a result of the business model and business processes. In the XXI century, human capital is the greatest asset of an organization.

### **Methodology**

In accordance with the purpose of the article, a study was conducted based on statistical data and reports prepared by relevant organizations, and very significant state strategies related to human resources in the tourism sector were formed.

Several methods were used during the research: analysis, deduction, induction. Looking at the literature, it was possible to draw many conclusions for the analysis of the most important models of hotel enterprises.

In accordance with the purpose of the article, the individual activity model was also considered. Based on all the analysis and results, this model was accepted and modified. We created such a model in order to conduct a detailed analysis of the hotels with especially effective service and strong competitive capacities.

Human resources and their special importance in the hotel sector maintain their importance for the service sector as well. We need to explain the individual performance model to emphasize the importance and role of human resources and its impact on quality and competitiveness.

Business satisfaction, employee loyalty, productivity, quality of work and service depend on the knowledge and skills of the individual, the motivation and support received from the company, and the peculiarities of the job.

These differences are taken into account to determine the effectiveness of an organization. Also, these criteria can be considered useful in determining a company's capability to compete. In fact, quality is the key to entering the competition; nevertheless, quality in its entirety depends mainly on the human factor.

This model can be applied to the hotel sector of any country, including Azerbaijan.

As a subjective labor factor, the category of “individual” affects the entire work process in the hotel, and the “work” factor here is an objective factor which supports the labor. [17] For increasing business efficiency and competitiveness, subjective factors, depending on the probability of certain labor factors, are more significant than objective ones.



**Figure 1. Individual performance category**

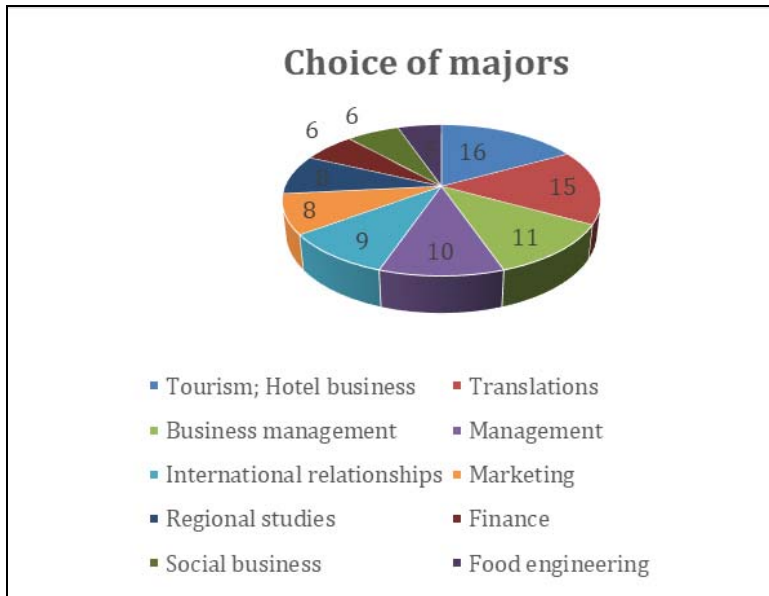
**Category – individual productivity**

Since the human factor is the main indicator of competitiveness in the hotel industry, the analysis of the factors affecting it is required. To put it more precisely, a person's productivity depends on 3 categories:

- Knowledge and skills
- Motivation and effort
- Support provided by the company

The next section presents a brief analysis of the impact of human resources on hotel productivity in the hotel industry of Azerbaijan.

## Conclusion and Discussion



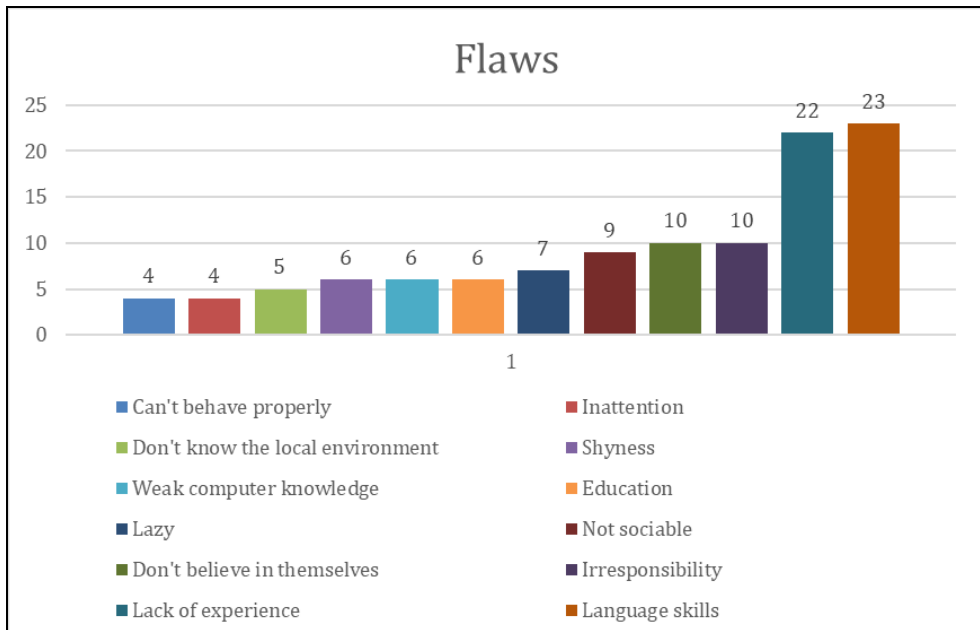
**Chart 1. Proposed specialties to choose from**

As can be seen from the corresponding paragraphs of “Strategic Roadmap for Development of the Specialized Tourism Industry in the Republic of Azerbaijan”, accepted by the Decree of the President of the Republic of Azerbaijan on December 6, 2016, human capital has a significant impact on tourism. In the roadmap, the role of service providers in hotels, restaurants and travel agencies is underlined.

The knowledge and skills required for employees in the hotel industry vary by the functions of a job field and job sector. Thus, management staff should have technical knowledge and knowledge about staff. As the status of an employee grows, the conceptual knowledge comes to the fore. Since there is always a connection between the person providing service and the guest, communication skills are important for a successful business and cooperation in this context; and this should be taught to all hotel staff. Speaking of communication, of course, employees must know at least one foreign language.

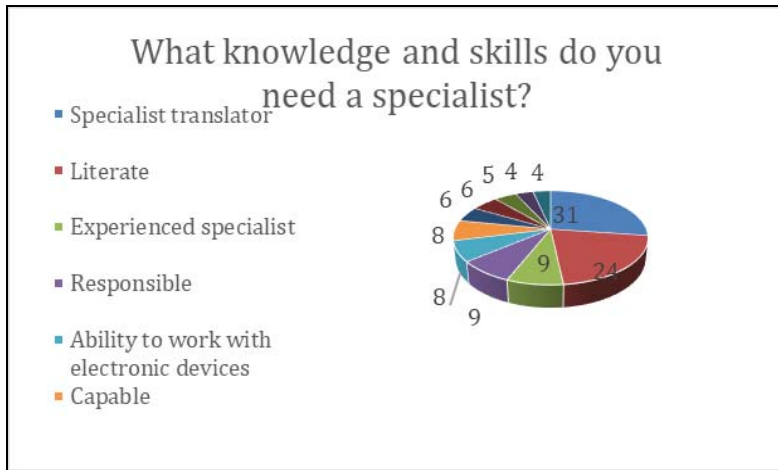


To prove this point, we present the results of the survey on industry organizations conducted within the framework of the project implemented by the United Nations Development Programme (representative for Azerbaijan) and Azerbaijan Tourism and Management University (ATMU), in order to determine the need for human resources in the tourism sector and the requirements of the industry.[13]

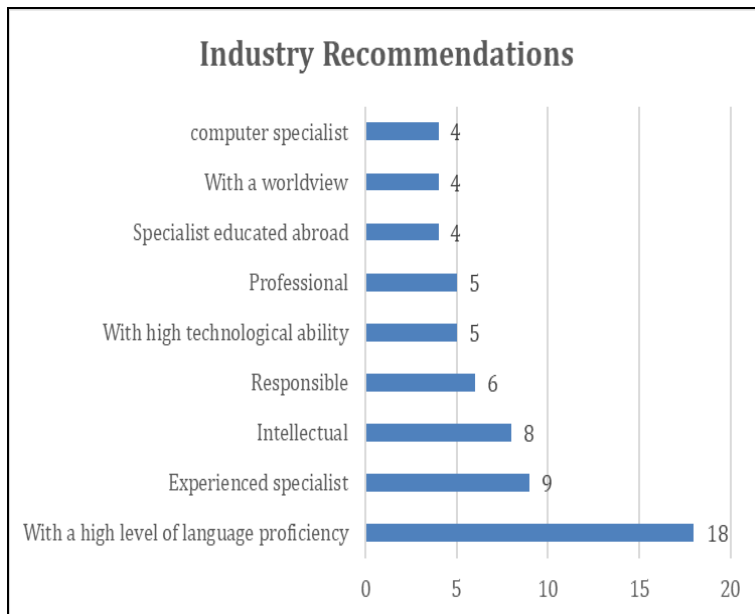


**Chart 2. Proposed specialties to choose from**

According to this survey, the negative aspects of the employees in Azerbaijani tourism industry are lack of knowledge of foreign languages, and lack of creativity and communication skills. This means that there are no basic conditions for a successful business realization. On the other hand, basic computer skills of employees in this field is also one of the worrying problems. These shortcomings are unforgivable for a country that wishes to be the center of tourism. If one of the categories is not fulfilled, it negatively affects the whole business and efficiency of the work, as well as the competitiveness of the hotel product.



**Chart 3. Demanded specialist**

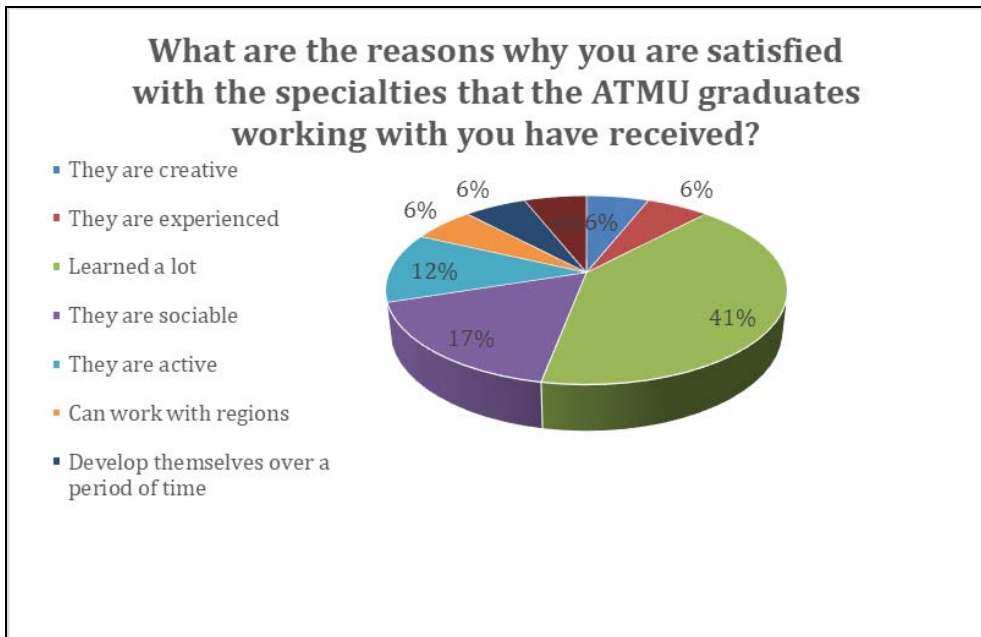


**Table 1. Industry Recommendations**

In a word, the staff in the hotel industry of Azerbaijan do not possess important knowledge and skills, and therefore these factors have a negative impact on the effectiveness of the service sector and the ability to compete. We can conclude that the situation has slightly improved since the time of the study. But labor competition is the focus of attention. Furthermore, there are questions about staff motivation in the hotel industry of Azerbaijan.

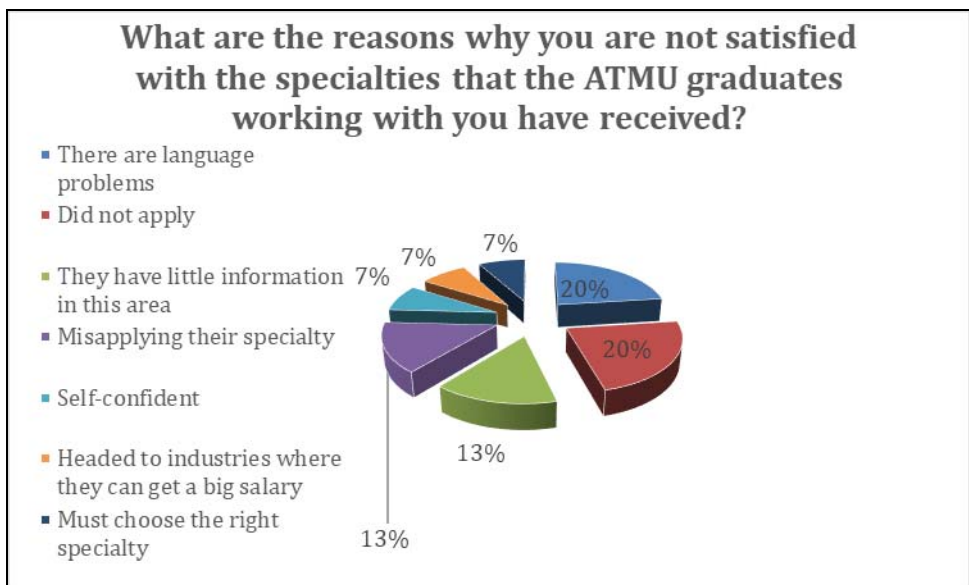
We can say that customer satisfaction depends on employee satisfaction, and since the latter is ensured by the entrepreneur, in such a service industry, the motivation factor for the hotel to achieve business success comes to the fore.

In Azerbaijan, there is the possibility of encountering a negative behavior of those who provide service, and this behavior makes the client think about changing his hotel to another one. What causes this? The answer lies in the creation of motivation (by means of the factors that direct a person to work individually, alignment of needs that cause conflicts, emphasizing the importance of one of the needs among various ones).



**Chart 4. What are the reasons why you are satisfied with the specialties that the ATMU graduates working with you have received?**

In order to motivate work, certain methods and techniques are used that directly affect human behavior. Motivational techniques include: money, job security, offering interesting positions, providing social credits, training and career advancement opportunities, right to express an opinion on quality issues and making joint decisions.



**Chart 5. What are the reasons why you are not satisfied with the specialties that the ATMU graduates working with you have received?**

Then the question arises: If local hotel owners are aware of the motivation factor, what do they do for this purpose? Unfortunately, most local hotels see profit as their primary goal. In fact, the goal should not be profit; since it is only a means to the main goal, the true goal should be to ensure customer satisfaction. The founders of modern management consider employee satisfaction in the hotel industry to be important, and it is not a coincidence that the hotels with the most successful business are located not in Azerbaijan, but in the distant countries that are partners.

As for the third element of the individual category, the company must provide full support to the employees. We can say that this factor is no less important than knowledge and skills, employee motivation. On the other hand, the motivation at

work, desire to acquire new knowledge and skills, flawlessness of activity, acquisition of more logical and significant successes by the company - all of them depend on the support provided to the employee at the workplace. This is closely related to the motivating factor outlined above.

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## QUALITATIVE ANALYSIS OF PUBLIC PERCEPTION OF WORK ETHICS IN NIGERIA'S PUBLIC SECTOR

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### Abstract

*The Nigerian public service is crucial to the country's economic development. This is because a vibrant public service sector is able to harness effectively overhead taxes and also account for public expenditure at all levels. The objective of this study is to investigate how public servants perceive work ethics to positively influence organizational success and productivity in Nigeria's public sector. In this study, the researcher used qualitative methods to analyze the response of 15 individuals from the public who have visited a typical public office at least 3 times within the last years. An interview form containing 7 items was administered, and the results were analyzed from themes that give a true picture of the perception of respondents. It was observed that workers in public service are not professional enough, taking their jobs with levity. As a result, this study recommends public service reforms.*

**Keywords:** government, Nigerian, public service, qualitative analyze, work ethics

**JEL Classification:** M19



## Introduction

For any nation to develop, it must effectively harness the contributions of its public sector in order to spur growth and development. This is because the public sector is the medium through which developmental efforts of the government can be implemented. Imhonopi and Ugochukwu (2013) agree to this idea, noting that the government can drive economic growth, and increase the level of trust between them and the citizenry by acting through the public sector, i.e., the various government-owned departments and agencies. Thus, the growth of any nation hangs largely on the government and the public servants that are employed to work in these organizations.

In many nations of the world, there are established codes of conduct for carrying out work in the public sector. This is also applicable to Nigeria. The constitution of the country has made prescriptions of codes of ethics in workplaces that public servants must adhere to. According to Bem (2014), code of conducts help to make workers in the public sector carry out their obligations dutifully to society. The author further notes that a breach of these codes would result in an unfavorable economic condition in the country, manifested in a high level of corruption, instability, lack of trust in government establishments, and an impeded national economic development.

Public servants in Nigeria's civil service are largely perceived to show a *laissez-faire* attitude to work, causing workers in a typical government office in Nigeria look short of what to do (Anazodo & Okoye, 2012). This is because excessive delegation of jobs and negligence of duty are the order of the day, a situation that has caused many to demand the popular "civil service reforms" (Anazodo & Okoye, 2012). Ogbonnaya (2018) explained that Nigeria is faced with tremendous of ethical backwardness and a severely weak value system. Some researchers further pointed that these unfavorable conditions resulting from breaching of codes of work ethics are being experienced in Nigeria due to low quality output and a high level of corruption in the public sector of the country (Okechukwu & Jide, 2018). This notion is in agreement with early ideas by Balci et al. (2012) who gave the opinion that lack of good ethical codes in the culture of an organization would increase the chances of destructive policies and violence, causing disappointment of some employees and others adopting the behaviour of placing personal benefits over that of the public, in other words, corruption. Bem (2014) opined that the citizens are often at the receiving end of poor and widespread increase in the decay of work ethics among workers in public sector.

Massoudi and Hamdi (2017) explained work ethics as the basis for hard work and assiduousness, with the belief that there is a benefit to be derived from being diligent with work. Tripathi (2014) further stated that in every organization, the employees' work ethics contributes to, and determine the overall success of the organization. For an organization to record high performance, it has to maintain a high standard of ethics and work values (Gould, 2014). This opinion is in line with the ideas of Bernard and Oyende (2015), who noted that since human contributions in any organization comes first in the order of important, how well each member of the organization performs his duty determines the overall performance, and, of course, success of the organization. It is on this premise that the current study tries to look at how public servants themselves perceive their own work ethics, and whether it is enough to positively influence organization success and productivity.

### **Objective of the study**

The aim of this study is to investigate on how public servants perceive work ethics to positively influence organization success and productivity in Nigeria public sector.

### **Literature Review**

The abysmal state of work performance in Nigeria's public sector has been an issue of concern to several scholars and professionals (Vambe, 2013). The government in the bid to put a stop to this introduced SERVICOM and the Code of Conduct Bureau. However, this seem to be inadequate as only a few public servants with the right work ethics and integrity always seem to be scarce (Vambe, 2013). In this section, we shall look at how literature of work ethics in Nigeria has developed over time.

### **History of Nigeria's public sector**

Nigeria's economic sector is divided into three distinct groups; the private sector, public sector and non-government organizations. While the private sector is out to provide goods and services in exchange for money, the public sector is government-owned (comprising of all government parastatals, Nigerian civil service, the military and the police), and is out to provide services for the general public. According to Haque (2001) the function of the public sector to provide goods and services to the citizens is because the public sector represents the interest of the citizens. Hence, it is safe to trace the history of the public sector to the civil service.

History of Nigeria's public sector history can be traced back to the era of British colonialism, the time of amalgamation of the Northern and Southern protectorates

in 1914 (Igbokwe-Ibeto, Nwobi, & Nnaji, 2019). At this time, the public sector was made of mostly Europeans, with traditional rulers settling for lower positions in the political structure so that the colonial political system will have some sense of legitimacy (Igbokwe-Ibeto, Nwobi, & Nnaji, 2019). This also counts for the reason why the system of indirect rule enjoyed a lot of success; it leveraged on the traditional rulers as part of the administration body in various small towns and villages. These traditional rulers were highly revered by the people who they ruled over. Their powers were seen to be spiritual and political, especially in the Northern and Western regions (Igbokwe-Ibeto, Nwobi, & Nnaji, 2019). Hence, the citizens had no choice but to accept the rule of the Brits. The Nigerian civil service began to take shape in in 1954 on the introduction of three regional political structure. This became more visible and organized in 1960 on gaining independence from colonial rule with the constitution at that time providing for parliamentary system of government and a significant level of independence for the regions, each region having its own government but with exclusive power in commercial and fiscal policies, defense and foreign relations reserved to the government (Igbokwe-Ibeto, Nwobi, & Nnaji, 2019; Okekeocha, 2013).

Since independence, several committees and panels has been assigned with the responsibility of studying and making recommendations for the reformation of the civil service. Some of these panels includes Margan Commission (1963), Adebo Commission (1971) and Udoji Commission (1979). The public sector, comprising gained greater visibility and became more active as more policies on developments and programs where actively carried (Igbokwe-Ibeto, Nwobi, & Nnaji, 2019). In the 1970s, Nigeria experienced an oil boom which boosted the country's economy. This, coupled with the commitment to succor the effects of the civil war led to the creation of more states in place of the regional system that was in operation (Igbokwe-Ibeto, Nwobi, & Nnaji, 2019). Over the next two decades, 36 states were created in total. Consequently, it led to the expansion of the civil service, with the federal civil service and those of the states witnessing tremendous growth, and more responsibilities (Igbokwe-Ibeto, Nwobi, & Nnaji, 2019). Unfortunately, this was not sustained. By the 2000s, the civil service was already witnessing a high degree of ineffectiveness, lack of work ethics among workers, and an alarming rate of mismanagement of the nation's resources (Abdullah, 2007).

### **The meaning of work ethics**

Work ethics is a branch of Philosophy known as Ethics. In the opinion of Aniele (2002), ethics involve studying systematically moral laws, either as a fundamental principle, or a study of human behavior. One can infer from this definition that

ethics is a science of evaluation, and not empirical or descriptive. Thus, in the study of ethics, the aim of the study is usually to evaluate and contrast with what ought to be, and not just describing or making empirical findings. Ethics consists of the study of moral principles that guides the way people ought to conduct themselves concerning work, teamwork, self-discipline, self-worth, and integrity (Aniele, 2002). According to Noe, Hollenbeck, Gerhart, and Wright (2004), ethics studies the principles of right and wrong in their fundamental state and the behavior that consistently obeys those principles. Ananti and Umeifekwem (2012) opined that the purpose of ethics is to address the issue of moral standards. Furthermore, the researchers noted that studying ethics in the premise of the duty of a worker in the public sector considers the job a service to the public. In other words, ethics in the public sector evaluates the right or wrong of the actions taken by workers in the public sector while carrying out their daily duties. It can also be explained as the standard with which workers in the public sector will be scrutinized by the public (Ananti & Umeifekwem, 2012).

The accounting dictionary of 2019 described work ethics as being able to maintain the right and proper moral value at workplace. This attitude, in the opinion of determines how a worker will carry out his job in a workplace. Cascio (2013) noted that work ethics is the set standard of morals acceptable in an average work place as concerning the welfare of the employees, their attitude to work, self-discipline, and how committed they are to their tasks at their workplace. Velasquez (2002) sees work ethics as the principle guiding the conducts of individuals and groups in at workplace, which makes them adhere to the ethical codes in their organization. This influences the level of productivity and profitability of the organization. Adams and Danny (2007) posited that one of the most important benefits an organization derives from work ethics is that it helps keep organizational integrity as it helps all members of the organizational maintain professional norms. The pair also explained that work ethics help workers avoid mistakes that makes the public lose trust in them. Some of such mistakes or misdeeds are corruption and nepotism (Adams & Danny, 2007). Hence, work ethics make workers in the public sector accountable to the general public whom they serve (Adams & Danny, 2007). In the opinion of Friedrich (1940), ethics can be likened to a moral compass guiding an individual in public administration in the midst of widespread ethical bankruptcy.

### **Work ethics in the Nigerian public sector**

The workers' attitudes, integrity, self-discipline, teamwork, emphasis on quality, commitment and productivity of the Nigerian workers have painted a

rather negative picture of apathetic, uncommitted men and women, who are unresponsive to motivational techniques. The Nigerian workers have been described as indolent, apathetic and unresponsive to motivation and generally, not willing to put forth maximum productive efforts (Ugwu et al., 2019). Whichever way we look at it, the Nigerian workers are what we have, hence we must encourage them to make meaningful contribution to the development of the nation by becoming more productive. Given this outside perception of Nigeria workers in relation to ethics, the current study tries to examine the public perception of staffs of the Nigerian civil service. To do this, this study tries to answer the research question below;

- What perception does the average Nigerian hold concerning the Nigerian civil service?

### **Methodology**

The researcher conducted an open-ended interview using an interview form (see table 1) containing 7 items all relating to the research questions in section 2. The responses of the respondents were recorded and transcribed from which researcher derived themes and codes were qualitatively analyzed. Two coders were used in order to arrive at a robust result. Furthermore, inter-coder reliability was calculated using Kohen Kappa technique. This was necessary to ascertain whether the results only happened by chance or not. Respondents were recruited from the public but were narrowed down to only those who have had at least 3 encounter with public offices in the last one year. Overall, 15 persons made the requirement for the study, and were grouped based on the number of visits.

**Table 1. Interview questions**

S/N	Question
1.	On scale 1-5 (5 been the highest), how would you rate the civil service in terms of work ethics?
2.	Have you ever had an encounter at any public office, describe the service you received?
3.	How professional are workers within the civil service?
4.	In terms of punctuality to work, how would you describe public servants?
5.	How would you describe dedication to the job by public sector workers?
6.	How would you describe regularity of workers in public service?
7.	Do you think the civil service needs reform?

## Results

Coding was done in twice; firstly, across individual groups, i.e. one, two or three visits to a public office within the last 365 days, and secondly there was a recoding that cuts across all three groups. A theme was developed from the transcript using the coding relationship, bearing in mind the research question. The themes were grouped for easy identification. Furthermore, respondents mostly gave additional information as regards work ethics in the public sector, which formed a part of the discussion. Table 2 shows the coded transcript for this study.

**Table 2. Coded transcript**

S/N	Three visit	Four visits	Five visits	Code
1	Rating of 1	If possible 0 rating, very poor rating nevertheless	Low rating of 1	Poor rating due to poor impression
2	Yes	Yes	Yes	Laissez-faire attitude to work
	Unprofessional	Lazy response	Very poor	
3	Unprofessional at all	Unprofessional	They do not care approach professionalism	Unprofessional
4	80% arrive after 9a.m	Civil servants are never early to work	The government job is never taken seriously	Lack of punctuality
5	Most bring personal jobs to do at the place of work	Poor dedication	Many only do it as it is the only available option for them	Very low commitment and dedication
6	Government workers skip work at will	Bosses in the government parastatals are rarely at work	Only junior staffs are regular at work	Many come to work at will as there are rarely queries
7	Yes	Very importantly	Yes, and very urgently too	Quick fix of the problem through reforms

For testing how trustworthy the codes (table 2) are, an intercoder-reliability test was adopted through the comparison of results of the coding schemes of both coders (table 3). Cohen Kappa coefficient was calculated as 0.86, implying a close-to-perfect agreement coding results. “X” means that the participant provided a



response that is okay for a particular question. This is coded as 1, while “S” implies that the response is not okay, coded 0. Kappa accounts for the

**Table 3. Consistency of coding scheme**

Question	First coder (researcher)	Second coder (coding expert)
1	X	S
2	S	S
3	X	X
4	S	X
5	X	X
6	X	S
7	X	X

**Table 4. Interrater-reliability**

Second coder	First coder			
		X	S	
X	3	2	5	71%
S	1	1	2	29%
	4	3	7	
	57%	43%		

$$\text{Kappa is given as; } K = \frac{Pr_a - Pr_e}{1 - Pr_e};$$

Where,  $Pr_a$  is summation of probability of relative observed agreement (addition of sufficient and insufficient response) and division by all possible response) =  $3+1/7= 57\%$

$Pr_e$  is probability of agreement which is based on chance; (% insufficient responses for first coder × % insufficient responses for second coder) + (% sufficient responses for first coder × % sufficient responses for second coder) =  $(0.57 \times 0.71) + (0.43 \times 0.29) = (0.4047 + 0.1247) = 0.52$

$$K = \frac{Pr_a - Pr_e}{1 - Pr_e} = \frac{0.57 - 0.52}{1 - 0.52}$$

$$K = 0.10$$



A low consistency implies that coding does not converge mainly due to few number of interview questions. Hence, study results is then solely based on the interpretation of themes. From table 2, the following group of themes can be determined (see table 5).

**Table 5. Themes for the current study**

Theme	Codes
Attitude	Laissez-faire attitude to work
	Low commitment and dedication
	Lack of punctuality
	Irregular attendance (no queries)
Problems	Poor rating
	Unprofessionalism
Solution	Quick fix (reforms)

### **Discussion**

Work ethics in Nigerian public service has gone bad mainly due to way workers carry out their jobs. The codes developed from the transcript of interview shows that workers rarely care about their work and hence do not take it seriously. Low commitment, lateness to work and even skipping work for personal programs are some of the poor attitudes that result in serious problem for the civil service. This habit cause problem such as poor rating of the public service by citizens as well as a tag of unprofessionalism for which the workers are known for. Some respondents even reported that many public servants are not even qualified for the roles for which they have been employed. These problems tend to affect the Nigerian economy as the labour force is not living up to expectations. While there are so much negativity about public servants and their work ethics, an aspect of the themes of this study showed that it is important that the public sector undergoes yet another batch of reforms that should be aimed at repositioning it in the right direction.

The results of this study is in line with the research of Ananti and Umeifekwem (2012) who noted poor attitude to work by local government staffs in some parts of Nigeria. It is also in line with the study of Vambe (2013), who opined that the provision of more work incentives, improved salaries and the enthronement of the culture of ethics and professionalism can be very useful to revamp public sector in Nigeria.

### **Conclusion**

Poor ethical standard has found its way to all aspects of the Nigerian system, especially within the Nigerian Public Service. A new value system has to be introduced and instilled into persons attached to the Public service. Departmental heads of public institutions need to begin to take steps into re-establishing the practices. It may be rather difficult to reach the Millennium Development Goals and all other policies with a wrong public service attitude. Hence, a value system that can shape the Nigerian society is needed. When there is no added value by the public service, it impacts negatively on the economy

### **Policy recommendation**

Based on information gathered from this study, it may be very important for policy makers to look into the following areas

1. Enactment of new public service laws that will clamp down on civil servants that do not take their jobs seriously.
2. Furthermore, there is a need for a revisiting of the issue of salary and wages of public servants (minimum wage). This may serve as a new source of motivation for better performance
3. Rejuvenation of the entire mindset of new employees coming into the public service, so that they have a new perspective towards work, and are able to give in their best to the job.

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## **CHALLENGES AND TRENDS REGARDING THE IMPLEMENTATION OF ICT SOLUTIONS IN THE MANAGEMENT OF CUSTOMER SERVICE DEPARTMENT, WITH CASE STUDY AT AS&ICT ROMANIA**

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### **Abstract**

*The motivation for choosing the theme is primarily due to our passion for the ICT field. In this work, we first approached the study and analysis of the national and international ICT market from the last 5 years, then we will refer to the challenges and trends regarding the implementation of ICT solutions in the management of the customer services department, with a case study at the Company AS&ICT Romania<sup>1</sup>.*

*The ICT industry in Romania represents one of the most prosperous economic sectors, registering a turnover of almost 6 billion euros in 2019, representing approximately 5.5% of the country's Gross Domestic Product.*

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<sup>1</sup> In order to protect the identity of the company and the statistical data used in this work, we chose not to disclose the real name of the company where we conducted the case study.

*In 2020, the IT&C sector had a turnover of 70.3 billion lei and was in the Top 5 economic sectors, along with manufacturing, construction, transport, and storage*

*The purpose of the paper is mainly to follow the evolution of the ICT market on a national and international level in the last 5 years.*

*The objectives pursued in the paper have in mind the establishment of the year-by-year evolution of the national and international ICT market, as well as the impact it generates on the economy and everyday life.*

*The importance of the theme for research and for the business environment consists in the fact that increasingly in recent years the ICT field represents in the business environment an important pillar in the digitization and automation of services. Digitization means a large number of tools that make work more efficient within a company.*

*The novelty of the paper's theme would consist in measuring the impact of the influence of the ICT industry on the perception of everyday life, studying the growth of the national and international ICT industry, as well as its impact on the business environment.*

**Keywords:** *implementation of ICT solutions, management of the customer service department, business environment, digitization*

**JEL Classification:** *O14*

## **Introduction**

This **research paper** tries to highlight the challenges and trends regarding the implementation of ICT solutions in the management of the customer service department. The contribution of the ICT sector in simplifying project implementation procedures is being pursued. With the help of specialized software, it is desired to correlate the solutions and directions given by management with all the entities involved in the process. (Szymczyk, K. , 2021)

### **1.The international profile market specific to the ICT industry**

According to a Reuters study, mobile applications and the cloud are becoming more important, and the profit margins in software are more and more attractive. However, it is estimated that large companies such as IBM, HP, Oracle or Dell could soon operate important restructurings. In fact, Cisco has announced that it will lay off 5,500 employees, thus joining a long line of prominent companies that have undergone massive restructuring in recent years. (*Foo Yun Chee, 2023*).

There is a kind of "decomposition" taking place in the ICT sector, and companies like Microsoft and Amazon, which provide "super cloud" services, stand to gain in the medium term. These services help manage hardware, software, networks and databases, without the need for company employees to deal with every technological chapter. The consequence is that large companies can manage with fewer employees. (Harter, D. E., Krishnan, M. S., & Slaughter, S. A., 2000).

The transition to the new business model in ICT does not only involve restructuring, but also acquisitions. Cisco, for example, has bought a number of smaller companies specializing in ICT security or data analysis and says the move will help it establish itself in areas where it wants to become a leader. (Simoni, M., Schiavone, F., Risitano, M., Leone, D., & Chen, J., 2022)

In the top 10 most valuable companies in the world we meet important players in the ICT industry (*Tuck A., 2022*):

**a. MICROSOFT** Its market capitalization crossed \$1 trillion in April 2019 and currently stands at \$1.2 trillion.

**b. APPLE** Currently has a market capitalization of \$1.1 trillion.

**c. AMAZON** In 2018, Amazon had a market capitalization of more than one trillion dollars, but currently, it reaches 971,000 million in the stock market, according to the ranking of PwC.

**d. ALPHABET** (owner of Google, Youtube, Chromcast ect) Its market cap now stands at \$799,000 million.

**e. ALIBABA** Alibaba currently has a market capitalization of \$522 billion

**f. FACEBOOK** currently has a market capitalization of \$469 billion.

## 2. The Romanian market specific to the ICT industry

Regarding the evolution of the ICT market in the last decade, the data published by the National Institute of Statistics (INS) in 2018 indicate a number of over 115,000 employees in the ICT industry in Romania. At the same time, the percentage evolution of turnover, and net profit, but also the number of employees of the largest technology companies in Romania between 2009 and 2019 increased significantly. (Jurek, P., Olech, M., & Brycz, H., 2021). Companies with foreign capital operating in Romania represent 10% of the total number of companies in the industry, generating 73% of market revenues, while Romanian companies generate approximately 27% of the total market. (<https://insse.ro/cms>) A problematic factor regarding the development of the ICT industry in Romania is the fact that about 78% of the market is used as exports according to the Employers' Association of the Software and Services Industry (ANIS), registering



significant increases compared to 2017 (65%) and 2018 (72%). (<https://anis.ro/en/>) This trend comes against the background of an undersized internal market, caused by the low degree of digitization of the administration, respectively the adoption of technology on a very small scale in Romanian companies, compared to the EU average. Romania ranks 26th out of the 28 EU member states in the Digital Economy and Society Index (DESI) for 2020. (<https://digital-strategy.ec.europa.eu/>)

Based on pre-pandemic data, Romania's performance was identical in four of the five DESI dimensions measured. This situation is caused by the slow progress recorded in general, but also by political developments, as there have been four different governments in Romania in the last three years.

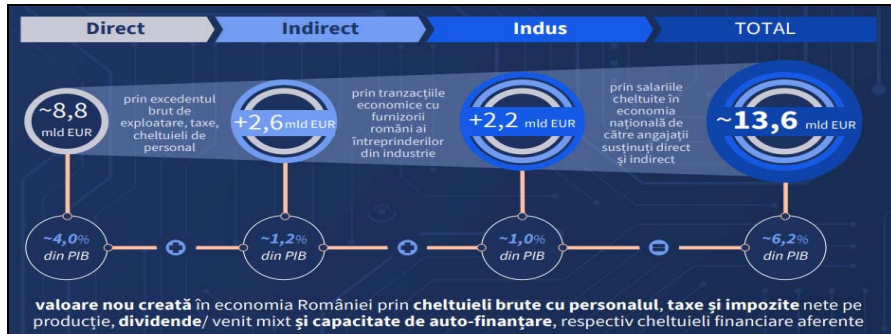
Romania scores the best in the connectivity dimension, thanks to the high use of very high-speed broadband and the wide availability of very high-capacity fixed networks, especially in urban areas. 49% of homes in Romania are subscribed to very high-speed broadband services (at least 100 Mbps), thus Romania ranks 5th in the EU. (Remeikienė, R., Gasparėnienė, L., Bayar, Y., Ginevičius, R., & Ragaišytė, I. M., 2022). However, the digitization of the economy has lagged behind, given that almost a fifth of Romanians have never used the Internet and less than a third have at least basic digital skills. Romania is well positioned in terms of ICT graduates, ranking fifth, with 5.6% of all graduates (EU average: 3.6%); however, in terms of digital public services and the use of internet services, Romania's performance is the lowest among EU member states (Kerzner, H., 2022).

The ICT field registered a 10% increase in employees in 2020 and 16% in 2021.

The annual growth rate of the gross added value in the software industry and ICT services and in the entire economy of Romania in 2020 was as it is to be shown in the graphs to be exposed, the data is taken from official sources, which we will quote. In the following pictures and graphs, we will try to look in detail at this impact (<https://anis.ro/en/>):

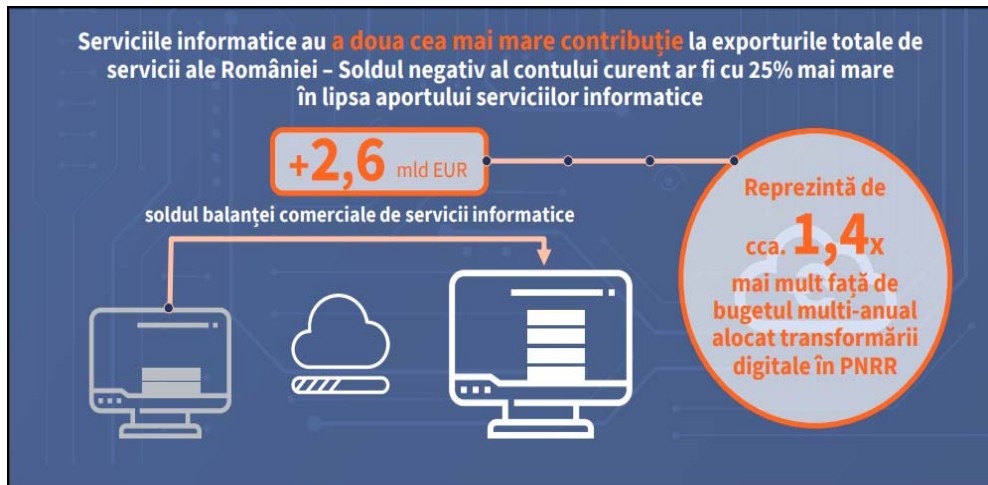


**The impact of the ICT software and services industry in Romania's GDP, 2020**



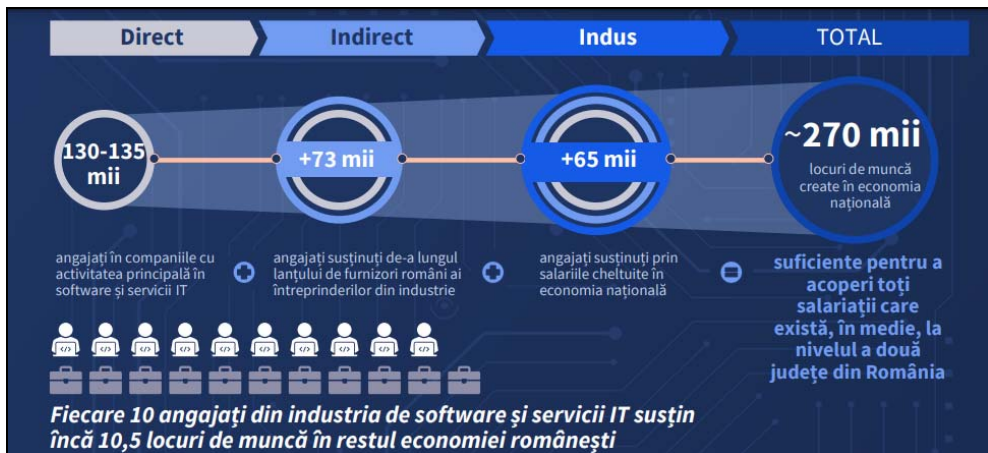
Source: ANIS – Study on the impact of the software and IT services industry

**The impact of the software and IT services industry on the trade balance in Romania, 2020**



Source: ANIS – Study on the impact of the software and IT services industry

The impact of the software and IT services industry  
on the labor market in Romania, 2020



(Source: ANIS – Study on the impact of the software and IT services industry)

A study carried out by SRD-media together with Adrian Lupău on the evolution of the IT field in Romania shows that (<https://www.managero.ro>):

- Small IT firms in Cluj register a 15% increase in employees in 2021 compared to 2019, while Bucharest shows a growth of only 1.5%
- The average IT companies in Romania show an increase of 11% in Cluj and 13% in Bucharest.
- Large IT corporations present on the Cluj market register significant increases in 2021. 57% more employees than in 2019
- LinkedIn – an online environment for new opportunities

When it comes to small IT companies in Cluj, the number of employees has increased significantly since 2019. The data shows that in 2021 there were 3.5% more than in 2020 and 15% more than in 2019.

However, the same cannot be said about those in Bucharest. There was a decrease of 0.4% in 2021 compared to 2020, among the employees of these companies.

- Average ICT companies in the country show an increase of 11% in Cluj and 13% in Bucharest.

Data from ICT companies in Cluj that have between 50 and 100 employees showed an increase of approximately 11% from 2019 to the present.

An evolution is also observed in the case of companies in Bucharest, where we have an increase of almost 13% on the IT labor market.

- LinkedIn – an online environment for new opportunities.

The pandemic has influenced all areas of society, and the labor market was no exception. The fact that business events and conferences could no longer be held due to the restrictions and safety measures imposed by the authorities, made entrepreneurs reorient themselves. LinkedIn was the social platform that generated new opportunities in the industry for ICT employers and employees, especially after the outbreak of the pandemic. (Alkatheeri, H. B., Jabeen, F., Mehmood, K., & Santoro, G., 2021).

An expert in LinkedIn, Adrian Lupău explains in the same article as above, what this social media platform represents for entrepreneurs, but also from the point of view of the collected data: "For data collection, we used LinkedIn, with its professional version Sales Navigator, because it is the only source of real-time data on the evolution of companies. This is due to the fact that it is constantly updated by all members of the network. When we talk about data, there is no ultimate source of 'truth' because data by its very nature is perishable and constantly changing, but the way this data is collected and updated makes the difference. Precisely from this point of view, LinkedIn presents an advantage, being the only professional business network that had a significant growth in 2020. Entrepreneurs turned their attention to the online environment to generate new opportunities in the absence of traditional means - conferences and events business - which became unavailable due to the pandemic," Adrian Lupău reported (<https://www.managero.ro>).

### Methodology

In this study, SRD-media, together with Adrian Lupău, B2B sales specialist and LinkedIn expert, analyzed over 200 companies present on the ICT market in Romania. Data on the number of employees from 2019, 2020 and 2021 were extracted from LinkedIn, with the aim of tracking the evolution of the labor market in this field. Both Romanian companies and subsidiaries of large international corporations were included in the analysis (<https://www.managero.ro>). They were analyzed and compared according to their size: small companies (under 50 employees), medium-sized corporations (between 50 and 100 employees) and large employers (over 100 employees), with a focus on Cluj and Bucharest. (Shastri, K., & Mishra, R., 2021)

### 3. Legislative aspects regarding the ICT field in Romania

There are many areas of ICT activity that are regulated or influenced by applicable laws. First there is the so-called "intellectual property" in general, especially with regard to media content (especially CDs and DVDs) and digital content (music, movies, video games and programs in general ...): in particular, copyright, fair use and specific regulations for limiting duplication (copy prevention). The problem of Internet piracy is also very much felt, with the dissemination of content through peer-to-peer distributed systems. The patentability of software is a controversial and constantly evolving subject in Europe and elsewhere. (Wańkowski, Z., & Jasiulewicz, A., 2021)

Topics related to software licensing, software license acceptance, free and open source software may involve discussions of product law, individual developer professional liability, warranties, contracts, trade secrets, and intellectual property.

According to Lawrence Lessig, there are 4 main forces that govern the Internet, according to what he calls the "Pathetic Point Theory" in his book "Code and Other Laws of Cyberspace" (Lessig, L., 2009):

- The law: What Lessig calls "the standard code of the East Coast," clearly referring to the laws passed by the White House. In terms of digital legislation, the United States is the country with the most advanced regulations. The many ever-changing laws, codes, and regulations of the United States make many actions on the Internet subject to conventional law. Areas such as gambling, child pornography and fraud are regulated in the same way online and offline. One of the most controversial sectors is trading and transactions in general, especially cross-border. Sometimes it is clear that illegal offline transactions are not regulated on the Internet. (Bode, M., Deneva, M., & Van Sinderen, M. J., 2022, June)

- Architecture: What Lessig calls "West Coast Code," from Silicon Valley programming code. These mechanisms concern the parameters of how information can and cannot be transmitted over the Internet. Everything on the Internet, from filtering software (URLs or keywords that are blocked before they can be viewed on the device), to cryptographic programs, to the basic architecture of TCP/IP protocols, falls under this essentially private regulatory category. It can be argued that all other ways of regulating the Internet are based on or significantly influenced by the "West Coast Code".

- Norms: As in all other modes of social interaction, behavior is governed by social norms and conventions. Although some online activities or conduct may not be expressly prohibited by the Internet Architecture Code or expressly prohibited by traditional government law, such activities or conduct are governed by the rules

of the community in which the business is conducted, in this Internet users. Just as certain patterns of behavior would lead an individual to be estranged from our real-world society, so some actions will be censored or self-regulated by the norms of whatever community one chooses to access on the Internet (Kumar, M., & Ayedee, D., 2021).

- Market: Closely allied to regulation by social norms, markets also regulate certain patterns of behavior on the Internet. While economic markets will have limited influence on the non-commercial side of the Internet, the Internet also creates a virtual marketplace for information, and that information can have a huge market impact. (Alawamleh, H. A., AlShibly, M. H. A. A., Tommalieh, A. F. A., Al-Qaryouti, M. Q. H., & Ali, B. J. , 2021). Moreover, the increasing popularity of the Internet as a means of transactions and as a showcase for advertising has brought the laws of supply and demand into cyberspace. The forces of supply and demand also affect Internet connectivity, the cost of bandwidth, and the availability of software to facilitate the creation, publication, and use of Internet content. (Gil-Trujillo, A., & Alonso, J. J. S. , 2023)

AS&ICT Romania is a major system integrator of ICT solutions on a market with a high level of competition, which respects the legislative framework and the rules in force. (Weill, P., & Ross, J. W., 2005)

#### 4. Presentation and brief history of AS&ICT Romania

AS&ICT Romania was established in 1994 as a subsidiary of AS&ICT System Integration & Technology Distribution AG - Austria. The company has continuously developed from its initial stage as an ICT distributor, making rapid progress towards achieving the corporation's goal of expanding its leading position in the provision of ICT consulting, solutions and services in Central and Eastern Europe and the German-speaking countries region . AS&ICT Romania is a major system integrator on a highly competitive market. The company offers a wide range of ICT consulting services, develops and implements customized solutions and provides customers with non-stop assistance.

AS&ICT has a vast portfolio of value-added ICT services that includes: consulting, customer training, installation and maintenance, warranty and post-warranty services, project management, training and professional support in related areas, such as networking and systems operation.

Also, AS&ICT Romania is a near shoring center that responds to the requests received from ICT markets in Europe. The company offers software development services, project management and related consulting services. Carefully chosen and



implemented IT solutions respond to dynamic changes in the business environment. AS&ICT Romania has proven its competence in providing such ICT solutions and can be the right partner that can help you quickly be present on the market so as to obtain superior results.

AS&ICT Romania S.R.L. is a commercial company with limited liability, with fully private capital, it was established and operates in accordance with Law no. 31/1990 on commercial companies, with subsequent amendments and additions, being registered at the Bucharest Trade Registry. AS&ICT Romania S.R.L. was established in 1994, having private capital fully subscribed and paid by the following associates:

1. AS&ICT AG, Austrian legal entity, with registered office in Austria, representing 41% of the share capital.
2. Computers BeLting ICT Company GMBH, Austrian legal entity, with registered office in Austria, representing 59% of the share capital.

AS&ICT Romania S.R.L. is organized, operates and carries out its activity in accordance with the legislation in force in Romania, with the Constitutive Act of the Company, with the Decisions of the General Meeting of Associates and the Decisions of the Company's Administrators. The company's activity is organized by department, according to the Organization Chart approved by the General Director/ Company Administrators. The object of the company's activity is that stipulated in the Company's Constitutive Act, the main field of activity is "consulting activities in information technology" - Caen code 620, the main activity being Code CAEN 6202 - Consulting activities in information technology. The purpose of the activities and the range of products provided have evolved with the development of the company, AS&ICT Romania having the ability to offer appropriate distribution, consultancy and technical support services.

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With a team of 240 specialists, with skills and new business verticals developed through recent acquisitions (Fair Value - 2018, Kapsch CarrierCom Romania - 2019, Cronus eBusiness - 2020), AS&ICT Romania ranks third in the list of local IT integrators made by Finance newspaper.

AS&ICT believes that a successful company must combine an active presence in the technical and professional field with social and cultural activities. For these reasons, AS&ICT Romania is involved in supporting various activities in fields such as science, culture, education and public health

The company's main objective is to help its customers improve their business performance by implementing and effectively using the most advanced IT solutions.

### **5. The microenvironment of the company**

In order to deliver innovative, solid and safe solutions, AS&ICT realized from the beginning the importance of long-term partnerships with the most important suppliers of information technology, communication services and software applications-

Improving the certification portfolio is absolutely necessary for AS&ICT Romania. Competences on multiple brands of products and services, as well as the ability to integrate a wide range of solutions from different suppliers, to combine them and turn them into successful projects, are the basis of AS&ICT's strategy.

Some of the technological partnerships of AS&ICT company are: DELL EMC, CISCO, ORACLE, STARS, VM WARE, FUJITSU, HP, FORTI NET, CIBER ARK, FORCE POINT, PALO ALTO, LENOVO, MICROSOFT, SAP etc.

Essential Customers of AS&ICT company are as follows:

The Ministry of Transport and the City Hall of the Capital together with AS&ICT Romania implemented, together with STB and Metrorex, a new system whose long-term objective is to improve travel conditions (Bucharestians can travel with the same ticket both on the metro and on public surface transport) .

Implementation of the BIG DATA IT system at the Competition Council. Integrated in the project "Optimizing the interaction with the business environment and implementing advanced mechanisms of analysis and data exchange by implementing an IT system of e-government and Big Data analysis within the Competition Council", the project completed by AS&ICT Romania represents the implementation of a parts of the internal business flows of the Competition Council that are essential as data sources for the operation of the Big Data platform. The computerization and integration services of these flows contribute to the completion of the data sources needed for the Big Data project with the data processed in the work flows, transferring structured and unstructured data in an electronic environment that are not yet consolidated at the level of the institution.



The State Inspectorate for Road Transport Control together with AS&ICT Romania have implemented the "Integrated Information System (SII)". The project has as its general objective the creation and operationalization of a modern, safe and efficient framework for carrying out the activity of the ISCTR through the implementation of an integrated IT solution, which will support the control activity carried out by the ISCTR according to the legal provisions in force. This objective will be achieved by putting into operation the Integrated Information System (SII), used by the ISCTR staff to carry out current activities and carried out by AS&ICT Romania.

AS&ICT's clients include: SC OMV Petrom SA (Petrom), Loteria Română, H&M Romania, Hervis Sports Romania, Michelin Romania, Daimler Romania, ALSTOM Romania, the Ministry of Education, the National Printing Office, BAYER Romania.

Among AS&ICT's main competitors in the local market were TotalSoft, IBM, Star Storage, Ness Technologies and HP.

## 6. The international macro-environment

### a) Political Environment

In an extremely difficult economic context, dominated by the coronavirus pandemic, the AS&ICT AG group successfully completed the first six months of 2020. AS&ICT impresses with very good results, continuing the growth curve, with revenues of EUR 268.6 million, with 8% more compared to the same period of 2019. In the second quarter, the EBITDA value increased to EUR 27.0 million (2019: EUR 23.2 million), also the operating cash flow reached 38.9 EUR million, EUR 11.7 million more than the previous year. All this positions AS&ICT as the winner in the face of the crisis caused by the new coronavirus.

Whether we are talking about video conferencing systems, workstations for home offices or critical infrastructure for data centers, technology providers are very active at this time offering solutions and services to deal with the crisis and minimize its impact. AS&ICT has always been and remains with its customers and has all the resources to respond promptly and adequately to the increased number of requests. Thanks to its solid position, AS&ICT also pays attention to current procurement opportunities so that, in July 2020, AS&ICT has expanded the portfolio of products and skills through the strategic acquisitions of Iskratel and CITYCOMP.

And at the local level, AS&ICT Romania, 100% owned by AS&ICT AG, recorded a turnover of EUR 19.4 million in mid-2020, up from 2019: EUR 19.1 million.

Hannes Niederhauser, CEO: "Despite the current crisis, our outlook is positive. We have played our cards well during this period, we are performing in various sectors and therefore we consider ourselves victorious in the face of the coronavirus crisis. I look forward to continuing with other successful acquisitions in the coming quarters. There is no doubt that we will achieve our 2020 target of €1,150 million in revenue with €115 million in EBITDA and we are maintaining our plan to reach €2 billion in revenue with €220 million in EBITDA in 2023."

b) Economic Environment:

Financial results S2-2021

\* The company reports significant increases compared to the first semester of 2020, which in the context of the pandemic represented a spectacular growth for AS&ICT Romania.

\* Turnover increased by 8% and net profit increased by 72% compared to the same period last year.

\* Operational cash flow was improved by over 100%.

\* Last year, AS&ICT Romania acquired 2 local companies, the investment value being 12 million euros, the financing being 50% from own sources and 50% from sources within the group.

\* By the end of 2021, AS&ICT Romania plans to acquire a local company that will complete the portfolio.

The AS&ICT Romania technology company, part of the AS&ICT AG group (ISIN: AT0000A0E9W5, WKN: A0X9EJ, Stock Exchange symbol: SANT) and one of the largest integrators of IT&C solutions on the local market, closes the first half of 2021 with outstanding results, turnover increased by 8% compared to the same period last year, with an estimated increase of 35% by the end of 2021. Net profit increased by more than 100%, with an estimated increase of 397.5 % until the end of the year. And in terms of the number of employees, the company has registered a spectacular growth, from 183 people in 2020 to approximately 280 people in 2021.

"The investments made in 2019 and 2020 through which the company acquired 2 local companies, namely Cronus eBusiness and Kapsch CarrierCom, are starting to mature. The IT&C industry experienced an effervescent period starting last year, and the financial results of AS&ICT Romania prove that the business direction assumed last year was consistent with the opportunities offered by this context.

This is an excellent signal for our company, which encourages us to go in the same direction, with the plan to acquire a local company to complete our portfolio by the end of 2021." said the company's CEO in an interview for the company's internal newspaper.

Moreover, the figures recorded at the group level are also impressive. AS&ICT AG ends the first half of 2021 with an increase of 11.5%, to 600.6 million euros (compared to 538.7 million euros in the previous year), and EBITDA increasing by 12.2%, to 58.3 million euros (compared to 52.0 million in the previous year). Despite the chip crisis, gross margin of 38.8% is almost at the same level as last year, and earnings per share (undiluted) increased by 6.7% to 0.32 euros (compared to 0.30 euros last year).

A particularly good sign for the AS&ICT Group is the significant increase in orders in progress to €1.137 million as of June 30, 2021, from €927 million as of December 31, 2020. New orders were recorded, worth a total of 406 million euros, only in the second quarter of the year. The strong demand can be attributed to emerging industrial companies that are driving growth with IoT products, as well as global growth plans to accelerate the economic recovery imposed by the COVID-19 crisis.

The high demand for IoT solutions confirms that the AS&ICT Group is well positioned in the market and has excellent growth prospects. Without the current chip crisis, even stronger near-term growth would be possible. In the second quarter of the year, for example, orders worth 38.3 million euros could not be fulfilled or were postponed for the following months. AS&ICT is making sustained efforts to complete backorders in the near future and is investing in new supply chains and product adaptation.

"Revenue growth and the rapid acceleration of incoming orders in the first part of the year are a good starting point for the 12% growth we are targeting for 2021. The chip crisis we are currently facing somewhat diminishes these good prospects as it delays deliveries and slows even stronger growth, which the very good order situation predicted. Even so, we reached our targets for 2021, namely a revenue of 1,400 million euros, with EBITDA of 140 million euros. We also reconfirm that our medium-term objective is to achieve a revenue of 2 billion euros in 2023, with EBITDA of at least 220 million euros." said the CEO of the AS&ICT AG group.

According to Profit.ro: "The local subsidiary of the Austrian group AS&ICT, one of the largest integrators of IT&C solutions, last year recorded a turnover of 217.7 million lei, up 2.1% compared to 2019, and the net profit reached 917,607 lei, from a minus of 211,180 lei a year ago. The company last recorded a net profit

in 2015. Receivables increased from 72.1 million lei to 75.3 million lei, and total liabilities rose by 45 million lei to 145.04 million lei."

"AS&ICT Romania continued in 2021 the upward trend started three years ago, both through organic growth and through completed acquisitions, being one of the largest IT integrators in Romania. I could say that we are starting to reach our true potential company. The company's turnover has grown in the last three years more than the IT market in Romania, which, according to recent data, registered an advance of 1.3% annually. The net profit rose by over 100% in the first part of the year and I anticipate that the advance of this indicator will approach 400% for the whole year 2021. The company ended the previous year with a profit that exceeds the objectives and with a turnover about 50% higher than that of 2020".

c) Ecological Environment

Environmental pollution began to make its presence felt with the start of the industrial revolution in the 19th century and since then it has continued to grow, becoming a real public health problem nowadays. Pollution occurs when the natural environment cannot destroy an element that has reached the air, soil or water in an unnatural way. The destruction process can vary from a few days to thousands of years, depending on the nature of the pollution.

AS&ICT Romania has implemented a waste management plan. This is aimed at reducing the waste generated by the company.

d) Socio-cultural environment

In 2021 AS&ICT Romania put Bucharest on the short list of cities with modern public transport services, by implementing payment solutions that use state-of-the-art validators, at Metrorex and STB, thus AS&ICT Romania was awarded the prize in the ePayments category in during the Annual Gala of the FINANCE Awards.

The e-FINANCE Awards Gala is organized by Finmedia and is in its 18th edition. Annually, within this gala, the most innovative and complex projects from the previous year in the IT&C and financial-banking sectors are recognized.

e) Technological Environment

AS&ICT Romania is an integrator of ICT solutions, it ensures the implementation of technological innovations and the latest developments in the field to its customers.

**7. Case study regarding the implementation of ICT solutions in the management of the customer service department**

AS&ICT has a customer-oriented policy to be able to respond to all customer requirements in an efficient manner by repairing or replacing equipment that is defective, damaged or in poor working order.

At the moment AS&ICT covers the whole country through the service center in Bucharest and in the country, being able to ensure a resolution time of up to 4 hours.

Within the support organization, the specific processes of the activity are very well defined and controlled, such as: handling and qualification of hardware and software calls, software assistance by phone, remote assistance, on-site interventions of a preventive nature (maintenance) or corrective (defect fixing), spare parts logistics, escalation of more difficult issues, contracting and training.

The stock of spare parts dedicated to equipment support is located both in Bucharest and at service partners in the country.

In order to be able to respect its call intervention commitment to the customer, AS&ICT will maintain an inventory of critical components. These components are stored at the AS&ICT headquarters. They are managed in such a way that their continuous availability can be ensured and they are always accessible to the specialists who ensure the support of the client for the necessary interventions.

AS&ICT Romania has a team dedicated to answering calls received by phone, email or fax. The Call Center is a structure that concentrates support resources and uses the accumulated experience to amplify the value of the support team.

The Call Center acts as an "extinguishing" center for all support calls, ensuring the correct sequence of support actions to solve problems in the shortest possible time.

The support organization of AS&ICT Romania includes qualified personnel, with extensive experience, certified by the manufacturer, for all delivered equipment, for the entire duration of the warranty/post-warranty contract. AS&ICT's support engineers are graduates of specialized automation or electronics faculties, regularly trained in the training centers of major international suppliers such as Hewlett-Packard, IBM, EMC, Dell, CISCO, Fujitsu, etc. and possess the latest technologies for support such as hardware and software diagnostic methods, the possibility of remote diagnosis via modem, online connections with expert centers in Europe. All support engineers benefit from a car and mobile phone to ensure the highest on-site interventions level. Customer feedback and references place AS&ICT Romania among the most respected service organizations in Romania.

AS&ICT works closely with selected strategic partners, for whom AS&ICT is also a key partner and who, like AS&ICT, are prepared to invest significantly in the successful development of the partnership. Some of the current strategic

partners of AS&ICT are international brands like Dell Technologies, HPE, SAP, Microsoft, Oracle, Cisco, VMWare etc.

AS&ICT develops individual solutions for its customers based on recognized and tested technologies from these partners. This gives customers security and compliance with global standards (as opposed to proprietary systems) as well as the ability to use only the latest technology at all times.

Certifications bring valuable and measurable rewards to an organization. As an integrator, it is very important to demonstrate the ability to manage a wide range of solutions and products from different suppliers, integrate and implement them into successful projects. For AS&ICT Romania, continuous improvement of the certification portfolio is a must.

The company's active partnerships:

- Check Point 3 Stars Partner
- CISCO Gold Partner
- Cynet Silver Partner
- Dell Technologies Titanium Partner
- Forcepoint Platinum Partner
- Fujitsu Partner
- HP Inc. Silver Partner
- HPE Gold Partner
- Lenovo Partner
- Microsoft Gold Partner
- Oracle Partner
- SAP Gold Partner
- Symantec Corporate Reseller
- Veeam Gold Partner

Veeam Software is a privately held technology company that develops backup, disaster recovery and virtualization management software for VMware and Hyper-V virtual environments. AS&ICT Romania is an authorized Veeam Software partner.

- VMware Advanced Partner

AS&ICT Romania's Infrastructure Team provides operational support services 24 hours a day, with the help of highly qualified engineers who have been working in the operational field for many years. The Service Desk team is available to our customers every day of the year, 24 hours a day.

#### *WHAT THE COMPANY OFFERS IN THE FIELD OF OPERATION*

- complete performance of on-site or remote operational tasks



- 24/7 monitoring of network infrastructure, security systems, data center systems and applications

- monitoring and proactive services
- automatic monitoring of the life cycle of IT resources
- ensuring the security and availability of IT systems

*WHAT THE COMPANY OFFERS IN THE FIELD OF OPERATIONAL SUPPORT*

- support for devices and processes operated by the client
- a single point of connection for customers, available 24 hours a day
- immediate start of troubleshooting at the time of notification

*WHAT THE COMPANY OFFERS IN THE FIELD OF MAINTENANCE MANAGEMENT*

- continuous monitoring of quality and quantity parameters in the provision of the service

- incident, problem and change management based on ITIL
- drawing up technical and maintenance reports
- periodic maintenance analysis consultations
- continuous maintenance development

AS&ICT is a team of professionals with many years of experience, who can ensure the trouble-free operation of the entire IT system at your disposal, both in terms of commercial and technical aspects. The required service level is always ensured through ITIL-based processes. Our management solutions can be integrated into your existing operational environment without any difficulty. Due to our broad customer base, we can provide our services in a cost-effective manner, taking advantage of economies of scale. (Wided, R., 2023)

*Example of project implementation at the national level*

After the award of the contract follows the planning regarding the implementation of the requirements of the contract:

1. Discussions and planning of the transport of materials needed in the implementation of the project with the logistics department:

- a) Equipment storage
- b) The assigned locations and equipment
- c) Necessary time allocated to the transport of the equipment
- d) The contact persons in the respective locations

2. Project implementation planning:

- a) Establishing the installation calendar on locations
- b) Elaboration of procedures for the installation and configuration of equipment



c) Training of staff and partners involved in implementation

3. Implementation of the project:

a) Installation and configuration of equipment

b) User training

c) Elaboration of the necessary approvals and guarantee certificates

4. Maintenance and performance of the guarantees established by the contract.

5. Post-warranty period.

*Example of ticket collection and intervention*

- Receiving and registering the request by the Service Desk department and assigning a unique registration number.

- Contacting the applicant to establish the need for materials/equipment according to the reported problem

- Establishing the area and the team that will carry out the intervention

- Informing the logistics department for the preparation and delivery of the equipment/materials necessary for the intervention.

- Going to the location and solving the request

- Completing the intervention report

- Closing the ticket in the ticket platform

- Return of materials/equipment used during the intervention.

### **Conclusion and proposal**

During this work, I followed the evolution of an ICT company both on the national and international market, the trends and trending of this field.

Innovation is the thing that maintains competitiveness and challenges in the field, something that puts a lot of pressure on the management of companies, management that must deliver optimal and quality solutions to business partners.

The implementation of new ticket management ICT systems aims at improving some work parameters, streamlining customer relations, and reducing resource losses. These parameters should be carefully monitored long after implementation to ensure that the desired change has occurred and that the investment has been worth the effort.

The question remains the same: how come the Romanian ICT industry mostly remains at the stage of ICT service provider when it could evolve towards the status of a software creator where the added value and profit margin is much higher.

The fact that in Romania we have more and more specialists in the field of IT, management, must guide this resource towards the creation of software, automation and research.

This seems to be the new trend of the software industry which grew by 10% compared to 2019, surpassing the threshold of 8.3 billion euros in 2020. Over 27 thousand software companies were active in Romania in 2020. Pandemic remaining one of the engines of development of the software industry.

The case study carried out was carried out within the employing company, in the customer service department. In order to be able to streamline the process and reduce intervention time, I believe that the ticket application should require optimizations, and its structure should be customized according to the needs of each customer. A first step in reducing the time allocated to the preparation of the intervention, is the correlation of the stock and the need of parts in real time.

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