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OPPORTUNITIES AND CHALLENGES OF REMOTE WORK

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JEL: M54, O33

Abstract

In a dynamic crisis situation such as the current one, the forecasts for the impact of COVID-19 on the world economy and the development of individual countries and cities are constantly changing. The impact of COVID-19 has turned many industries upside down in unexpected ways. More organizations switch to remote working environments for their employees due to the current world health crisis. The purpose of this article is to outline the opportunities and challenges facing Bulgarian employees working from home during the March-April 2020 state of emergency and beyond. We discuss the many advantages and disadvantages of remote work from an individual point of view.

Key words: remote work, COVID-19, work from home, employee attitudes, telework

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1. Introduction

2020 was a difficult year. This year the world economy faced the crisis of the century. The global spread of the corona virus infection has led to a recession and destabilization of global financial and commodity markets. International and local businesses are experiencing increasing difficulties, and a sense of insecurity is increasingly prevalent in global economic life. Rapid, informed and coordinated response and the development of innovation and digitalisation at international and local level are becoming increasingly key to tackling the pandemic.

The spread of Covid-9 around the world has led to the widespread introduction of work from home. According to Leonardi (2021) “this shift is enabled by digital
technologies that allow workers to communicate via text, audio, and video and to share and edit data and documents in real-time. As examples of the dramatic and swift increase in remote work enabled by digital technologies, Zoom’s daily active user base grew by 67 per cent in March 2020, the number of daily active users of Microsoft Teams grew from 20 million in November 2019 to 44 million in March 2020”.

For some companies, the evolving nature of work drove a shift to virtual operations well before COVID-19. These organizations are in the fortunate position of having already made the investments in processes, platforms and training that enable a truly successful remote work environment. However for other organizations a shift to remote work can be particularly challenging.

The emergence of the corona virus and the introduction of the state of emergency in Bulgaria put business organizations to the test and forced them to introduce remote work in their practice.

Remote work is definitely not a new trend in Bulgaria, it has been discussed for years, and in a number of companies in areas such as information technology it has long been applied. But before the unexpected health crisis, for many companies, fulfilling their day-to-day responsibilities was remotely part of the future. However, the extraordinary circumstances necessitated rapid action to change business processes and practices in order to quickly adapt to the new conditions.

The purpose of this article is to outline the opportunities and challenges facing Bulgarian employees working from home during the March-April 2020 state of emergency and beyond.

The topic is especially relevant in the context of the pandemic, as periodic lockdowns have forced a very large number of organizations to organize the work of their employees remotely. There is still no definite data on whether remote work is more efficient or not than office work, and whether in the future, after the end of the pandemic, organizations will keep this way of working for their employees.

This article does not aim to establish how effective the work of employees working from home is. We are discussing the multifaceted motivations and drawbacks to remote work, but only from the individual perspective. The results of the present study could be used as a basis for future research on proving the effectiveness of remote work and its relevance in different sectors of the economy or for a comparison between organizational and individual opinion about remote work.

To achieve the stated goal, a survey was conducted among 242 employees in organizations of different sizes in terms of their experience with remote work. The study was conducted through a questionnaire sent through email and social networks to various employees of the private and professional contact network of the author. The survey does not claim to be representative of all areas of activity and all employees in
Bulgaria. The study was conducted in June 2020, after the end of the state of emergency in Bulgaria, imposed due to the covid-19 pandemic.

2. Theoretical review

According to Cambridge Business English Dictionary remote working is a situation in which an employee works mainly from home and communicates with the company by email and telephone.

The remote work is not a new idea. There are many publications describing the advantages and disadvantages of remote work. Describing the concept of remote work, the researchers focused primarily on the place of work, the use of information and communication technologies in the process of performing official duties, and the work schedule of the person providing the work (Garett and Danzinger, 2007, p. 28).

According to Greenberg and Nilssen (2008, p.5) “telework is replacing an employee’s travel from home to office and from office to home with information processing technology (e.g. computers, telecommunications). It is related to mobility and can be used to create bonds between employees from different places around the globe and their work”. Gray, Hodson, and Gordon (1993, p.2) think that “remote work is work performed away from the traditional workplace for a significant amount of time with the use of telecommunication tools”. Hynes (2014,p.581) reports that “remote work is providing work outside the place where the results of work are needed or which would be a traditional place of work in the past, using information technology”. According to Mannering and Mokhtarian (1995, p. 49) remote work is “work performed at home or in a place close to home, without commuting to a conventional office during standard working hours”.

According to Gurova (2016) remote work is the performance of a certain employment contract of the labor function outside the location of the employer, its branch, representative office, other separate structural unit (including those located in another area), outside a stationary workplace, territory or facility, directly or indirectly under the control of the employer, subject to use for the performance of this labor functions and for implementation of interaction between the employer and the employee on issues related to its implementation, public information and telecommunication networks, including the Internet.

Many organizations around the world used this opportunity for remote work even before the pandemic. Gallup research in the United States before 2020 shows that more and more employees are working remotely. Between 2012 and 2016, Gallop reports the number of remote employees increasing four percentage points, from 39 percent to 43 percent of the American workforce. Thirty-one percent of remote workers reported
spending between 80 and 100 percent of their time remotely in 2016 (Hickman and Robison, 2020).

Remote work (telework, or work from home) is quite logically enshrined in the state of emergency - in practice because it was the only job opportunity for many people. The term “telework” is used to describe remote work in many countries around the world, but it is not present in the Bulgarian legislation and practice. The labor code in Bulgaria defines the concepts of home work and remote work (or work from distance). In essence, however, the term “telework” defines the conditions for remote work. For this reason, the terms “remote work, telework or work from home” are used as synonyms in this article. All of these words and expressions describe an increasingly adopted practice by organizations around the world. This is the time to clarify that working from home / remotely does not mean homework.

According to the Bulgarian Labor Code - Art. 107h, para. 1, the work from a distance is a form for organizing work, taken out of the premises of the employer, through the use of information technologies, which before its removal was or could be performed in the premises of the employer (Labor Code, art. 107h, para. 1). With Art. 107n, para. 1 of the Labor Code explicitly establishes that the employee who performs remote work has equal labor and trade union rights with those of employees who work in the premises of the employer.

According to Art. 107b of the Bulgarian Labor Code, homework may be agreed in connection with the production and / or provision of services in the home of the employee or in other premises of his choice outside the workplace of the employer for remuneration with his and / or the employer’s equipment, materials and other aids (Labor Code, Article 107b). Again, it is about organizing the work process outside the employer’s premises, but the difference with remote work is that the latter is related to the use of information technology, involves software, internet connectivity, etc. But in both cases, disciplinary responsibility and equal treatment with other employees in the company are mandatory.

The transition to remote work is a “salvation” for most companies when quarantine measures related to COVID-19 restricted the movement and life of the people. Before Covid-19, businesses were slowly learning how good remote work was. Since the advent of Covid-19, the forced global remote work experiment has revealed to many how well remote work works.

Remote work offers a vast number of benefits from a managerial and HR perspective. As Tuyo (2020) report studies of University Credit Union have showed that employees who are given some flexibility in their work actually become more productive team members. If someone in the team needs to get up from their desk for any personal reason at home, it doesn’t really have a negative impact on their productivity.
for the day. Flexibility during the work day helps teams stay happier (despite everything else happening in their lives) and better communication helps ensure everything is completed on a daily basis. In a way, remote work forces teams to find a focus around common goals, which facilitates efficient coordination of tasks.

Study, reported from Bloom et al. (2015), for the effects of work from home in the Chinese company CTRip with 16,000 employees shows a 13% increase in productivity. This was due to two main factors: firstly, employees were able to work more minutes per shift on a monthly average, due mainly to fewer breaks and sick days. Secondly, being able to work in a quieter, more convenient environment, made it possible for them to focus better and thus perform a higher number of similar tasks in the same amount of time. Based on the results of the experiment, CTRip “improved total factor productivity by between 20% to 30% and saved about $2,000 a year per employee working from home. About two thirds of this improvement came from the reduction in office space and the rest from improved employee performance and reduced turnover” (Bloom et al., 2015, p.170).

Remote work is also frequently associated with greater flexibility in work schedule, which can be another dimension along which workers can optimize. Some workers may be more productive working early in the morning and others late at night. By reducing stress about coordinating work and family schedules, remote work can also allow greater focus while at work. Lastly, the reduction in travel time can extend the hours employees are able to work each day.

A natural part of the transition to remote work was to establish new frameworks and protocols for team communication. “Smoother and more consistent communication across the team quickly proved itself as a very positive benefit that was a boon to the team’s effectiveness” (Tuyo, 2020).

Remote positions can access higher quality workers anytime there are higher quality workers outside the local market. Remote work capabilities allow a firm to access a larger labor market. This will lead to better matching of firms with higher quality workers if they can find each other, and if firms can entice distant workers to work for them remotely.

On the other hand, implementing remote work practices also comes with potential challenges. For instance, as Popovici and Popovici (2020) note, companies can find it difficult to build a culture that is accepting and supportive of remote work, which can be detrimental to their retention efforts since it can go as far as impacting employees’ motivation and satisfaction. It can also be difficult for an organization to track exactly who is working remotely, when and how, particularly when remote work is adopted more informally. This also brings up a unique set of managerial issues specific to telework practice, which can only be addressed when taking into account the overall
organizational context such as culture, values, control practices etc.

According to Surkova (2020) remote work has many benefits for employees:
- you can work where you want to. This is the main advantage of remote work for employees.
- you can plan it yourself, start the day and choose the time work. Often employers do not regulate the work schedule, focusing on implementing a specific task as indicator of labor efficiency. Employees are often presented the opportunity to successfully combine study or care for children or elderly relatives with work;
- In remote work there are no age limits and the employee appearance is not relevant at all. The most important thing here is the immediate result of the work;
- saving money and time. Working remotely, you don’t have to spend money and time on travelling from home to work and back, no need to buy expensive clothes and shoes. Food costs are also minimized.

Objectively, “there are some disadvantages of remote work for employees that must be kept in mind. The nature of many companies does not provide the possibility of switching to remote work” (Surkova, 2020). In such cases, it is possible to consider the distribution of workers only in some departments, as a rule, in office space. Remote work involves minimizing live communication. Teamwork with instant messaging and video communication does not compensate for the required amount of communication for sociable people. It is not always easy for an employee. That is why it is important to understand that remote work is not suitable for some people due to character traits and lifestyle. “Social isolation has a strong psychological impact on the individual and the community as a whole” (Charlampous et al., 2019).

Due to the intense use of information and communication technologies, remote workers are even more vulnerable to health risks such as high stress and anxiety levels, fatigue, burnout, headaches and eyestrain (Eurofund, 2020).

All of these aspects can affect remote workers to different extents. Now is the time for organizations to pay extra attention to all these negative aspects that remote workers are facing. As the remote work phenomenon as a whole increases, their potential harmful impact is also prone to increase.

The current pandemic has posed serious challenges for HR executives that have never been so valued by senior management. The list of tasks for HR managers is constantly growing – take care of the health of employees, keep the spirit of the company high, manage telecommuting, decide when and whether to dismiss employees (The Economist Newspaper, 2020).

“In this unprecedented crisis, not a small part of the employers in Bulgaria resorted to dismissal of employees without realizing the problem they will have after
the crisis for quality staff. Because the people who have been fired will not return to the company” (Varbanova, 2009). What is already clear is that the main and decisive competitive advantage after the end of the corona virus crisis will be the quality of human capital in the company.

For each organization, the crisis is a period of instability, an opportunity for a serious change. The result can be final - either unfavourable or positive. But in all likelihood, the crisis is a threat to the survival of the organization (Prahalad, S.K, Ramaswami, V., 2009: 19). Possible assigned new tasks in a crisis management situation usually require new skills, approach, knowledge and action.

The corona virus pandemic could be a catalyst for something new - more frequent work from home in the future. Before the pandemic in Europe, regulated work from home was an exception rather than a norm. According to Eurostat, in 2019, only 5.4% of workers aged 15-64 in the EU usually worked from home. Among the European countries where even before this crisis the practice of working remotely was necessary are Norway, Iceland, Luxembourg, Finland, Austria. The Netherlands is considered the “champion” in this respect with 14% of employees. This is also the country that is said to have the best balance between professional and personal life. At the opposite pole with between 1 and 2 % are Cyprus, Hungary, Croatia, Greece, and in Bulgaria and Romania less than 1% of employees work remotely (see Figure 1) (Eurostat, 2020).

As can be seen from the figure, Bulgaria lags far behind the global trend for teleworking and flexible workspaces. In Bulgaria, due to the crisis with Covid-19 and the state of emergency imposed in March, only 28% of non-financial organizations preferred telework instead of cutting staff or putting them on leave, and in April even 26.5%. These are data from a survey of the National Statistical Institute in Bulgaria, conducted in the period April 8-May 25, which included 3770 enterprises with approximately 230 000 employees (NSI, 2020). For comparison, in Spain COVID-19 has increased to 88% the companies whose staff works from home, while before the crisis they were only 4%. (EAE Business School, 2020).
According to Popovici and Popovici (2020) however, this data will have skyrocketed a year from now. The COVID-19 related health crisis has practically unleashed the potential for telework across the globe as of 2020. The numbers of those who have switched to teleworking have allegedly soared within the past few months,
marking a true revolution in the history of remote work.

The situation after the corona virus cannot be the same again as it was before. Before the corona virus, millions of people spent much of their lives in offices. Employers are now reassessing the need for large office spaces and realizing that their employees can work from home.

According to a Mercer study involving 1274 companies, a quarter of Bulgarian companies introduced flexible working conditions during the COVID pandemic. The same percentage of companies intend to keep this policy permanent after the health crisis. It is estimated that an average of 50% of employees will work remotely after the pandemic. “According to the survey, 57% of companies in Bulgaria have introduced the possibility of remote work because of the COVID pandemic, and 37% have already had this policy before” (Marinova, 2020).

According to Janap Boogard, director of office consulting services for the Middle East, Europe and Africa in Colliers, “the biggest surprise for many companies was the discovery that telecommuting was applicable to them without losing productivity and harms the sense of connection between team members. This has caused a number of businesses to rethink their processes, corporate culture and the future of the workplace in general” (Chobaligova, 2020).

Although not all economic sectors have this opportunity, many companies have chosen to work from home to help control the pandemic. However, this also proved to be a challenge. Companies faced the challenge of digitizing their work regimes. The corona virus required the shift from onsite to remote work to happen overnight. In-person meetings have been moved to web conferencing; interviews are conducted by phone and video chats, and workplace conversations have moved from over-the-cubicle to Skype or texts. Sharing paper and physical sign-off is now impossible, and so we rapidly implemented online replacements to any remaining manual processes. As expected, the companies in the IT field coped with this task most easily. But even companies that resisted telecommuting realized the benefits of this type of work.

According to Kilgore (2020) while there are so many challenges for employers during the COVID-19 pandemic, it’s great to see vendors offering their free solutions to help us be successful with our remote work. We must also think of the future of work, with the realization that the new normal, even after the pandemic has passed, will be different than the mostly on-premises work of the past. Therefore, we need to invest in HR technology that will allow virtual HR service delivery and workforce collaboration to provide competitive advantages to our organizations.
3. Research results

The study was conducted among employees in Bulgarian companies. The survey took the form of an anonymous questionnaire available on docs.google.com. The link to the survey was provided to participants via email and social media. The results of the study were processed using Excel.

The aim of this article is to outline the opportunities and challenges facing Bulgarian employees working from home during the March-April 2020 state of emergency and beyond.

The tasks set by the research are:

1/. To establish what percentage of the surveyed persons had the opportunity to work remotely during the state of emergency in Bulgaria.

2/. To analyze the benefits and risks of the remote work indicated by the respondents.

3/. To establish what percentage of the surveyed persons would like to continue working from home after the end of the pandemic.

A total of 242 employees (n = 242) took part in the survey, namely 175 women (72.3% of all respondents) and 67 men (27.7%). The vast majority of the respondents, i.e. 32.2%, were aged 36 to 45. People between 19 and 25 are 21.1%, those over 55 accounted for 2.9% (see Figure 2). This is quite logical, because it is the people in active age who most often work remotely, and the older ones find it more difficult to use modern digital means and this makes it more difficult for them to do the work from home.

![Age of respondents](source: Author's own research)

Fig. 2: Distribution of respondents by age

*Source: Author’s own research*
38.8% of the respondents did not have the opportunity to work remotely, 1.2% were laid off due to the crisis, and respectively 0.8% worked in the office of their own volition and 0.8% were on unpaid leave (see Fig. 3). This could be due to the fact that in the sample of respondents, we came across those who work in organizations and/or areas where it is difficult to perform remote work or are not sufficiently prepared to switch to remote mode at work for such a short time. Unfortunately, in our survey there is no question about the field of activity of the organization in which the employee works.

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, I worked completely remotely</td>
<td>41.7%</td>
</tr>
<tr>
<td>Yes, I worked mostly remotely with infrequent office visits</td>
<td>14.0%</td>
</tr>
<tr>
<td>No, there was no opportunity for remote work in our organization</td>
<td>38.8%</td>
</tr>
<tr>
<td>No, I was laid off because of the closure of the business with the introduction of the state of emergency</td>
<td>1.2%</td>
</tr>
<tr>
<td>I had the opportunity, but I worked in the office because I didn't worry about my health.</td>
<td>0.8%</td>
</tr>
<tr>
<td>I was on unpaid leave</td>
<td>0.8%</td>
</tr>
<tr>
<td>other</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

**Fig. 3: Percentage of respondents who had the opportunity to work remotely provided by employers**

*Source: Author's own research*

Working from home has a number of advantages and provides a number of opportunities according to our respondents. The biggest benefit of working from home, according to those who have worked remotely, is that they do not waste time traveling to and from the office (80.4%). This high percentage, in our opinion, is due to the fact that most of the respondents are from the capital Sofia (68.6%), where the distances are large and more time is needed for people to travel to their workplace. This advantage is probably not so important for people from small settlements.

More than half of the respondents indicated that for them the benefits of telework are: flexible working hours and the opportunity to organize your own working day (59.4%), the opportunity to do some personal activity in the meantime (55.2%) and the opportunity to work in a cosy atmosphere at home (52.4%)(see figure 4).
Slightly more than 1/3 of the respondents who worked from home during the state of emergency in Bulgaria said that, while working remotely, they managed to pay more attention to their family and homework (37.8%). A large percentage of respondents (32.9%) say that working from home have the opportunity to better focus on work in the absence of noise from colleagues, clients, etc. Some researchers believe that working from home saves money on food or is an opportunity for a more complete and healthy diet. According to the author, the low percentage is due to the fact that these benefits were not set in advance as a possible answer in the questionnaire, but there was an opportunity to indicate further and most of the respondents most likely focused on the previously mentioned possible options.

The survey shows that many people approve working from home and will probably want to be able to take advantage of it to some extent after the coronavirus crisis. A total of 64.9% of the surveyed employees indicated that they would like to work to varying degrees remotely after the end of the pandemic - 38.8% would like to work remotely after the crisis when their work for the day does not require their physical presence in the office, 25.2% - when there is some objective reason and 16.5% - when they have to do some personal work (see Fig.5).
Tatyana Kicheva.
Opportunities and Challenges of Remote Work

This data confirm the thesis of other researchers that remote working will permanently enter our daily lives even after the end of the corona virus pandemic. Perhaps never again will the percentage of remote workers be as low as before the pandemic. Perhaps the hybrid way of working - from different workspaces, will be a lasting trend.

Mass work from home is the most visible change since the corona virus to date. Currently, a large proportion of global companies operate from home. However, the proliferation of remote work can lead to decentralization of labor markets and businesses, which are currently concentrated mainly in the capital Sofia.

Not to be overlooked is the percentage of people who would not like to continue working remotely - 35.1%. (see figure 5). There can be various reasons for this. More than half of the respondents indicate that they lack live contact with colleagues in the office, which makes their work at home more complicated (56.2%). Office work creates connections between employees, which often overcome purely professional relationships. The opinion of our colleagues is also important for our own self-esteem when it comes to not only professional but also personal qualities. Social isolation negatively affects the mental health of employees. On the other hand, it is more difficult for employees to break away from domestic commitments in order to fulfil their official duties - 37.4% of respondents indicated that they encountered difficulties in remote work due to the presence of pets, children and other family members, which hindered their focus on work (see Fig. 6).
Almost 40% of the respondents had some technical difficulties in working from home - 17.3% indicated a bad internet connection, 16.6% had problems with the platform through which they worked and 5.8% did not have enough devices (laptops, tablets, etc.) for remote work, given that the children in the family also studied remotely during this period.

4. Conclusion

In conclusion, it can be said that remote work is here to stay. The strong interest in remote work was confirmed by the present study. The results of the survey show a relatively high level of respondents’ propensity to work remotely, although the practice of telework in Bulgaria was not very popular before the pandemic.

The advantages of remote work, which had the strongest influence on the respondents’ interest in telework, were also identified. The most important benefit was the lack of time to travel to and from work. Other benefits include flexible working hours, the ability to better balance work and private life, and more.

However, the COVID-19 pandemic which overnight forced a large number of employees to work remotely, turned out to be the greatest motivator to start working remotely.

Under the pressure of restrictions due to the Covid pandemic, many Bulgarian employees discovered the advantages of remote work and changed their way of thinking about teleworking. For this reason, it would be interesting to conduct such a study in

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of pets, children and other family members</td>
<td>37.4</td>
</tr>
<tr>
<td>I felt isolated and lonely after not being able to work</td>
<td>17.3</td>
</tr>
<tr>
<td>Lack and / or poor internet connection</td>
<td>17.3</td>
</tr>
<tr>
<td>Platform issues like Zoom, Teams, etc. - overload</td>
<td>16.6</td>
</tr>
<tr>
<td>Lack of enough devices (laptops, tablets) for work</td>
<td>5.8</td>
</tr>
<tr>
<td>It takes time to adapt and differentiate between work</td>
<td>0.7</td>
</tr>
<tr>
<td>Extremely long daily stay in front of a device / minimum</td>
<td>0.7</td>
</tr>
<tr>
<td>Too much digital communication that interrupts</td>
<td>0.7</td>
</tr>
<tr>
<td>Delays of colleagues in meetings, which delayed their start</td>
<td>0.7</td>
</tr>
<tr>
<td>Other</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Fig. 6: Challenges (difficulties) to work from home

Source: Author’s own research
a few years to make a comparison and see how employees’ views have changed and whether the proportion of people working from home has increased significantly since the pandemic compared to with data from before. The conclusions that could be drawn from such a comparison, would be significant from both a practical and a theoretical point of view.

According to us Covid-19 has forever changed the way business organizations work. We believe there will be more and more people who want and will be given the opportunity to work remotely, and not only in the IT sector.

Today’s crisis is an opportunity for many companies and their employees to discover the benefits of working in virtual teams and it is likely to significantly change people’s work habits.

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MEASURING KEY PERFORMANCE INDICATORS IN RETAIL TRADE

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JEL: L81, L10

Abstract

The tendency of business entities to cope with the challenges of the environment in which they operate is determined by the state and development of a complex system of evaluation indicators describing the condition and performance of the company and their time dynamics. They serve to objectively measure the extent to which the individual economic operator meets the conditions by which to be assigned to the group of successful business agents. In traditional retail trade, the most significant indicators for business evaluation are: gross (profit) margin, operating margin, turnover of inventories, gross return on investment in inventories, gross profit per employee, etc. The paper examines the key economic performance indicators of the three leading retail chains in the retail sales of fast moving consumer goods (FMCG) in Bulgaria.

Key words:
retail trade, gross margin, operating margin, inventory turnover.

Introduction

At the beginning of the third decade of the 21st century, the economic ability of market participants to survive in an intensely competitive environment is determined by the assessments and their time change in certain key indicators of their business activity. The economic strength of each economic agent determines its suitability to meet the challenges of the local, regional, national and global market environment in which it is positioned for active business operations. In the retail trade, several key indicators are of leading importance that can be assessed and thoroughly studied. They
are gross (profit) margin, operating margin, turnover of inventories, gross return on investment in inventories, gross (profit) margin per employee and others.

The main aim of this work is based on a theoretical summary of the essence of selected key performance indicators for retail trade to perform their quantification for the three leading retail chains in retail trade in Bulgaria and to make an appropriate analysis of the quantitative estimates obtained and economic interpretation of their dynamics.

The research objects of the present study are the three leading retail chains for the sale of fast moving consumer goods (FMCG) in the country. The data on the market shares of the selected commercial operators are estimated by the analyst company ICAP, as for the five-year period from 2014 to 2018 they change from 11.7% for Kaufland Bulgaria, 5.3% for Lidl Bulgaria and 5.1% for Billa Bulgaria to 14.1% for Kaufland Bulgaria, 8.5% for Lidl Bulgaria and 7.0% for Billa Bulgaria (Kaufland Bulgaria EOOD & KO KD, 2015; Kaufland Bulgaria EOOD & KO KD, 2019). The market positions of the selected companies are retained as they occupy the first three places at the top of the ranking of companies in retail trade, but they mark a sustainable development in the direction of increasing sales and hence market shares, which is a result achieved against the overall increase in retail sales of FMCG in the country by over BGN 11 billion (Georgieva, 2019) and total retail sales volume by over BGN 43 billion in 2018 (National Statistical Institute, 2019). In its economic logic, this is a clear signal of the continuing concentration in the sector and the increasing power and economic importance of the economic agents of exchange selected for research.

A specific point of the present study is the use of certain commercial terminology, which has acquired popularity and is part of the specific language of commercial entrepreneurship, but in its legal nature and normative application in accounting standards, is in some relative controversy. To this end, comments will be made in the statement to express both the commercial and accounting nature of the indicators.

Another accompanying limitation of the work is related to established corrections in the reporting data of selected indicators for previous periods, which are disclosed in subsequent reporting periods of the surveyed companies. For this purpose, in the technical and economic calculations the reporting data with the best up-to-date are used as a priority, which takes into account the recalculations made for each of the previous years of the research period 2014-2018 extracted from the unconsolidated financial statements of the selected trade operators. As a last limitation of the research carried out, we determine that when conducting a comparative study for longer periods of time, it is advisable to eliminate the impact of price changes in the value of performance indicators of commercial activity. However, since in the present study the emphasis is on the comparison between individual economic indicators within the country, the
impact of price changes would be the same for all surveyed participants and would affect their values equally, therefore this transformation at comparable prices has not been taken out. However, it should be taken into account when carrying out the economic interpretation of the results.

1. Theoretical overview of key performance metrics in retail trade

For each active business entity there is a universal set of performance indicators, with the help of which a diagnosis of economic condition in the business can be given, which predetermines its opportunities for successful market performance and potential threats to its existence. In its entirety, it can be assessed both statically and dynamically, the latter having greater cognitive significance and is applied in the complex assessment of the economic condition of each trader.

Further, the study can be expanded by a comparative study of the same indicators between similar economic entities, which will serve to determine the benchmark for the best performance in a business activity or segment of the market. But, “even without specific comparative data available, a skilled analyst will scan the revenue and expense categories on an income statement as a matter of course over a number of time periods to see if any of them seem out of line or are trending adversely within the particular company’s experience” (Helfert, 2001, p. 105). In retail trade, where the specific entrepreneurship of resale is realized, in which the products, own produced goods and materials purchased by the representative agents of the product exchange are sold to end users, it is appropriate to focus on economic evaluation and analysis of the system of the following important business performance metrics:

1. Gross (profit) margin or the average level (percentage) of the sales markup, which is traditionally calculated on the basis of the selling price, in which the net sales revenue of the commercial companies is usually expressed. If the basis of this ratio is changed and it is the reference of the cost of goods sold, then we will get the average level of the gross margin to the acquisition price of products at which the business agent works. Or, despite the difference in the absolute values of these two expressions, the relative (percentage) estimates obtained describe the trader’s gross level of profitability. The gross margin metric itself is obtained as the ratio of gross income or gross profit and the reported in income statement value of cost of goods sold (COGS). The main point for the implementation of the technical and economic calculation is the clarification of the information sources, for obtaining the assessment of the indicator, which requires interpretation of the essence of the accepted in commercial theory and in this paper for unambiguous categories of the gross profit and the gross margin defined in International Accounting Standards (IAS 1) and National Accounting Standards (NAS 1).
Despite the accounting identity of the two indicators, it should be “noted the existing difference between the economic categories of gross margin and gross profit” (Terezova, 2009, p. 117), where we accept the understanding that in its economic content the category of gross margin is more appropriate for the cumulative expression of the effects that remain in favor of the trader from his business activity. By this mean “is a key number for assessing the performance of an enterprise and for predicting future profitability” (Revsine et al., 2014, p. 66). Gross margin is “sometimes referred to as gross profit, a term that can be misleading, since expenses must be subtracted to determine profit and by this gross margin is the amount available to cover expenses and provide profit” (Easterling et al., 2012, p. 45).

Gross margin in commerce is the value expression of the difference between net sales revenue and the income statement amount of the cost of the goods sold (cost of sales) and thus reflects the price of the trade service, formed as the sum of trade margins, discounts, markdowns and mark-ups. Thus, gross margin arises as a result of “the difference between the net sales and the net purchase value of goods sold” (Vladimirova & Nikolova, 2017, p. 196). It should be noted that “the main elements of gross margin are operating expenses and profit from trade operations” (Danchev & Grozdeva, 2010, p. 577). Therefore, the magnitude of the economic effect of gross margin ensures the coverage of all company expenses and, together with other non-merchant-specific revenues (other operating income), leads to the formation of the profit that is used for tax purposes (corporate income tax). From this position, the formal expression for obtaining the gross margin is:

\[ (1.1) \]
\[
\text{Gross margin percentage to the sales price} = \frac{\text{Gross margin}}{\text{Net sales revenue}} \times 100 =
\]
\[
= \frac{\text{Net sales revenue} - \text{Cost Of Goods Sold}}{\text{Net sales revenue}} \times 100
\]

\[ (1.2) \]
\[
\text{Gross margin (percentage) to the purchase price (Markup)} = \frac{\text{Gross margin}}{\text{Cost Of Goods Sold}} \times 100 =
\]
\[
= \frac{\text{Net sales revenue} - \text{Cost Of Goods Sold}}{\text{Cost Of Goods Sold}} \times 100
\]

And in the general case Gross margin to the sales prices <Gross margin to the purchase price.

2. Operating margin or average level (rate) of operating profit. A key point in this
metric is the use of the operating profit of the commercial company, which expresses the difference between the value of the absolute amounts of operating income and operating expenses (costs).

\[ \text{Operating margin} = \frac{\text{Operating profit}}{\text{Net sales revenue}} \times 100 \]

The main objective of this ratio evaluating is to measure the operational efficiency of the management of trade operations.

3. The specificity of the commercial activity, where the group of “Inventories” is dominated by the subgroup “Goods”, allows to calculate the more specific indicator of turnover of inventories or for short of goods or only stocks. However, in general, the turnover of the average inventories is assessed in all business activities. Essential in the technology of technical calculations and economic interpretation of the results is the moment when on an annual basis the income statement gives the annual value of sales made by the company, and they represent most of the commercial company revenues for the period as accumulated from beginning to the end of period volume, until the value of inventories is given not through their annual accumulation represented in the balance sheet, but through their final snapshot volume in the current assets of the balance sheet. This “reflects the fact that the income statement number represents activity over the entire accounting period, whereas the balance sheet number only represents assets or equity as of the end of the accounting period” (Guenther, 2005, p. 76). Therefore, it is appropriate to present them as an average value, which is assessed in the most general case as the average value of the sum of the initial for the current period (final for the previous period) and final value at the end of the current period. This allows obtaining a conditionally adjusted or modified value, which is applied only for the purposes of obtaining the specific indicator of average inventory turnover.

\[ \text{Inventory turnover (turns)} = \frac{\text{Net sales revenue}}{\text{Average inventories}} \]

An important point in obtaining the assessment is the consideration with the applied accounting approach for the way in which the baseline indicators used in the metrics are reported. This is because net sales revenue is recorded at selling prices, while inventories are valued at the cost of their acquisition. Hence, the possibility of alternatively obtaining the indicator by using the cost of goods sold instead of revenues from the net sales of goods.
Inventory turnover (turns) = \frac{\text{Cost Of Goods Sold}}{\text{Average inventories}}

In the Bulgarian literature (Kostova, 2010, p. 159) (Todorov, 2008, p. 112) (Nenov, 2012, p. 321) (Danchev & Grozdeva, 2010, p. 460) and in the practice of business evaluation the first indicator has greater popularity. Based on the indicator Inventory turnover (turns) 3.1 and / or 3.2 within the length of the reporting period measured in days, a derivative indicator for the average duration in days of one turnover can be obtained:

Inventory turnover (turns) = \frac{\text{Days of the period}}{\text{Average inventories}}

Each business entity “must make trade-offs in deciding the optimum level of inventory and thus the desirable rate of inventory turnover” so as to achieve profitable investment in inventory, lowering costs for financing and carrying inventory and ensuring the continuity of sales (Wahlen & Baginski & Bradshaw, 2010, p. 287).

4. Gross margin return on inventory investment – GMROII, indicates how many units of gross income are obtained due to 1 or 100 units of investment in inventories.

\text{Gross margin return on inventory investment} = \frac{\text{Gross margin}}{\text{Average inventories}} \times 100

5. Gross margin per employee (GM/E) is used to measure the contribution that one full-time employed person in the company has to the acquisition of the gross margin effect.

\text{Gross margin per employee} = \frac{\text{Gross margin}}{\text{Number of full-time employees}}

An alternative measure of labor productivity in a commercial company is the composite economic indicator of the level of labor productivity, which is expressed through average sales made on one person from the staff (NS/E).

\text{Net sale revenue per employee} = \frac{\text{Net sale revenue}}{\text{Number of full-time employees}}
An important point in obtaining both indicators is the derivation of the summary estimate of the average number of employees, as an average value for a certain reporting period. In the present work, the estimates of the annual average number of employees are derived from the annual reports of the surveyed trade organizations.

6. Level of operating expenses (OER), which will quantify the volume of operating costs required for the realization of a 1 or 100 units of sales.

\[
\text{Operating expense ratio} = \frac{\text{Operating expenses (incl. Cost Of Goods Sold)}}{\text{Net sales revenue}} \times 100
\]

A specific moment for obtaining this indicator is the possibility to include the reported (book) value (cost) of goods sold in the value of the sum of operating expenses. With the help of this indicator the system of metrics for evaluation of the operational efficiency of the business is developed, through which the concept of the factor determinism of the profit rate in the commercial company is supplemented. The aim is to keep the indicator below 1 (100), which will determine the ability of the business with current revenues to cover the operating costs of the commercial activity.

In conclusion of the theoretical part, we can point out that there are specifics in the definitions and practice of obtaining the measures of certain economic indicators in specific business activities and in particular in commerce. They comply with the economic uniqueness and the established trade tradition, but in their fundamental economic essence they are measures that in a very universal way, are trying to give a complex picture of the overall business performance of any agent of product exchange by analogy valid for each business unit. In practice, this means that “a little thought and common sense should suggest which measures are likely to produce the most helpful insights into company’s efficiency” (Brealey & Myers & Allen, 2010, p. 714).

2. Measuring key performance indicators in retail trade in Bulgaria

In 2018, the market leader in retail trade in the segment of fast-moving consumer goods Kaufland Bulgaria is positioned in first place in terms of revenues from sales of goods in the amount of BGN 1,547,393 thousand. The leading position of the company is confirmed in terms of operating margin, which has its highest value of 7.2% in 2016 and despite the registered decrease to the lowest estimate of 5.6% in 2018, this measure of the efficiency of the largest commercial operator in the country, confirms its better performance compared to the other participants included in this study for each of the years of the period (see Table 1).
**Table 1**

Key performance indicators of the three leading retail chains for fast moving consumer goods in retail trade in Bulgaria by years for the period 2014-2018

<table>
<thead>
<tr>
<th>Commercial Operator</th>
<th>Periods</th>
<th>Gross margin (%)</th>
<th>Operating margin (%)</th>
<th>Inventory turnover</th>
<th>GMROII (%)</th>
<th>GME (thousand BGN per 1 person)</th>
<th>NS/E (thousand BGN per 1 person)</th>
<th>OER (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>to net sales</td>
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<td>revenue</td>
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<td>to cost of</td>
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<td>goods sold</td>
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<td></td>
<td>days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kaufland Bulgaria</strong></td>
<td>2014</td>
<td>14.2</td>
<td>6.4</td>
<td>9.5</td>
<td>38.2</td>
<td>8.2</td>
<td>44.6</td>
<td>135.8</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>13.6</td>
<td>7.2</td>
<td>9.8</td>
<td>37.4</td>
<td>8.4</td>
<td>43.2</td>
<td>133.1</td>
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<tr>
<td></td>
<td>2016</td>
<td>10.4</td>
<td>7.2</td>
<td>10.5</td>
<td>34.7</td>
<td>9.4</td>
<td>38.7</td>
<td>108.8</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>24.8</td>
<td>6.1</td>
<td>11.6</td>
<td>31.4</td>
<td>8.7</td>
<td>41.7</td>
<td>287.9</td>
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<tr>
<td></td>
<td>2018</td>
<td>24.5</td>
<td>5.6</td>
<td>12.2</td>
<td>29.8</td>
<td>9.2</td>
<td>39.5</td>
<td>300.0</td>
</tr>
<tr>
<td><strong>Billa Bulgaria</strong></td>
<td>2014</td>
<td>24.4</td>
<td>-1.9</td>
<td>13.3</td>
<td>27.4</td>
<td>10.1</td>
<td>36.2</td>
<td>325.2</td>
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<tr>
<td></td>
<td>2015</td>
<td>24.2</td>
<td>0.9</td>
<td>14.5</td>
<td>25.2</td>
<td>11.0</td>
<td>33.3</td>
<td>351.3</td>
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<td></td>
<td>2016</td>
<td>25.1</td>
<td>0.9</td>
<td>15.0</td>
<td>24.4</td>
<td>11.2</td>
<td>32.5</td>
<td>375.7</td>
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<tr>
<td></td>
<td>2017</td>
<td>24.4</td>
<td>0.7</td>
<td>14.7</td>
<td>24.8</td>
<td>11.1</td>
<td>32.9</td>
<td>359.0</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>23.8</td>
<td>0.3</td>
<td>14.6</td>
<td>25.1</td>
<td>11.1</td>
<td>32.9</td>
<td>346.8</td>
</tr>
<tr>
<td><strong>Lidl Bulgaria</strong></td>
<td>2014</td>
<td>19.5</td>
<td>-4.7</td>
<td>11.7</td>
<td>31.2</td>
<td>9.4</td>
<td>38.7</td>
<td>228.3</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>21.6</td>
<td>1.5</td>
<td>11.9</td>
<td>30.6</td>
<td>9.3</td>
<td>39.1</td>
<td>258.1</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>23.3</td>
<td>3.7</td>
<td>13.1</td>
<td>27.8</td>
<td>10.1</td>
<td>36.3</td>
<td>305.6</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>24.3</td>
<td>3.2</td>
<td>14.4</td>
<td>25.4</td>
<td>10.9</td>
<td>33.6</td>
<td>348.7</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>25.3</td>
<td>4.2</td>
<td>15.1</td>
<td>24.2</td>
<td>11.3</td>
<td>32.4</td>
<td>380.9</td>
</tr>
</tbody>
</table>

*Source:* Author’s calculations based on data from Kaufland Bulgaria, Billa Bulgaria, Lidl Bulgaria.

Despite the leadership in this metric for Kaufland Bulgaria in comparative terms, the company does not achieve this economic efficiency, as a consequence of the higher level of gross margin, the exchange agent who works with the highest level of gross
margin is Lidl Bulgaria, which in 2018 registered an estimate of 25.3%, compared to 24.5% for Kaufland Bulgaria and 23.8% for Billa Bulgaria. This in itself is a business situation in which taking the leading position on a key performance indicator is not enough to obtain a similar situation in all measures of the trader’s performance metrics. In practice, this is an argument behind the understanding that excellence in a given economic aspect is achieved through relative compromising in other areas. In business, this means that it is difficult to achieve maximum performance in relation to all economic indicators, because this requires significant resources and advanced management skills, and commercial operators should apply a business approach to balance and mutual compensation between the indicators, against the background of the overall positive development and the existing resource constraint.

At the beginning of the researched period in 2014, Lidl Bulgaria had a negative assessment of the operating profit margin of -4.7%, which is a natural result of the expansion strategy of the company in the country, which started its business four years earlier at the end of 2010. This is also the last moment with a negative expression of the operating profit, as in the other periods a steady increase of the indicator to its highest value of 4.2% is demonstrated in 2018. There is a similar development profile in Billa Bulgaria with a negative assessment of the indicator of the level of operating profit margin at the beginning of the period of -1.9% in 2014, which was followed by an incremental increase to 0.9% in 2015, which the company failed to further develop in the direction of an upward trend, so the company ends the period with a relatively insignificant estimate of 0.3% in 2018. All this, however, is achieved against the background of the most stable development of gross margin, as Billa Bulgaria is the only company that does not report significant amplitudes in the level of gross margins between the lowest values of 23.8% in 2018 to the highest of 25.1% in 2016. The decrease in the level of gross margin is a reaction to competitive pressure between leaders in the consumer goods retail trade sector.

The structure of the revenues of the surveyed trade companies confirms that in the retail trade sector the largest share have the revenues from sales of goods and services, for example in 2018 for Kaufland Bulgaria this share is 98.5%, for Lidl Bulgaria is 99% and for Billa Bulgaria is 99.2%. This is an unequivocal confirmation of the basic economic nature of the activity of trade companies in the economic system. Of course, there are other sources in the revenues of each commercial operator, but they have negligible shares and can be the result of transactions with currencies and financial instruments, participation in capital markets and as transfers between related companies or “accidental” (extraordinary) processes with positive results for the company. From this position the indicators for the inventory turnover, measured in number of turns and in days of one turnover, are estimated. The undisputed leader here is Lidl Bulgaria.
with estimates of 15.1 turnovers in 2018, which is the fastest turnover measured in days for one turnover with an estimate of 24.2 days, but it should be noted that this value is achieved only at the end of the period or is a result of inventory management policies and product portfolio in the company. Such finding is completely logical in the context of the format definition of this retailer as a hard discounter and the related with this product structure, pricing policy and intensive promotional activity. If we summarize the performance in terms of turnover for the whole period, then Billa Bulgaria performs relatively best, but after 2016 this company began to register a certain slowdown in the average speed in the realization of inventory. Conditionally the weakest in terms of turnover of the three companies is the performance of Kaufland Bulgaria with the lowest reading of 9.5 turns in 2014, which transformed as significant average duration of one turnover of 38.2 days. Such a situation is caused by the extremely diverse product portfolio in the retail chain and the presence of a relatively considerable volume of goods with relatively lower turnover, both in the food and non-food segment of the offered commodity range. The findings would be similar for the surveyed reporting periods, if we apply to the assessment of the turnover indicators the cost of the goods sold instead of the net sales revenues. Such a technical change in the calculations causes two distinctions, one is related to the conditionally less favorable value of the estimates, expressed as lower values for turnover and a longer average duration in days of one turnover, another point is that the most unfavorable values the metrics for Lidl Bulgaria are achieved one year later in 2015.

The ranking of the three commercial operators with regard to return on investment in inventories metrics shows that the most successful in terms of product portfolio management ability is Lidl Bulgaria, which at the end of 2018 reached an estimate of 380, 9%. Although this finding for the best performance can be interpreted from another position, as in four (2014, 2015, 2016 and 2017) of the five surveyed years the leadership in the indicator fell to Billa Bulgaria. This is a good signal for the ability of the representative of the REWE concern to form a product offer in accordance with the preferences of the served customers. The most unsatisfactory of the three companies is the performance of Kaufland Bulgaria, which always over the years occupies the last position and registered the lowest value of the three compared economic entities of only 108.8% in 2016, which compared to the highest score of 300% in 2018 clearly demonstrates that the company is aware of the critical situation in this area and has taken important steps to change the management of the product range.

Labor productivity measured as gross margin per employee distinguishes Lidl Bulgaria as the undisputed leader among the compared companies for each reporting year of the surveyed period. The highest score of the indicator was achieved in 2018 of BGN 90.5 thousand on average per staff member. However, the indicator has undergone
the most significant development at Kaufland Bulgaria, as the lowest estimate of BGN 21.4 thousand per employed person in 2014 reached BGN 66.6 thousand per one person in 2018 or an absolute increase of BGN 45.2 thousand per one person or a growth rate of 310.9%. As with most indicators, Billa Bulgaria clearly demonstrates the sustainability in the development of gross margin per employee measured by a standard deviation with an estimate of \( \sigma_{GMROE\ Billa} = BGN\ 1,557 \) thousand per staff member, with values of \( \sigma_{GMROE\ Kaufland} = BGN\ 19,504 \) thousand per person from the employed in Kaufland Bulgaria and \( \sigma_{GMROE\ Lidl} = BGN\ 10,144 \) thousand on employee from the work force working for Lidl Bulgaria.

This confirms that the marketing strategy of Billa Bulgaria is aimed at maintaining stability in the development of the economic process. This means that in the competitive conditions of retail trade in fast moving consumer goods, each company applies an individual market strategy, which measured by certain key performance indicators manages to ensure the desired economic effects and achieve business objectives set. In addition, the alternative form for measuring labor productivity obtained as the average net sales per employee (NS/E) was evaluated. The highest estimate of the indicator was achieved in 2018 of BGN 358.3 thousand sales per employed person at Lidl Bulgaria. As again the most significant development, the indicator has undergone at Kaufland Bulgaria, as from the lowest estimate of BGN 187 thousand sales per employed person in 2014 it reaches BGN 271.8 thousand sales per employed person in 2018 or a relative increase of 145.3%. According to this indicator as well, Billa Bulgaria demonstrates a stable positive development, which is estimated as an average annual growth rate of 103.1%.

Finally in the research, the level of operating costs was estimated, where the lowest estimate of 95.4% was achieved by Kaufland Bulgaria in 2017, which is a reaction to the highest value of 109.3% achieved by the same company a year earlier. Therefore, we can look for a rational explanation in the behavior of business entities, which, taking into account an unfavorable situation in a given indicator during a given reporting period, concentrate their decisions in the direction of its correction, which gives results in the next period. Overall, Lidl Bulgaria performs relatively well, as in four (2015, 2016, 2017 and 2018) of the five years, it managed to maintain its level below 100%. At the end of the period, only Billa Bulgaria registered an estimate of 101.2%, which partly explains the declining rate of the company’s operating margin in 2018.

The given estimates for the key performance indicators of the retail trade activity of the leading operators in the trade sector in the country can give only one of the possible sections when performing a complex analysis of their company activity. This requires a more comprehensive approach to performing business diagnostics, in which the evaluation of key performance indicators has a leading place and importance. The
analysis carried out confirmed the established understanding that “the company’s own financial statements is the best source of information to know more about a company, its past performance, current health, and prospects for the future” (Revsine et al., 2014, p. 3) and confirms that “economic analysis is one of the main methods for studying economic reality” (Yonchev & Terezova, 1998, p. 23), but they also “provide clues about what’s really important – that is, what’s likely to happen in the future” (Brigham & Houston, 2018, p. 118).

Conclusion

The performed technical calculations, the received quantitative estimates and the economic interpretations made related to them, allow us to formulate the following more important conclusions:

First, in a comparative plan between the individual companies, the achievement of leading assessments on some indicators is associated with a less favorable position in others, which requires their consideration as a balanced system when looking for sustainability and comprehensive efficiency in economic development.

Second, the differences in the assessments of the key indicators of the individual trade operators are determined by their format specifics as retailers. At the same time, the state and dynamics of the market environment and competition and many other factors beyond the control of the company, as well as within its management, have a significant impact on the overall performance of the company.

Third, in the short run, the management decisions of individual operators sought as a reaction or achieving time stability in the development of economic indicators, or counteracting the deterioration in the dynamics of an indicator of activity, which gives results in subsequent periods. All this leads to an effect expressed in the relatively positive direction of development of all three operators towards the end of the surveyed time horizon.

Fourth, with the help of the presented system of key performance indicators it is confirmed that the dynamics in some metrics can be rationally economically justified with the changes in other of the given indicators, which is an expression of their interdependence and compensation.

Therefore, each trade company must conduct a systematic comprehensive and quantitative study of its business performance, which provides economic arguments for the effectiveness of management decisions and to create arguments about the need to make well-defined changes to successfully adapt to market challenges and successfully resist the competition pressure. Commercial operators must constantly improve their ability to study these and other key performance indicators, which is a prerequisite.
to get the most out of the resource allocation and which must be done in a dynamic, territorial and product aspect.

The conducted research can be further developed under the fulfillment of a specific condition, which is related to the possibility to significantly increase the cognitive value of the assessments, if they are assessed analytically or independently by stock keep units from the portfolios of commercial companies. However, this is achievable in the presence of operational information in high detail, derived directly from the information databases of commercial companies. If this is feasible, then combining information with its greatest time disaggregation will achieve a high level of complexity of economic analysis and information security of any managerial decision in trade and mainly in terms of product portfolio management and sales. Of course, the above indicators cannot present a comprehensive picture of the overall economic development of commercial agents, but they are an appropriate starting point for conducting a complex economic analysis of trade activity.

References


Izdatelski kompleks - UNSS.


INNOVATION POLICIES AND MECHANISMS USED FOR STIMULATING THE INNOVATIONS IN THE FIVE LEADING AFRICAN COUNTRIES

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Abstract

Innovations in the modern world are of great importance for everyone. They are the basis for high competitiveness of companies, economic growth of economies and prosperity of societies. The scientific objective of the article is to identify the various levers, models and specific incentives for innovation and research and development (R&D) in the five leading African countries in this area, according to the Global Innovation Index 2020. On this basis, conclusions and guidelines have been worked out, that are useful both from a scientific point of view and for improving the renewed innovation policy of Bulgaria. The article uses various research methods and approaches, including methods of analysis and synthesis, comparison and causation, as well as systematic and complex approaches.

Key words: innovation policies, innovations, stimulating innovation

Introduction

In the modern world innovations are one of the most fundamental factors for the development, growth and improvement of the competitiveness of companies and economies, as well as for improving the quality of life in societies. They are implemented in the high-tech economic sectors, as well as in the traditional ones such as education, medicine and services. In which sectors of the economy and social life
should innovation be supported and what specific mechanisms should be applied to stimulate it, is definitely a prerogative of the innovation policy of each country. And although when referring to innovation it is usually associated with the world’s leading economies, we must keep in mind that, in fact, efforts are being made in all parts of the world to stimulate innovation. Of particular interest are countries that have limited financial resources and many political, economic and social problems and yet they find the right tools to pursue national innovation policies. Moreover, in many countries with weaker economies there has been achieved relatively high efficiency of the implemented measures. This is exactly the situation in several African countries, which are leaders among the others in the region. In line with this statement, the scientific objective of the article is to identify the various levers, models and specific incentives for innovation and research and development (R&D) in the five leading African countries in this area, according to the Global Innovation Index 2020, and to draw conclusions and work out guidelines that are useful both from a scientific point of view and for improving the renewed innovation policy in Bulgaria. The article uses various research methods and approaches, including methods of analysis and synthesis, comparison and causation, as well as systematic and complex approaches.

1. Nature of the innovation policies

In our opinion it can be pointed out that innovation policy covers a wide variety of measures for economic regulation, taxation, depreciation policy, patent-licensing and antitrust legislation, regulation of the technology market, stimulating small and medium-sized innovative businesses and attracting funds for the implementation of innovations. But in addition to all these rather indirect measures, innovation policy can also use direct payments, low-interest or interest-free loans and subsidies for the development of innovative, high-tech or key country-specific businesses, as well as specific government contracts for the delivery of innovative products, services or processes. It is generally a course of action, a choice of objectives and guidelines, the adopted line, containing necessary activities and resources to achieve the targets and is related to the elements of management and governance. According to Borràs and Edquist (2013), innovation policy can be likewise defined as a combination of actions taken by public organizations that influence innovation processes. Furthermore, it is a set of strategies, programs, events and others aimed at creating favorable conditions for the accelerated development of R&D and successful implementation of innovations in companies and the market (Raychev, 2014). In other words, innovation policy is the interface between research and technological development policy and industrial policy, and aims to create a favorable framework for bringing ideas to market (Gouardères,
Properly developed and implemented innovation policy, according to Eremkin and Sutayrina (2012), should have a positive influence on the propensity for entrepreneurship, macro and microeconomic environment of interaction between companies and the education system, which on the one hand affects the attitude to innovation, and - on the other - creates competencies needed for innovation.

It is fundamental, in our opinion, to point out that innovation policy should cover not only the various types of industries, including both high-technology and traditional ones, but also all other areas of economic and social life, most precisely incentives for innovation in services, agriculture, social work, healthcare, etc.

One of the essential goals of innovation policy, in addition to satisfying various needs in society, is to increase the competitiveness of the economy. From this point of view, innovation policy could be a very powerful instrument in the hands of governments, because economic growth usually leads to an increase in people’s welfare and also to an improvement in the quality of life – especially important for all African countries. In this regard, it is particularly important that each country’s innovation policy focuses not only on certain tax breaks or direct subsides, but offers a wide range of opportunities, because for every company or individual innovator that is trying to make an innovation successful, there are various so-called “most appropriate” incentives to succeed. For some of them, the problems are in the initial stages and assistance should focus on the phases related to generating ideas or creating pilot series. For others, the difficulties are in the subsequent phases, such as the marketing of new products or services – respectively, innovation policy should provide incentives in this field, etc.

One of the last references we could make in terms of innovation is the continent of Africa. Possibly because the economic development of most African countries is much lower than that of the world’s leading economies, since most African countries have been independent for only a few decades, and since in most of them the essential difficulties do not stem from how to achieve the highest standard of living, but rather from how to overcome basic problems such as hunger or providing the population with medicines or basic necessities. However, there are several countries in Africa that pay special attention to innovation and pursue targeted policies to stimulate it. These include Mauritius, South Africa, Tunisia, Morocco and Kenya. They are ranked first in the ranking of the Global Innovation Index for 2020 (Fig.1).
As the funds that these countries allocate to stimulate innovation are not very large (except in South Africa), but apparently some of them are spent quite effectively, the examination of their innovation policies and various specific levers and mechanisms to stimulate innovation and R&D may be interesting and useful in developing a future improved innovation policy for Bulgaria.

In this regard it is necessary to consider the specific innovation policies in the top five countries according to GII 2020 in Africa – Mauritius, Republic of South Africa, Tunisia, Morocco and Kenya.

2. Innovation policy of Mauritius

Mauritius is the leading country in the area of innovation for the continent of Africa. According to GII 2020, it ranks 52nd in the world with an index of 34.35 (WIPO, 2020). An interesting fact about the country is that by 2018 it is usually above the 80th place in the GII rankings. Since 2019, however, the government in Mauritius has relied heavily on innovation, not only on paper, but also as a real implementation of measures aimed at improving innovation, and there is a leap by 30 places upward in the rankings of GII 2020.

The country’s innovation policy is implemented with the leading role of the Government and in particular of the Ministry of Information Technology, Communication and Innovation (Ministry of Information Technology, Communication and Innovation, 2020). The Mauritius Research and Innovation Council also takes an active part in stimulating innovation. Since 2018, the country has adopted several important documents in the area of innovation, including the National Innovation
Framework 2018-2030 (National Innovation Framework, 2018), Digital Mauritius 2030 (Digital Mauritius, 2030) and Mauritius Artificial Intelligence Strategy (2018). These are documents that outline the principles and the focus of the island’s innovation policy until 2030.

In Mauritius there are various options for directly stimulating innovation and research, such as the Research and Innovation Grant Scheme – CRAIGS (MRIC, 2020), which grants innovative projects up to around €100,000. Other instruments are the Intellectual Property Promotion Scheme – IPPS, the Social Innovation Research Grant Scheme, the National SME Incubator Scheme (NSIS), Research and Innovation Bridges and others.

In addition, for the period 2014-2020, Mauritius, in cooperation with EU representatives, participated in two projects within the European Programme “Horizon 2020” in the areas of “Leadership in enabling and industrial technologies” and “Marie Sklodowska Curie Actions” (European Commission, 2020). The island also participates in EU’s Seventh Framework Programme, with six participants in six projects, half of them covering the scientific field of information and communication technologies.

In Mauritius, there are tax reliefs for innovation and R&D, and in addition to the many tax rebates that can be used in the various economic sectors in the country, from 2017 onwards an exemption from income tax on innovative products applies for a period of eight years if they can be patented, or if it is software, it must be able to be protected as copyright (Lomas, 2017).

The total R&D expenditure in Mauritius for 2016-2018 is between 0.4% and 0.3% of GDP (UNESCO, 2020). In real terms, this is about 42.8 million euros per year. The total cost of R&D per capita is about 33 euros.

3. Innovation policy of Republic of South Africa

The Republic of South Africa, according to GII 2020, is ranked second among the countries of the continent. It ranks 60th in the world with an index of 32.67 (WIPO, 2020).

The most important document outlining the roadmap for South Africa’s transition to a diversified economy by 2030 is the National Development Plan (South African Government, 2012). It applies to both the economic and social, and the cultural policy of the country, having innovation at the heart of almost every area.

Other important elements in the implementation of the country’s innovation policy are the National Integrated Cyber Infrastructure System (SCIR, 2020) and the Industrial Policy Action Plan 2018/19 - 2020/21 (South African Government, 2018). The integrated system encourages scientific and industrial development by
providing high-performance computing capabilities, high-speed network capacity and a national research data infrastructure, providing seamless access for the research and educational communities in South Africa. The Action Plan provides a framework for the development of the entire South African industry, with a special place for innovation and technology, including that of technological maturation and commercialization of large research and development projects, that have the potential to create significant industries in emerging technological spheres.

The principal bodies involved in the implementation of innovation policy in the Republic of South Africa are the Ministry of Higher Education, Science and Technology, the Ministry of Trade, Industry and Competition, the Ministry of Telecommunications and Postal Services, the Academy of Sciences of the South African Agency for Technological Innovation.

Direct funding of innovative activities in South Africa can be obtained through various programs (Technological Innovation Agency, 2020) such as: 1) The Technology Stations Program, whose goal is to improve the competitiveness of the industry by applying specialized knowledge, innovation and technology and facilitating the interaction between industry and academia. 2) The Innovation Program for Inclusive Development. 3) The Youth Technology Innovation Program. Its goal is financing and supporting young people aged 18 to 30 who have innovative ideas that have the potential to start a new business. 4) The Cleantech Global Innovation Program, whose goal is fostering innovation in clean technologies and helping entrepreneurs grow their small, medium, micro and start-up enterprises. 5) The Innovation Skills Program.

In South Africa, indirect stimulation of innovation through tax relief for companies is also used (Department of Science and Innovation, 2019). Up to 150% of current or capital R&D costs can be deducted from taxable corporate income, without a ceiling on the amount. This incentive is available for businesses of all sizes (both SMEs and large ones) and in all sectors of the economy.

Total R&D expenditure in the Republic of South Africa (UNESCO, 2020) for 2016-2018 is 0.8% of GDP. In real terms, this is between 1.6 and 1.9 billion euros a year.

4. Innovation policy of Tunisia

Tunisia is the third country according to GII 2020 for the continent of Africa. It ranks 65th in the world with an index of 31.21 (WIPO, 2020).

In Tunisia, innovation policy is the responsibility of the Ministry of Industry and SMEs, through the Agency for the Promotion of Industry and Innovation. It implements government policy related to the promotion of the industrial sector and innovation.
The Center itself also has a Center for Innovation and Technological Development (Center d’Innovation et de Développement Technologique, 2020). The Ministry of Higher Education and Research also participates in the implementation of the country’s innovation policy. In addition, Tunisia has a National Agency for the Promotion of Research, whose key aim is to support public research structures. Technopolis, which represent places in which activities in the field of education, scientific and technical research, production and technological development are located, also play an important role in terms of innovation in the country. Their main goal is to promote the competitive capacity of the economy and to develop its technological components by stimulating technological innovation.

In the area of innovation and high technology, the National Strategic Plan Digital Tunisia 2020 is in effect in the country, and since the beginning of 2020 a National Strategy for the Promotion of Industry and Innovation 2035 is being prepared.

In Tunisia, several programs and various funds that stimulate innovation are being implemented, such as the Upgrade Program (PMN) and the Business Competitiveness and Market Access Facilitation Program (PCAM); the Risk Mutual Fund (IN‘TECH), which finances high-tech innovative projects; the Industrial Decentralization Promotion Fund (FOPRODI); The incentive scheme for creativity and innovation in the field of information and communication technologies (RIICTIC); The Start-up Innovation Fund invests in equity shares of start-up innovative companies that have strong development potential, and then, when the innovative companies establish themselves on the market, it has the opportunity to repurchase their shares.

In Tunisia, there are also some tax breaks for innovation (Agence de Promotion de l’Industrie et de l’Innovation, 2020), such as: sector, but excluding renewables, mining, real estate, local consumption, trade and telecommunications. Tax exemption for the first four years for start-ups, including innovative ones, as follows: 100% for the first year, 75% for the second year, 50% for the third year, 25% for the fourth year.

Gross domestic R&D expenditure in Tunisia (UNESCO, 2020) for the period 2016-2018 is 0.6% of GDP or in monetary terms between 185 and 216 million euros per year.

5. Innovation policy of Morocco

Morocco is the fourth country according to GII 2020 for the continent of Africa. It ranks 75th in the world with an index of 28.97 (WIPO, 2020). However, in the country there are implemented and are implemented several strategic documents in the area of innovation and research (Royaume du Maroc, 2020), the most important of which are the Morocco Innovation Strategy and the National Strategy for the development
of scientific research until 2025 (Royaume du Maroc, Ministère de l’Enseignement Supérieur, de la Recherche Scientifique et et de la Formation des Cadres, 2020).

The main institutions and organizations, responsible for implementing innovation policies in Morocco, are the Standing Ministerial Committee for Research and Technological Development, the Ministry of Higher Education, Research and Training, the Hassan II Academy of Sciences and Technology, the Supreme Council for education, teaching and research, the National Fund for the Support of Research and Technological Development, the National Center for Scientific and Technical Research.

In the North African country various programs for direct stimulation of innovation and R&D have been implemented at the national level in recent years. Such are the Morocco Incubation and Development Network; the INOV’ACT program; Programs to promote excellence; University and business partnership programs. In addition, innovators and scientists from Morocco have the opportunity to receive funding for international programs such as the Moroccan-Walloon Cooperation, Moroccan-Qatari Cooperation as well as other bilateral programs.

In Morocco, there are no tax breaks especially and only for innovation or R&D. But innovators can take advantage of discounts in areas such as the automotive, aerospace, electronics, chemical, and pharmaceutical industries through the Hassan II Fund (Moroccan Investment Development Agency, 2020). In addition, for large investment projects - over 9.2 million euros, including innovative ones - exemption from VAT and import duties may be requested. In the field of agriculture, tax relief can also be used (Worldwide Tax Summaries Online, 2020), including relief for innovative companies, with discounts varying depending on the size of the company.

Gross domestic R&D expenditure in Morocco (UNESCO, 2020) according to the latest available data (for 2010) is 0.7% of GDP or in monetary terms it is about 510 million euros.

6. Innovation policy of Kenya

Kenya is the fifth country according to GII 2020 for the continent of Africa. It ranks 86th in the world with an index of 26.13 (WIPO, 2020).

The main institutions and organizations responsible for implementing Kenya’s innovation policy are the Ministry of Science, Technology and Innovation, the National Commission for Science, Technology and Innovation (NACOSTI, 2020), the Kenyan National Innovation Agency and the National Research Fund.

The Ministry of Science, Technology and Innovation is responsible for the policy, planning and control over the financing of innovation and R&D. It coordinates the implementation of flagship programs for all line ministries, departments and agencies
with respect to science, technology and innovation.

One of the important documents regarding the economic and social development of the country is Kenya Vision 2030. In it, along with a number of issues to be solved in areas such as income, health, nutrition, the essential role of science, technology and innovation are creating wealth and building the human capital needed to make the transition to a knowledge-based economy (Kenya Vision 2030, 2017). In addition, the Ministry of Education in Kenya has developed a Science, Technology and Innovation Policy (Republic of Kenya, Ministry of Education, 2017), which contains in-depth analysis, vision, targets, policies and strategies in these areas. Especially in the field of innovation, efforts are envisaged, which include the development of innovation centers, business incubators, science parks and special economic zones to convert ideas, research or prototypes of viable products and services.

In Kenya, there are several programs for funding innovation and R&D that can receive direct funding, such as the Science, Technology and Innovation Grant; the ICT capacity building; the Fostering ICT entrepreneurship; the National Innovation Awards; the Scholarships for innovation leaders and others.

Indirect incentives focus on tax breaks that are not directly meant for innovation and R&D, but can benefit all companies that have invested in Kenya (Kenya Revenue Authority, 2020). Discounts are most often in the form of increased depreciation rates for the first year (in some cases for subsequent years) after investing in buildings, machinery, farming or for the purchase or acquisition of the right to use an optical cable from a telecommunications operator, and vary between 10% and 50%.

According to the latest available data (for 2010), the gross domestic expenditure on R&D in Kenya (UNESCO, 2020) is 0.8% of GDP or in monetary terms it is about 380 million euros.

7. Analysis of the characteristics of innovation policies in the five African countries

If we analyze these five leading innovation countries in Africa in more detail, we will find that there are a number of similarities. All of them have developed strategic documents in the area of innovation policy. And although their focus is different - from innovation in industry, agriculture, research and development, to high innovation of SMEs or something else, policies are implemented by trying to implement different, but as appropriate as possible country-specific approaches and incentives.

In all five countries considered, the main drivers for the implementation of innovation policy are governments – directly through certain ministries or through specific government agencies.
Another important feature in these African countries is the presence of indirect incentives for innovation or R&D in each of them. Of course, there are nuances - in Mauritius, the Republic of South Africa and Tunisia, the relief is tax-related and is directly aimed at R&D and innovation. There are also tax breaks in Morocco and Kenya, but they target all eligible investments, including those for innovation activities; however they are not specifically prepared for innovation and R&D. Considering all the observations made thus far, we may need to conclude that tax incentives that are directly aimed at stimulating innovation and R&D are more effective than general measures in this direction, because Mauritius, South Africa and Tunisia are in the GII 2020 ranking far ahead of Morocco and Kenya who do not offer such special relief.

Another fact is that in all five countries, gross domestic expenditure on R&D as a percentage of GDP is between 0.3% in Mauritius and 0.8% in South Africa and Kenya (Figure 2), which is a very low level compared to the leading innovative countries in the world, (for example in Israel and the Republic of Korea - these costs are over 4.5%) (UNESCO, 2020). Moreover, these are the top five countries on the African continent in terms of innovation.

On the other hand - the low costs that Mauritius incurs, but the good results achieved - show that the chosen main tools and levers in the innovation policy of the country are used correctly and give good results. This means that it is essential, in order to achieve high innovation in different economies, to not only spend a lot of money, but make sure they are properly targeted and implemented through the most appropriate instruments of innovation policy in a particular country.

Other important information on the innovation policies of the five leading African countries according to GII 2020 and the funds they spend on stimulating innovation

Fig. 2. Gross domestic R&D expenditure in Mauritius, South Africa, Tunisia, Morocco and Kenya

Source: The author, based on information by UNESCO, (2020)

On the other hand - the low costs that Mauritius incurs, but the good results achieved - show that the chosen main tools and levers in the innovation policy of the country are used correctly and give good results. This means that it is essential, in order to achieve high innovation in different economies, to not only spend a lot of money, but make sure they are properly targeted and implemented through the most appropriate instruments of innovation policy in a particular country.

Other important information on the innovation policies of the five leading African countries according to GII 2020 and the funds they spend on stimulating innovation
and research can be obtained by looking at the GDP per capita R&D expenditures. This indicator can be determined by relating R&D expenditure to R&D to the population of the country concerned (Table 1).

**Table 1**

<table>
<thead>
<tr>
<th>Country</th>
<th>Place in GII 2020</th>
<th>GDP expenditure on R&amp;D in millions of Euros</th>
<th>Population</th>
<th>Expenditure of GDP on R&amp;D per capita in Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
<td>V=III/IV</td>
</tr>
<tr>
<td>1. Mauritius</td>
<td>52</td>
<td>42.8</td>
<td>1,295,462</td>
<td>33.04</td>
</tr>
<tr>
<td>2. Republic of South Africa</td>
<td>63</td>
<td>1,900</td>
<td>57,092,143</td>
<td>33.28</td>
</tr>
<tr>
<td>3. Tunisia</td>
<td>65</td>
<td>216</td>
<td>11,805,501</td>
<td>18.30</td>
</tr>
<tr>
<td>4. Morocco</td>
<td>75</td>
<td>510</td>
<td>36,439,551</td>
<td>14.00</td>
</tr>
<tr>
<td>5. Kenya</td>
<td>86</td>
<td>380</td>
<td>51,517,661</td>
<td>7.38</td>
</tr>
</tbody>
</table>

*Source:* Data on GDP expenditure on R&D are from UNESCO (2020). Data on the population of the countries are from Wikipedia (2020).

Based on these data, it can be assumed that in all five countries, the GDP expenditure on R&D per capita is not high - about 33 euros in Mauritius and South Africa - and extremely modest - 7.4 euros - in Kenya. This, together with the low percentage of gross domestic R&D spending, are in fact two of the important reasons why even the leading countries on the continent of Africa are outside the top fifty in the world in terms of innovation.

From the analyses and conclusions made, three important **guidelines** can be drawn regarding the development of a new innovation policy in Bulgaria. **First**, although the measures applied to stimulate innovation are extremely diverse, they must be selected in such a way as to best suit the specific characteristics of the economy and society. Here, too, it must be emphasized that a package of long-term, well-considered measures is needed, not current short-term solutions. **Second**, the availability of specific tax rebates for innovative companies or individual innovators has a positive effect on the whole economy and is an important factor in improving the innovation of the country that implements them. In the case of Bulgaria – the low corporate tax for all economic entities is clearly not a sufficient incentive in this direction and it is necessary to think in the direction of reducing the tax and perhaps the insurance burden for highly-qualified staff (Bulgarian and foreign), engaged in research and other innovative activities, both
in scientific organizations and in enterprises of the various economic sectors. **Third,**
the achievement of significant results in the field of innovation and R&D is linked to
the direct costs of GDP in this direction. Unfortunately, in this aspect Bulgaria, with
a cost of about 60 euros per capita is very far from the world’s innovation leaders:
Switzerland – over 2,380 euros, Israel – over 1,890 euros and Sweden – 1,530 euros
(UNESCO, 2020) and much nearer the leading African countries Mauritius and South
Africa. This actually means that in the majority of cases in our country, innovations
happen despite the intervention on the part of the state, and not with its help. It is
of great importance that the expenditures on R&D and innovation be proposed as a
priority item in the following republican budgets in order to achieve more significant
results.

**Conclusion**

Although globally the five African countries under study are not among the leaders
in innovation, in regional terms they are leaders in this field. When analyzing the
innovation capacity of different countries, there must be taken into account a number of
other details, related to their overall economic development, recent political and social
issues (as in South Africa, Morocco, Tunisia), entrepreneurial attitudes and many other
factors, which affect innovation. However, these countries have a few things in common
besides being leaders in innovation in Africa. All of them implement various programs
for direct financing of innovation and R&D in their countries, which are funded from
the national budgets and elsewhere, the specific ministries or other government bodies
or agencies implement national innovation policies. It is important to note that in all of
these 5 countries, in an effort to develop innovation, tax relief is used - directly aimed
at both R&D and innovation and common to various investment projects, as indirect
measures in this respect.

In conclusion, it must be stated that in order for an economy to be strong and
innovative, it does not have to be rich in oil, or be a former colonial power, or one of
the world’s largest economies - prerequisites that can undoubtedly take precedence in
that case. However, it is very important for the country to have the right policy and
strategy for innovative development of the national economy, to use the appropriate
fiscal incentives and for innovation to be a priority for the whole society.

**End notes:**

¹ **Global innovation index** provides detailed indicators for innovation in 131
countries and economies around the world (for 2020). It is an annual ranking of
countries by their capacity and success in the area of innovation. It is published by Cornell University, INSEAD and the World Intellectual Property Organization in partnership with other organizations and institutions and it is based on both subjective and objective data obtained from several sources, including the International Telecommunication Union, the World Bank and the World Economic Forum. It’s 81 indicators explore a broad vision of innovation, including the political environment, education, infrastructure and business complexity.

2 However, here we must consider the fact that not all countries have complete freedom with regard to direct subsides, including those for innovation. (For example, EU member states)

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EFFECT OF PRODUCT ATTRIBUTE AND PRICING STRATEGY ON MULTINATIONAL FIRMS COMPETITIVENESS

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Abstract

In today’s dynamic and turbulent environment, organizations are increasingly entering into the international market to sustain competitive advantage and explore special skills and knowledge and the need to improve their performance. This study examined how competitiveness could be achieved using product attributes and pricing strategy in Nigerian multinational firms. The survey research design was adopted. A structured questionnaire was employed in collecting data from 313 respondents in Nestle Nigeria Plc, Unilever Nigeria Plc, and P.Z. Cussons Nigeria Plc, which was obtained through Raosoft sample estimator at 95% confidence level and 5% error margin using selected multinationals in fast-moving consumer goods. Categorical regression was used to determine the effect of product attribute and pricing strategy on multinational firms’ competitiveness in Nigeria. The study revealed that product attributes and pricing strategy have positive, significant, and joint effects on multinational firms’ competitiveness with coefficient and p-value of β₁=0.288 (p-value<0.000) and β₂=0.289 (p-value<0.000) at F-stat=67.795 (0.000) and adj. R²=0.381. Therefore, it is concluded that competitiveness can be achieved using product attributes and pricing strategy. It is recommended that firms place greater emphasis on their products’ attributes and pricing to improve their competitiveness posture.

Key words: competitiveness; marketing mix; pricing strategy; product attributes.

1. Introduction

The current dynamics in the business environment has caused multinational firms to transfer a certain part of their commercial practice to other countries while adapting their operations in such foreign countries because of less competition and lower intensity of rivalry in those countries. This action requires the firm to choose an operation area where its products and services could make a large impact. This is important to allow the interaction between the firm and society in markets where conditions and cultural forces might affect certain areas’ products or services.

Globalization has made organizations increasingly face intense competition both in the domestic and the international arena. The level of competitiveness manifests the organization’s ability to design, produce, and market products superior to those offered by competitors. Globalization will warrant entering the local and international markets, with improved marketing strategies to meet the consumers’ needs and satisfaction (Doole and Lowe, 2008). Marketing practices are geared towards performance improvement and can be seen in the contexts of branding, pricing policy, applied marketing channels, and promotion activities (Kenesei, Gyulavari and Seer, 2013).

As pointed out by Kaleka and Morgan (2017); Karafyllia and Zucchella (2016); Dosi, Grazzi and Moschella (2015) marketing strategies showed how organizational competitiveness affects business performance (at both domestic and international level). Scholars such as Gbolagade, Adesola and Oyewale (2013); Mutambuki and Orwa (2014); Ebitu (2016) and Chukwuemeka (2016) observed that there is a causal relationship between marketing strategies and business performance in Nigeria. It could be seen, therefore, that competitiveness drives performance. It may be interesting then to see competitiveness from within and evaluate how internal marketing strategies can help to achieve it.

Various studies have examined how product attributes have influenced organizational performance, firm competitiveness, market share and price sensitivity (Mutambuki & Orwa, 2014); Ebitu, 2016; Chukwuemeka, 2016 Lawal, 2012). However, to the best of the researchers’ knowledge, how product attributes drive pricing strategies among multinational firms is yet to be seen. The choice on the multinational firms is premised on Lawal’s (2012) position who opines that multinational firms are drivers of developing economies prosperities. Therefore, this study seeks to evaluate internal strength (competitiveness) of multinational firms through product attributes and pricing strategy, which are presumed to be majorly controlled internally by the firms in Nigeria.
Research Objectives

i. to examine whether product attributes contribute positively to Nigerian multinational firms’ competitiveness among fast-moving consumer goods.

ii. to investigate the effect of pricing strategy on Nigerian multinational firms’ competitiveness among fast-moving consumer goods.

iii. to assess the combined effect of product attributes and pricing strategy on Nigerian multinational firms’ competitiveness among fast-moving consumer goods.

The study was divided into five sections. Section one introduces the subject matter, section two presents a literature review, section three the research methodology employed for the study, section four the research findings and discussion of the findings and section five provides the conclusion and recommendations of the study.

2. Review of Literature

The Concept of Marketing Mix Strategies

Marketing mix strategies are determined by defining organizational goals and objectives. The Marketing strategy is the marketing logic by which the company hopes to create customer value and achieve profitable customer relationships. The marketing mix is a method used by the company trying to reach its targeted customers and outwit its competitor’s. According to Aremu and Lawal (2012), the marketing mix strategy is defined as an analysis of the market and its environment, relating to customer buying behaviour and competitive activities. This marketing mix strategy is associated with the 4P’s of marketing i.e. product, pricing, place, and promotion, which defines the company’s marketing objective and explains how it will be achieved in the future (Ibidunni, 2010); but these 4P’s of the marketing mix have been further extended to 7P’s.

Marketing mix strategies are the methods adopted by the firm to outwit their competitors through product attributes and pricing strategies. The quality of the product is the key to ensuring customer satisfaction, and it is essential first to know the customer’s needs. Their exact needs must be produced within a period to a minimum price set. The product can be determined in terms of packaging, labeling, size, design, texture and taste, timeliness in delivery, reliability, and potency. Product prices can also influence customers’ buying behaviour.

The Concept of Product Attributes Strategy

The product attributes are the set of decisions made by the producers to meet the buyers’ expectations regarding the question „What will the product offer by way of
meeting the need gap and giving satisfaction?“ The strategy focuses on how consumers’ choices in terms of product design, packaging, brand positioning, and product guarantee are enhanced. Gilaninia, Taleghani, & Azizi, (2013) defined a product as anything that intends to attract attention, acquisition, use, or consumption which can be marketed in order to meet the need or desire of the buyer. A product can be any physical object having a complex set of advantages with a good characteristic of quality, brand, design, durability, packaging, comfort, and style presented for sale, opined Indumathi and Dawood (2016); Oladele (2009). These attributes are expected to form the basis of attraction to the consumers and also stand the product out from substitutes. Therefore, it is imperative that organizations through their pre-production marketing would have identified the need gap and develop a product that will meet the need gap in a manner that attracts the attention of potential buyers.

The Concept of Pricing Strategy

Pricing can be a big challenge to an enterprise, especially where there are many substitutes, different cost elements, and the desire to make a profit. The primary reason for the employment of strategic tools is to create value for customers. According to Armstrong and Kotler (2013), companies need to make the right pricing decisions to develop a compelling marketing mix. Pricing is an element in the marketing mix and can be a vital and potent element in the international market. A product’s price is the monetary exchange value for a given quantity and quality of goods or services or what to pay to use a product (Gilaninia, et al. 2013, Nwokoye, 2000). Underpricing or overpricing a product could have an adverse effect on sales (Waiswa, Nduhura, Mugerwa, Settumba, Wanume, & Businge, 2016). Therefore, appropriate pricing is essential to drive the product purchase and set the table for competitiveness.

Multinational Firm Competitiveness (M.F.C.)

Market competition presupposes the existence of more than one organization in the market, requiring that each organization adopt an appropriate marketing strategy to remain afloat given the strengths and weaknesses of these firms. The style of promoting and enhancing competitiveness among organizations is partly determined by the current turbulent macro environment and the ability to control the microenvironment. Arguably, the strength within can determine, to a large extent, the level of competitiveness in the market. Competition is seen as a form of battle against other companies, focusing on strategies that are related to managing the dynamic environment, customer needs, and competitor’s reaction in the market. Competitiveness has become more critical than ever for a business’s survival and success in a dynamic environment. Barney (1991) views organization resources as key to promoting competitiveness in the market. The
idea is that once resources are unique and differentiated from those offered by other competitors; such an organization can sustain competitive advantages. Cost advantages allow the organization to set strategic price and dwell on product attributes by operating from internal strength.

**Theoretical Framework**

The study is anchored on the resource-based theory. Hamel and Prahalad popularized the resource-based theory in their book „Competition for the Future“ (1996), in which scholars viewed an organization as a set of resources that made their resources different from one another and allowed them to earn money in a competitive advantage over others. Barney (1991) argues that the competitive advantages of the organization are determined by valuable, scarce and non-substitutable resources and capabilities, and depend on the firms’ ability to make a unique and differentiated strategy. He believed that valuable elements, such as resources, should enable the organization to do things and behave in ways that increase sales or market share, reduce costs, increase margins or add financial value to businesses (Barney, 1986). He also pointed out that resources are useful when they enable an organization to design or implement strategies that improve its effectiveness and efficiency (Barney, 1991).

The resource-based theory (RBT) provides an important framework for explaining and predicting the foundations of a firm’s competitive advantage and performance (Barney, Ketchen, & Wright, 2011; Slotegraaf, Moorman, & Inman, 2003; Vorhies & Morgan, 2005), management researchers (Barney & Hesterly, 2012).

This study rests on the resource-based theory since the intent is to see how internal strength can benefit organizations competing with one another in the same market place. The theory states that an organization’s competitive advantages are determined by valuable, scarce, and non-substitutable resources and capabilities to push for unique and differentiated strategy. In this context, the study is exploring the possible effect of product attribute and pricing strategies to estimate the competitiveness of organizations in the international markets. It is believed that valuable elements, such as resources, should enable the organization to do things and behave in ways that increase sales or market share, reduce costs, increase margins, or add financial value to businesses.

**Product Attributes, Product strategy and Firm Competitiveness: The Nexus**

Ebitu, (2016) in his work marketing strategies and the performance of small and medium enterprises in Akwa Ibom State, Nigeria, used a survey design and a simple random sampling technique with a total sample size of 240 SMEs. Eighty small and medium-sized enterprises were selected in two local governments in each senate district. The statistical tool used for this study was PPMC analysis. The study found
that the product quality and relationship marketing strategy significantly impacted the profitability and increased market share of S.M.E.s in Akwa Ibom State.

Chukwuemeka (2016) studies the influence of marketing strategies on I.C.F.s (indigenous construction firms)’ performance levels in south-south Nigeria. Targeted sampling was adopted for his study using primary questionnaire data with a sample of 87 C.E.O.s and CCI managers in the six states of Nigeria’s south-south geopolitical zone. An ordinary regression analysis was used to achieve the study result, which revealed a significant difference in the frequency of use of marketing strategies by the best performing and [worst] performing I.C.F.s.

Ayedun, Oloyede, Oluwunmi and Oyedele, (2014) aim to examine the effect of the marketing strategies adopted by the wealth review and valuation firms operating in Kaduna metropolis and their impact on the performance of their enterprise, using primary and secondary data through questionnaires and self-structured journals, the directory of the Nigerian Institution of Inspectors and Estate Evaluators, among other sources, with a sample of 25 evaluation companies and estate appraisal in the metropolis of Kaduna. The result of the correlation revealed that the use of various marketing strategies had a positive impact on business performance. However, it was clear that the relationship between marketing strategies and business performance was positive. The study later suggested that more aggressive strategies were needed to improve their performance further.

Gbolagade, Adesola and Oyewale, (2013) study the impact of the marketing strategy on business performance, with particular reference to selected S.M.E.s in the Oluyole local government area in Ibadan, Nigeria. The survey design was used, which involves the use of a customized primary data questionnaire with a sample of 103 respondents. The instrument used is a closed questionnaire, and a correlation coefficient and multiple regression analysis were used to analyze the data using SPSS. The results show that marketing strategies (product, promotion, location, price, packaging, and after-sales service) were common predictors of corporate performance in terms of profitability, market share, return on investment, and expansion.

Felzensztein, Stringer, Benson-Rea and Freeman, (2014) study international marketing strategies in Clusters using primary data, with the help of a questionnaire in which a sample of 141 general managers or marketing managers was obtained. The data were analyzed using SPSS, and the results of the study make a significant contribution to the theory of agglomeration by confirming the importance of sharing marketing knowledge to create a sustainable competitive advantage in international markets. The study did not take into account agro-food industries such as manufacturing and other knowledge-intensive industries. The research did not compare clusters of agro-enterprises and non-agro-industries in developed and emerging economies. It does not
examine the active marketing externalities and international competitiveness in the economies under consideration.

Masood, Saif, Sidra and Aamna, (2013) study the impact of the marketing strategy’s creativity on organizational performance through the effectiveness of the implementation of the marketing strategy (empirical evidence of Pakistani organizations). Primary data were used from a survey questionnaire provided by key personnel of Pakistan’s commercial service and manufacturing units. The regression analysis result showed that performance is optimized when an organization develops a creative strategy and achieves effective implementation. A practical data collection technique has been used for the study. Still, it is possible to study the possibility of using a cross-sectional research design that will increase the generalization. Besides, only one respondent from each organization was also used, while multiple respondents were not captured and that may increase the reliability of the results.

Oke, (2013) examined the effect of marketing strategies and bank performance in Nigeria using primary and secondary data in the form of questionnaires, CBN publications, and the Nigerian Stock Exchange database. Standard Least Squares and multiple regression techniques show that marketing has become a significant function of the banking sector because of the increased competition brought about by consolidation and banking reforms. The study also shows the overall importance of the marketing variables retained, although the effect is noticeable when it comes to marketing isolated from other variables. This helps to conclude that marketing strategy techniques need to be combined appropriately to improve performance.

Griffith (2010) examined the understanding of the effects of multi-level institutional convergence on international market segments and the global marketing strategy. The study was conducted in the United States using primary data by research. The results are significant because of their theoretical and managerial contributions to understanding the change of the marketing segment and their implication for the global marketing strategy. This study is limited by its focus on institutional effects at the macro level that can be decomposed. The research focuses on one element of the overall marketing strategy, that is, marketing mix elements and not on broader marketing strategy issues.
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3. Methodology

The survey research design was used to capture variables relevant to the study. The population of the management staff in marketing, finance and strategy departments of Nestle Nigeria Plc., Unilever Nigeria Plc. and P.Z. Nigeria Plc. of Fast Moving Consumer Goods chosen for this study were 1680 (Annual financial statements for the year 2016). Stratified sampling techniques were used to select management staff in each company as respondents based on their size because they are heterogeneous in nature. Raosoft sample estimator software was used to determine the aggregate sample size of 313 management staff at 95% confidence level and 5% margin for the study. However, from the 313 questionnaires distributed, only 218 were filled and returned appropriately. The questionnaire adopted a five-point Likert scale ranging from 1 (least agreed) to 5 (most agreed). The questionnaires were personally administered with the aid of 3 research personnel in December, 2018 and fully retrieved, April, 2019.

In determining the validity of the research instruments employed for this study, the content, construct, and expert validity was used. In achieving expert validity, the tool (questionnaire) was reviewed by the expert in academia, and the correction was made accordingly, to validate the content. The content validity was achieved through a pilot study where a test-retest method was employed. The test-retest method was used to test for the consistencies of the instruments. Questionnaires were administered twice to a group of 20 respondents who are not part of the sample size within a two week interval. The result from the first and second tests were correlated. The Cronbach alpha was adopted to fulfill the reliability test further. The Cronbach alpha coefficient reveals $\alpha=0.76$, 0.83 and 0.81 respectively for the product attributes, pricing strategy and competitiveness respectively. The construct validity was achieved by the researchers through carefully adapting the measures from studies that have employed such variables and are similar in objectives (Oke, 2013; Aremu & Lawal, 2012). Only specific questions that assess known measures of depression must be included in the
questionnaire. The categorical regression was utilized in the analysis of data with the aid of the Statistical Package for the Social Sciences (SPSS) version 23.

**Model specification**

The model aggregates the effect of product attribute and pricing strategy; it is estimated to examine how these elements individually or jointly affect the competitiveness of multinational firms in Nigeria. The model addresses the study’s main objective, which is to investigate the effect of Product Attributes and Pricing strategy on multinational firms’ competitiveness in Nigeria. The model is thus mathematically expressed;

\[
MFC = f(PS)
\]

\[
MFC = B_0 + B_1PS + \mu
\]

\[
MFC = f(PA)
\]

\[
MFC = B_0 + B_1PA + \mu
\]

\[
MFC = f(PS, PA)
\]

\[
MFC = B_0 + B_1PS + B_2PA + \mu
\]

Where:

MFC represents Multinational Firm Competitiveness;

\(\beta_0\) is the constant term;

\(\beta_1, \beta_2\) are the coefficient of the estimator;

\(\beta_1, \beta_2 > 0\);

PA = product attribute;

PS = pricing strategy;

\(\mu\) are the error term.

For the apriori expectation, it is expected that product attributes and pricing strategy have a positive effect on multinational firm competitiveness in Nigeria; hence the parameters of a pricing strategy should have a positive sign.

**Research Hypotheses**

\(H_01\): Product attributes do not contribute significantly to Nigerian multinational firms’ competitiveness among the fast-moving consumer goods.

\(H_02\): There is no significant positive effect of pricing strategy on Nigerian multinational firms’ competitiveness among the fast-moving consumer goods.

\(H_03\): Product attributes and pricing strategy do not significantly affect Nigerian multinational firms’ competitiveness among the fast-moving consumer goods.
4. Results and Discussion of Findings

Descriptive Statistics

Fig. no. 1 shows the degree of agreement of respondents to how product attributes affects firm competitiveness. The graph shows that most of the respondents are of the opinion that product attributes are pivotal to competitiveness.

![Product Attributes are Drivers of Competitiveness](source: authors' own projection)

Fig. no. 1. Product attributes strategies influence firm competitiveness

Hypotheses testing

We expect that product attributes do not contribute significantly to Nigerian multinational firms’ competitiveness among fast-moving consumer goods.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t(8.68)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Attributes</td>
<td>0.511</td>
<td>0.06</td>
<td>0.516</td>
<td>8.680</td>
<td>0.000</td>
</tr>
</tbody>
</table>

![Pricing Strategy Influences Firms Competitiveness](source: authors' own projection)

Fig. no. 2 shows the degree of agreement of respondents to how pricing decisions influence firm competitiveness. The analysis reveals that most of the respondents are of the opinion that pricing strategy is important to firms achieving competitiveness.

Fig. no. 2. Pricing strategy influences firm competitiveness

Source: authors’ own projection
Hypothoses testing

We expect that product attributes do not contribute significantly to Nigerian multinational firms’ competitiveness among fast-moving consumer goods.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>tc=</th>
<th>P</th>
</tr>
</thead>
<tbody>
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<td>0.516</td>
<td>8.680</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table no. 1

Source: Researcher’s fieldwork (2018)

Table no. 1 reveals the significance of relationship and effect (β=0.516) of product attributes on competitiveness. The coefficient of determination (R²=0.268) reveals that product attributes’ 26.8% variation in competitiveness is explained. The standard error (SE= 0.06) establishes that the model is a good fit by revealing how product attributes predict competitiveness since the value falls between the accepted estimates. This also indicates that product attribute is a significant driver of firm’s competitiveness. The unstandardized coefficient (B=0.511) shows that for every unit increase in product attributes, competitiveness increases by 0.511 units. The t-value (t-value=8.680, p=0.000) establishes that product attributes significantly affect competitiveness. The result establishes that product attributes significantly affect firm’s competitiveness in multinational companies.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>tc=</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Strategy</td>
<td>0.418</td>
<td>0.06</td>
<td>0.422</td>
<td>14.293</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: Researcher’s fieldwork (2018)
Table no. 2 reveals the significance of relationship and effect ($\beta=0.422$) of price strategy on the competitiveness of multinational firms. The coefficient of determination ($R^2=0.268$) reveals that 26.8% variation in competitiveness is explained by price strategy. The standard error (SE= 0.06) establishes that the model is a good fit by revealing how price strategy predicts competitiveness since the value falls between the accepted estimates. This also indicates that price strategy is a significant driver of firm’s competitiveness. The unstandardized coefficient ($B=0.418$) shows that for every unity increase price strategy, competitiveness increases by 0.418 units. The t-value ($t-value=14.293, p=0.000$) establishes that price strategy significantly affects competitiveness. The result establishes that price strategy significantly affects the firm’s competitiveness in multinational companies.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>13.344</td>
<td>8.087</td>
<td>0.000</td>
</tr>
<tr>
<td>PA (2)</td>
<td>0.288</td>
<td>4.478</td>
<td>0.000</td>
</tr>
<tr>
<td>PS (1)</td>
<td>0.289</td>
<td>5.866</td>
<td>0.000</td>
</tr>
<tr>
<td>Adj. $R^2$= 0.381</td>
<td>F-stat= 67.795 (0.000)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher’s fieldwork (2018)

Table no. 3 indicates that product attributes and pricing strategy have a significant combined effect on Nigerian multinational firm competitiveness, with F stat of 67.795 and probability value of 0.000, which reveals that product attribute and pricing strategy have a positive and significant combined effect on Nigeria Multinational Firm Competitiveness at 5% level of significance. The adjusted coefficient of determination (Adj. $R^2$) indicates that product attributes and pricing strategy account for 38.1% variation in Nigeria’s multinational firm competitiveness.

Discussion of findings
Findings revealed and indicated that product attributes significantly affect Nigeria’s multinational firm competitiveness. Hence, product attributes are the set of decisions that a marketer takes regarding the question „what to produce and sell?“ and the strategy involves the choices made on product design, the design of the elements of the product mix, packaging, branding, product positioning, product warranty, etc. Gilaninia, et. al. (2013) said a product is anything for attention, acquisition, use, or
consumption that can be marketed and can satisfy a need or want. Thus, Nigeria multinational firm competitiveness in the global market increases because product attributes contribute effectively to the ability of an organization to improve the quality of their product in terms of branding, packaging, etc. by gaining the interest of their customers to buy more of their product rather than the competitors own. This study is consistent with the study by Ebitu, (2016); Ayedun, et. al. (2014); Gbolagade, et. al. (2013); Owomoyela, et. al. (2013); Kazem and Heijden (2006); Ogunmokun and Esther (2004). Findings also showed that pricing strategy significantly affects Nigeria’s multinational firm competitiveness in the international market. Hence, pricing strategy is one of the main problems that marketing managers face in the market and also serves as the critical strategic tool used to create value for customers. This study is consistent and supported by the survey by Ayedun, Oloyede, Oluwunmi and Oyedele (2014); Gbolagade, Adesola and Oyewale (2013); Griffith (2010). Findings revealed that product attributes and pricing strategy individually have a positive and significant effect on Nigeria’s multinational firm competitiveness. The combined impact equally showed a positive and significant impact on Nigeria’s multinational firm competitiveness. This is consistent with the study by Ebitu (2016); Ayedun, Oloyede, Oluwunmi and Oyedele (2014); Gbolagade, Adesola, and Oyewale (2013); Griffith (2010) as explained. Consequently, the study further revealed that product attributes and pricing strategy serve as the engine that drives their firm to compete with others to expand their market share and add more profit to their sales. Resource-based view theory was adopted in line with the study, especially in Nestle Nigeria Plc., Unilever Nigeria Plc. and P.Z. Cussons Nigeria Plc.

5. Conclusion and Recommendation

The study examined the effect of product attributes and pricing strategy on firm competitiveness. The study established that the two dimensions of marketing mix strategies measured in product attributes and pricing strategies are significant drivers of competitiveness in multinational firms. The analysis establishes that the strategies significantly affect multinational firm competitiveness. The individual dimension asserts that product attributes are the most significant measures of marketing mix strategies driving multinational firm’s competitiveness in the international market. Based on the findings, the study suggests that multinational companies should pay more attention to product features which will be acceptable in the countries where their firms operate.

The findings also establish that multinational firms should offer competitive prices in order to create, maintain and sustain competitiveness. This is based on the findings of the study which reveal that pricing strategy enhance and influence competitiveness.

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The empirical findings of this study provide evidence that product attributes and pricing strategy plays an essential role in Nigeria’s multinational firm competitiveness in the international markets. The two elements: product attributes and pricing strategy have individual positive and significant effect. It is also worthy to note that in the joint analysis of the dimensions of strategies, the product attributes are the most significant construct. The study recommends that multinational firms should concentrate more and make use of the best strategies (product attribute) in order to attain and sustain competitiveness.

**Research limitations and future works**

Further studies are required to develop new hypotheses, by considering other elements of marketing mix strategies; this is because the two aspects of marketing mix strategies (product attribute and pricing strategies) employed in this study only account for 38% variation in marketing mix strategies. Therefore 62% variation in marketing mix strategies is accounted for by other factors not captured by this study. Furthermore, other multinational firms in other sectors can be considered.

**References**


FIRM’S ATTRIBUTES
AND PERFORMANCE OF DEPOSIT MONEY BANKS

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JEL: G02; G21; G210

Abstract

This study investigates the impact of firm attributes on the financial performance of deposit money banks in Nigeria’s financial sector. The scope of this research covered the period 2007 – 2018 using audited financial statements and reports of nine (9) deposit money banks listed on the Nigerian Stock Exchange. The results revealed that bank liquidity has significant negative effect, while bank growth has insignificant negative effect on financial performance. On the other hand, bank size and leverage have insignificant positive effect on the financial performance of banks. It is recommended that banks should pay attention to liquidity management and use this to enhance performance. Also, the management of banks should endeavor to make use of their growth opportunities optimally.

Key words:
Deposit Money Banks; Financial Performance

1. Introduction

Firm attributes are key indicators used for the internal assessment of bank operation by the management in order to evaluate performance, meet regulatory demand, manage profitability and liquidity, capital adequacy, risks, loan portfolio, capital composition,
Banks have different attributes that can affect performance such as size, leverage, liquidity, capital, firm age, dividend, market share, off-balance sheet activities, operating expenses (Francis, 2012 and Mirzae, 2012). The banking sector in Nigeria has witnessed a series of transformations from the era of regulation to deregulation, reviewing of licenses and increase in minimum capital requirement, etc. These have created changes in the area of capital adequacy, ownership structure, number of institutions vis-a-vis mergers and acquisition, depth and breadth of operations especially all in an attempt to reposition the industry to serve as lubricant to the wheel of the economy through their financial intermediation profitably since investors are expecting higher returns; this position was affirmed in the early work of Modigliani and Miller (1958), who said firm value is determined by company’s asset earnings.

Organizations have different parameters as means of evaluating management performance, shareholders evaluate by how ‘better off’ they are at the end of the accounting year, although there are debates as to the relative importance of financial and non-financial indicators regarding firm performance. However, proponents of financial performance measures argue that they are necessary because of the primary objectives of the firm, i.e. increase in value for shareholders. The study of (Kaplan, 2015; Callen, Klein and Tinkelman, 2005) submitted that investment decisions taken by investors in a particular business organization are mainly influenced by the ability of the business to remain stable in other to generate sufficient profits. However, the firm attributes are those inducement variables that are relatively sticky at firms’ level across time such as ownership structures, firm size, leverage, profitability, liquidity, firm growth, among others, that can contribute positively or negatively to the performance of the firm since they influence investment and financing decisions (Shehu, 2012).

All firm-specific determinants, with the exception of size, are expected to influence bank financial performance in the anticipated way. However, the extent other variables affect firm’s performance has continued to sparkle debate among researchers, literature research findings are inconclusive and divergent views as to whether firm attributes have any impact on financial performance (Farouk and Shehu, 2014; Barako, 2006, 2007; Alsaed, 2006; Yasser, Entebang & Abu Mansor, 2011; Marn & Romuald, 2012; Soyemi and Olawale 2016; Kakanda, et al., 2016; Kamande, 2017). Therefore it is necessary to understand bank explicit attributes and their influence on financial performance because stakeholders like managers, shareholders, creditors, the government, etc. have different objectives. This paper therefore fills the gap in the finance literature by investigating the dynamic interactions between firm characteristics and financial performance of some selected deposit money banks in Nigeria.
Literature Review

Kamande, (2017) evaluated the effect of bank specific factors on financial performance of commercial banks in Kenya with the aid of descriptive research design for five years. The findings show that there has been a significant decrease in capital adequacy. The study further concludes that capital adequacy affects the financial performance of commercial banks. However, there is positive and significant association between capital adequacy and financial performance. Uchenna, (2016) studied the board characteristics and financial performance of deposit money banks in Nigeria with multiple regression. He concluded that the foreign director is significantly and positively correlated or influenced the performance of the deposit money bank. The study further shows that grey directors have negative significant effect on the performance of deposit money banks in Nigeria.

Soyemi and Olawale (2016) observed firm specific factors capable of influencing the financial performance of non-financial companies listed on the Nigeria Stock Exchange with the aid of ordinary lease square regression. The results discovered that size and liquidity are determinants of financial performance having displayed a positive significant influence, though debt-equity ratio showed negative significant relationship with profitability. Uwamloma, Uwuigbe & Okorie (2015) appraised the effects of firms’ characteristics on earnings management of listed firms in Nigeria using descriptive statistics and pooled ordinary least square regression. The study revealed that firm size and firms’ corporate strategy have a significant positive impact on earnings management (proxied by discretionary accruals), whereas the relationship between firms’ financial leverage and discretionary accruals of the sampled firms in Nigeria was insignificant. They submitted that large firms tend to have higher motivations and more prospects to engage in the manipulation of earnings and exaggerate earnings due to the complexity of their operations.

Devi and Devi (2014) conducted research on determinants of firm profitability of fifty (50) firms listed on the Karachi stock market, Pakistan from 2016 to 2012 using ordinary least square regression. They submitted that positive relationship exists between financial leverage and corporate profitability and firm size and corporate profitability, though financing choice revealed a negative relationship with corporate profitability. Sweety and Kaur (2014) considered impact of firm-specific characteristics on the shareholder value of one hundred (100) listed companies in India for a period of twelve (12) years with the aid of multiple regressions. The findings of their study revealed that investors are likely to reward companies that have higher profitability, lesser market risk, efficient resource management, high leverage, more liquidity, higher marketing expenditures and robust market capitalization. Abbas, Bashir, Manzuor and Akram (2013) looked at factors affecting firm’s performance in the food sector.
of Pakistan using data from 54 non-financial companies listed on the Pakistan Stock Exchange which includes 36 companies related to sugar production and 18 companies related to other food products from 2005 to 2010 using one-way fixed effect model due to the presence of a cross-sectional fixed effect in the regression results. The outcome shows that long term leverage, size, risk, tangibility and non-debt tax shield are the factors significantly affecting the firms’ financial performance. Obamuyi (2013) explored the effects of bank capital, bank size, expense management, interest income and the economic condition on banks profitability of twenty (20) banks in Nigeria from 2006 to 2012 using panel data. The results showed a positive relationship as a result of improved bank capital and interest income, efficient expenses management and a favorable economic condition have positive impacts on banks performance and growth in Nigeria. Erasmus (2013) observed the impact of firm size on the performance of Microfinance institutions in Tanzania. The study considered thirty (30) Microfinance institutions operating within five years in Tanzania using total assets to number of borrowers and number of staff to proxy firm size. Their findings show that there is a positive relationship between firm size as measured by total asset and number of borrowers and performance of Microfinance institutions in the country. 

Hidayah, (2014) evaluated the effect of company characteristics toward firm value in thirty (30) property and real estate Companies listed on the Indonesia Stock Exchange between 2010 and 2012. The findings of the study reveal that managerial ownership, firm size and return on assets affect the firm value, while on the other hand capital structure does not have any effect on the firm value of listed property and real estate companies in Indonesia. Kaguri (2013) considered the relationship between the firm characteristics and financial performance of seventeen (17) life insurance companies in Kenya between 2008-2012. The findings of the study revealed variables are statistically significant to influence the financial performance of life insurance companies as indicated by the positive and strong Pearson correlation coefficients. 

Ulil, Bambang and Djumahir, (2013) studied the effect of firm characteristics proxies by size, firm age, profitability, leverage and firm growth on the governance quality which was proxies by the Internet Based Corporate Governance (IBCG) rating, and its impact on firm value. Their findings revealed firm size has an impact on governance quality and firm age, profitability, leverage, while firm growth does not significantly impact corporate governance quality. Soyemi, et al (2013) examined factors influencing the profitability of ten (10) deposit money banks in Nigeria from 2006 to 2010 using a regression model. The results revealed that bank size has a negative and significant relationship to the profitability of banks. Capital adequacy ratio also has negative relationship, which is statistically significant to variation in bank profitability. Florian (2013) studied determinants of firm performance in Romania using pooled
data set of 1,204 observations from 2005 to 2007 with the aid of regression analysis to establish the relationship among the variables. He submitted that time effect has a significant effect on companies’ performance. The study established that structural changes in the Romanian economy affect organizational performance and showed the effect of financial leverage on organization performance in certain industries.

Adah and Thompson (2013) considered firm’s attributes and the financial performance of Nigerian deposits money banks using ordinary least squares regression. The study finds out that bank growth and risk assets quality have significant positive effect on the financial performance of the banks in the period under review. The study further discovered that banks’ size has no significant impact on performance. Mehari and Aemiro (2013) measured the impact of firm level characteristics measured by size, leverage, tangibility, loss ratio (risk), growth in writing premium, liquidity and age on the performance of insurance companies operating in Ethiopia from 2005 to 2010 with pooled ordinary least square regression model. Their findings show that insurers’ size, tangibility and leverage are statistically significant and positively related with returns on total assets.

Abu, et al (2012) conducted a study that compared the financial performance of 18 different ownership structured commercial banks for the period of 2005 to 2010 in Nepal based on their financial characteristics using multivariate regression analysis by formulating two regression models utilized in estimating the impact of capital adequacy ratio, non-performing loan ratio, interest expenses to total loan, net interest margin ratio and credit to deposit ratio financial profitability. They revealed that return on assets was significantly influenced by capital adequacy ratio, interest expenses to total loan and net interest margin, while capital adequacy ratio has substantial effect on return on equity.

Ali and Hwang (2000); Archambeault and Dezoort (2001) considered the extent of mandatory disclosure by 94 listed firms both on the Dhaka Stock Exchange (DSE) and the Chittagong Stock Exchange (CSE) respectively. Both studies examined the relationship between company specific characteristics: age, size, status, profitability and mandatory disclosure of the sampled firms. The latter included auditors’ type and liquidity as explanatory variables. The two studies found that all the attributes are positively significant to information quality.

From the review of literature relating to the phenomenon being investigated, research had been done on firm characteristics and financial performance of listed deposit money banks and non-financial institutions by Uwamloma, et al (2015), Ubesie and Okwy-Nwangwu (2013), Sanda, Mikailu and Garba (2005). Many of the publications reviewed were basically within five years range. However, this study covered ten years from 2006 to 2015, showing post consolidation position of top nine deposit money banks in Nigeria. Likewise, further review of literature showed that methodologies

2. Methodology and Data

2.1. Data Collection

The data used for this study are secondary. The data were obtained from audited financial statements and reports of the sample firms of nine (9) listed financial institutions in Nigeria and these include: First Bank of Nigeria (FBN), United Bank for Africa (UBA), Guaranty Trust Bank (GTB), Zenith Bank, Union Bank, Access Bank, Diamond Bank, Fidelity Bank, and First City Monument Bank. The data covered the period between 2007 and 2018.

2.2. Model Specification

This study adopted the model of Soyemi and Olawale (2016) on firm characteristics and financial performance of non-financial firms in Nigeria. Financial performance was proxy with profit margin and return of equity, while firm characteristics were proxy with bank size, leverage, liquidity, tangibility and productivity as the independent variables. This study however, adopted the above model thus:

\[ FP = f(BG, SIZE, LEV, LIQ) \]  \hspace{1cm} (1)

The model attempts to explain the separate influence of the independent variables on the dependent variable in order to establish the effect of firm characteristics on financial performance in Nigeria. Our concern as social scientists is to establish a cause and effect relationship, that a dependent variable’s movements are causally determined by movements in a number of independent variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Performance (FP)</td>
<td>The ratio of net profit after tax to Total Asset</td>
</tr>
<tr>
<td>Bank Growth (BG)</td>
<td>The growth in gross income of banks</td>
</tr>
<tr>
<td>Bank Size (SIZE)</td>
<td>Natural logarithm of total assets</td>
</tr>
<tr>
<td>Leverage (LEV)</td>
<td>The ratio of non-current liabilities to shareholders fund</td>
</tr>
<tr>
<td>Current Ratio (LIQ)</td>
<td>The ratio of current asset to current liabilities</td>
</tr>
</tbody>
</table>

Source: authors’ compilation
3. Results and Discussion

3.1 Descriptive Statistics of Variables

Table 2

<table>
<thead>
<tr>
<th></th>
<th>FP</th>
<th>BG</th>
<th>SIZE</th>
<th>LEV</th>
<th>LIQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.134979</td>
<td>0.271206</td>
<td>6.066498</td>
<td>0.835622</td>
<td>1.035749</td>
</tr>
<tr>
<td>Median</td>
<td>0.120045</td>
<td>0.159761</td>
<td>6.066498</td>
<td>0.846472</td>
<td>1.046904</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.427645</td>
<td>2.139972</td>
<td>6.574069</td>
<td>1.115706</td>
<td>2.102601</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.017513</td>
<td>-0.345961</td>
<td>5.336748</td>
<td>0.708401</td>
<td>0.516667</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.083557</td>
<td>0.383096</td>
<td>0.272063</td>
<td>0.061289</td>
<td>0.223493</td>
</tr>
<tr>
<td>Observations</td>
<td>81</td>
<td>81</td>
<td>81</td>
<td>81</td>
<td>81</td>
</tr>
</tbody>
</table>

Table 2 shows the mean, median, and standard deviation of the variables considered in this study. The average financial performance (FP) is 0.13 with a median of 0.12 while the standard deviation is 0.08. Bank growth (BG) has a mean value of 0.27 with a median of 0.16 while the standard deviation is 38.3. Bank Size has a mean value of 6.06 with a median value of 6.06 while the standard deviation is 0.27. Leverage (Lev) has a mean value of 0.83 with a median value of 0.85 while the standard deviation is 0.06. Liquidity (LIQ) has a mean value of 1.03 with a median value of 1.04 and standard deviation of 0.22.

3.2 Correlation

Table 3

<table>
<thead>
<tr>
<th></th>
<th>FP</th>
<th>BG</th>
<th>SIZE</th>
<th>LEV</th>
<th>LIQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>-0.16 1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.30 -0.35 1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>0.19 0.01 0.25 1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIQ</td>
<td>-0.22 0.17 -0.20 -0.45 1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows the correlation between the variables used in this study. Bank growth and liquidity have a negative relationship with financial performance, while bank size and bank leverage have a positive relationship with financial performance. Bank size has a negative relationship with bank growth, while leverage and liquidity have a positive relationship with bank growth. A negative relationship exists between bank size and liquidity, while leverage and liquidity also revealed a negative relationship. All other variables revealed a positive relationship.
### Table 4

#### Pooled Regression Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.332198</td>
<td>0.254439</td>
<td>-1.305611</td>
<td>0.1956</td>
</tr>
<tr>
<td>BG</td>
<td>-0.013604</td>
<td>0.025539</td>
<td>-0.532671</td>
<td>0.5958</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.071324</td>
<td>0.036655</td>
<td>1.945833</td>
<td>0.0554</td>
</tr>
<tr>
<td>LEV</td>
<td>0.103297</td>
<td>0.169215</td>
<td>0.610450</td>
<td>0.5434</td>
</tr>
<tr>
<td>LIQ</td>
<td>-0.046477</td>
<td>0.045881</td>
<td>-1.012989</td>
<td>0.3143</td>
</tr>
</tbody>
</table>

R-squared 0.120743  Mean dependent var 0.134979
Adjusted R-squared 0.074466  S.D. dependent var 0.083557
S.E. of regression 0.080386  Akaike info criterion -2.144216
Sum squared resid 0.491104  Schwarz criterion -1.996410
Log likelihood 91.84073  Hannan-Quinn criter. -2.084914
F-statistic 2.609157  Durbin-Watson stat 1.078230
Prob(F-statistic) 0.042041

Source: authors’ calculations

Table 4 shows the pooled regression model. Bank growth and bank liquidity have insignificant negative effect on bank financial performance, while bank size and bank leverage have insignificant positive effect on bank financial performance.

### Table 5. Fixed Effect Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.324701</td>
<td>0.318806</td>
<td>-1.018490</td>
<td>0.3121</td>
</tr>
<tr>
<td>BG</td>
<td>-0.015819</td>
<td>0.026322</td>
<td>-0.600987</td>
<td>0.5498</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.079299</td>
<td>0.049046</td>
<td>1.616807</td>
<td>0.1106</td>
</tr>
<tr>
<td>LEV</td>
<td>0.075159</td>
<td>0.168926</td>
<td>0.444919</td>
<td>0.6578</td>
</tr>
<tr>
<td>LIQ</td>
<td>-0.077142</td>
<td>0.055457</td>
<td>-1.391019</td>
<td>0.1688</td>
</tr>
</tbody>
</table>

Effects Specification
Cross-section fixed (dummy variables)

R-squared 0.248241  Mean dependent var 0.134979
Adjusted R-squared 0.115578  S.D. dependent var 0.083557
S.E. of regression 0.078580  Akaike info criterion -2.103346
Sum squared resid 0.419890  Schwarz criterion -1.719052
Log likelihood 98.18551  Hannan-Quinn criter. -1.949162
F-statistic 1.871210  Durbin-Watson stat 1.259219
Prob(F-statistic) 0.053804

Source: authors’ calculations
Table 5 shows the fixed effect model. Bank growth and bank liquidity have an insignificant negative effect on bank financial performance, while bank size and bank leverage have an insignificant positive effect on bank financial performance. However, the Adjusted R squared is high with a strong goodness of fit of about 12%. This implies that the explanatory variables can explain the dependent variable by approximately 12%.

Table 6 shows the random effect model. Bank growth and bank liquidity have an insignificant negative effect on bank financial performance, while bank size and bank leverage have an insignificant positive effect on bank financial performance. However, the Adjusted R squared is low with a weak goodness of fit of about 7%. This implies that the explanatory variables can explain the dependent variable by approximately 7%. The F-Statistics revealed a value of 2.51 which is significant at 5%. This implies that the explanatory variables have individual and combined impact of the dependent variable. Hence, it can be concluded that there is significant relationship between firm characteristics and financial performance. Therefore, this leads to the acceptance of the alternate hypothesis.
Table 7

<table>
<thead>
<tr>
<th></th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>1.542293</td>
<td>4</td>
<td>0.8191</td>
</tr>
</tbody>
</table>

Cross-section random effects test comparisons:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fixed</th>
<th>Random</th>
<th>Var (Diff.)</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG</td>
<td>-0.015819</td>
<td>-0.014747</td>
<td>0.000039</td>
<td>0.8629</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.079299</td>
<td>0.074101</td>
<td>0.000704</td>
<td>0.8447</td>
</tr>
<tr>
<td>LEV</td>
<td>0.075159</td>
<td>0.088761</td>
<td>0.000593</td>
<td>0.5764</td>
</tr>
<tr>
<td>LIQ</td>
<td>-0.077142</td>
<td>-0.058945</td>
<td>0.000636</td>
<td>0.4707</td>
</tr>
</tbody>
</table>

Source: authors’ calculations

Hausman’s test discriminate between the fixed and random effect models as presented in Table 7. The Hausman’s chi-square statistics of 1.54 is not significant at 5%. Hence, it appears there is no correlation between the error term and one or more independent variables. Therefore, the random effect model is considered to be capable of generating more consistent estimate as against the fixed effect model. Thus, our discussion is based on the random effect model as presented in table 5.

4. Conclusion

This paper presents an analysis of the firm characteristics and financial performance of some selected deposit money banks in Nigeria for the period 2007-2018 in a random effect model. The result revealed that bank liquidity has a significant negative effect on financial performance, while bank growth has an insignificant negative effect on financial performance. This confirms that bank liquidity can largely affect profitability because banks must be highly liquid to remain in business and the liquidity rate is regulated by the central bank of Nigeria. On the other hand, bank size has an insignificant positive effect on financial performance. Surprisingly, firm size measured on total assets has no significant effect on bank performance. This could be due to the high level of financial instruments of banks.

This study further submitted that bank growth has an insignificant negative effect on bank financial performance, while bank size and bank leverage have an insignificant positive effect on bank financial performance. Therefore, it is necessary for banks to pay more attention to liquidity management and make sure that they maintain the minimum liquidity suggested by the Central Bank of Nigeria and world practice. It is also recommended that banks should pay attention to their size and use this to advantage
in other to trigger performance. Bank leverage also proved to have an insignificant effect on performance. Though this is positive, it is insignificant. Hence, it shows that the banks are making sub-optimal use of the growth opportunities available to them. The management of banks should endeavor to make use of their growth opportunities optimally in cushioning up total assets; human capital, intellectual capital and others.

References


EFFECT OF LIQUIDITY MANAGEMENT ON BANK PERFORMANCE

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Abstract

Liquidity management and profitability are very important issues in the growth and survival of businesses including financial institutions and the ability to handle trade-off between the two is a source of concern for financial managers. Hence, this research examines the relationship between liquidity management and bank performance using secondary data from the published annual reports of five (5) sampled Deposit Money Banks in Nigeria for a period of ten years (2009-2018). The proxies for liquidity management include loan to deposit ratio, loan to assets ratio, liquid ratio, while return on assets was the proxy for profitability. Data was analyzed using Auto Regressive Distributed Lag (ARDL) and results from the study showed that there is a negative and significant relationship between loan to deposit ratio with p-value 0.0021 and return on assets (ROA), a positive and significant relationship between loan to asset ratio with p-value 0.0005 and return on assets (ROA) and a positive and insignificant relationship between liquid ratio with p-value 0.1808 and return on assets (ROA). The study concludes that, there is a significant and positive relationship between liquidity management and profitability of banks in Nigeria. It is recommended that banks should always endeavour to administer their credits effectively by adhering strictly to rules on granting of credit.

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1. Introduction

Liquidity management is an essential ingredient for the success and survival of business concerns. At the macroeconomic level, liquidity is critical for the conduct of monetary policy, financial sector soundness and economic growth. Consequently, efficient and effective management of liquidity is at the heart of the conduct of monetary policy (CBN 2011). From the monetary authorities’ point of view, liquidity management is critical in delivering on the mandate of monetary and price stability. Adequate liquidity promotes sound banking and financial system which provides a virile platform for sustainable economic growth and development. According to Anyanwu (1993), liquidity management means the ease with which assets can easily be convertible to cash without loss and hence the bank’s ability to pay its depositors on demand. It is judged by the ease with which an asset can be exchanged for money. Liquidity management involves controlling the level of money supply in an economy in order to maintain monetary stability. Liquidity management in banks has posed several challenges during the distress era of 1980s and 1990s in Nigeria and persisted to the recapitalization phase of 2004 when banks were mandated to increase their capital base from ₦2 billion to ₦25 billion (Agbada and Osuji, 2013).

The Central Bank of Nigeria (CBN) mandate for recapitalization was considered to be the salvation for the banking and indeed financial system in Nigeria, however, just five years later, precisely in 2009, the Central Bank’s intervention was sought to stabilize and redeem eight banks that were deeply enmeshed in illiquidity. Consequently, ₦620 billion was injected into the eight affected banks to stimulate stability, and confidence and subsequently heralded the establishment of Asset Management Corporation of Nigeria (AMCON) for the acquisition of the affected banks. For instance, in 2004, there were 89 deposit money banks in Nigeria, 62 were assessed as being sound/satisfactory, 14 as marginal and 11 as unsound while two of the banks did not render any returns during the period (Ajayi 2009). According to Soludo (2004), the problem with the unsound deposit money banks included persistent illiquidity, poor asset quality, weak corporate governance and gross insider abuses. Most of the banks had weak capital base thus constraining them to overdrawn their accounts with the Central Bank of Nigeria and high incidence of non-performing loans. Liquidity is a precondition to ensure that firms are able to meet their short-term obligations. Liquidity refers to an enterprise’s ability to meet its current liabilities and it is closely related to the size and composition of the enterprise’s working capital position (Kontus and Muhanovic 2019).

Liquidity position in a company is measured based on the ‘current ratio‘ and ‘quick ratio‘. The quick ratio is a reasonable measure of a business’s short-term liquidity. The higher quick ratio is, the better the position of the business. The current ratio establishes
the relationship between current assets and current liabilities. Normally, a high current ratio is considered to be an indicator of the firm’s ability to promptly meet its short-term liabilities (Beck and Hesse 2009). The quick ratio establishes a relationship between quick or liquid assets and current liabilities. Banks indeed require liquidity since such a large proportion of their liabilities are payable on demand (deposits) but typically, the more liquid an asset is, the less it yields (Dzapasi 2020). The level of liquidity maintained by banks must meet minimum regulatory requirements and other routine financial obligations. Liquidity position not properly managed can result in crisis for banks hence management of liquidity should be commensurate with banking operations, safety of deposits amongst others. This underscores the reasons why monetary authorities do not compromise on banks liquidity position, as illiquidity will not only amount to a doom but total collapse of the system in particular and the economy at large. Liquidity is basic for efficient operations of a bank. A bank is said to be liquid when there is enough liquid assets and cash coupled with the ability to raise funds quickly from other sources, to meet its financial obligations on daily basis (Nzotta 2004).

Banks, as financial institutions, perform intermediation roles generally through the mobilization of resources from the surplus units and channeling of same to the deficit units for productive activities within an economy designed to ensure a more efficient resource allocation and utilization. Banks also makes investment so as to be able to make profit.

Ashraf, Nabeel and Hussain (2016) opined that for banks to achieve maximum benefits, they should find out the highest level of funds to fulfill the short-term requirement from which they can make profit. In essence, therefore, banks effectively manage liquidity so as to increase their profitability.

Liquidity management therefore involves the strategic supply or withdrawal from the market or circulation the amount of liquidity consistent with a desired level of short-term reserve money without distorting the profit-making ability and operations of the bank. It relies on the daily assessment of the liquidity conditions in the banking system, so as to determine its liquidity needs and thus the volume of liquidity to allot or withdraw from the market.

The liquidity needs of the banking system are usually defined by the sum of reserve requirements imposed on banks by a monetary authority (CBN 2012). Liquidity management aims at obscuring optimum interest income, determining the total amount of cash and marketable securities that banks would need at any point in time. Undoubtedly banks have as their prime objective the desire to survive to make profit and to grow and also improve their profitability. In order to achieve these objectives, a bank has to manage its liquidity well so as to make profit. Based on the forgoing analysis, this research study examines the effect of liquidity management on
the performance of banks in Nigeria. The research intends to contribute to the existing literature as a result of the mixed results from various researchers who had earlier embarked on research works on liquidity management and bank performance.

The remainder of this paper is as follows. Section 2 examines the literature that is relevant to this study. Section 3 discusses data and methodology for the study. Section 4 deals with research findings and discussion while part 5 which is the final part deals with summary and conclusion.

2. Literature Review

Agbada and Osuji (2013) investigated the efficacy of liquidity management and banking performance in Nigeria. The researchers used profitability and return on capital employed (ROCE) as proxy variables. Findings from their study indicates that there exists statistically significant relationship between efficient liquidity management and bank performance. They therefore concluded that efficient liquidity management enhances banks soundness.

Kasekende and Ating-Ego (2003) in a study conducted on the Ghanaian banking sector found no positive relationship between liquidity trend and profitability and concluded that there is a negative relationship between liquidity and profitability in the Ghanaian banking sector. This result is not in consonance with the empirical works of Agbada and Osuji on Nigeria examined above.

Bassey and Moses (2015) examine the liquidity-profitability trade off of deposit money banks in Nigeria using a panel data of 2010-2012. They employed Ordinary Least Squares (OLS) techniques to estimate the variables. Findings from the study revealed that there is statistically significant relationship between bank liquidity measures of current ratio, liquid ratio cash ratio, loan to deposit ratio, loans to asset ratio and return on equity, and observed that when return on asset was used as proxy for profitability, the relationship was statically insignificant. They therefore recommend that banks should evaluate and redesign their liquidity management strategy so that it will not only optimize returns to shareholders equity but also to optimize assets of the bank.

Salim and Bilal (2016) examined the impact of liquidity management on financial performance in Omani banking sector. The study found a significant relationship between loans to total assets, loans to short term liabilities and deposits, bank loans, customer deposits to total assets and return on assets and no significant relationship between liquidity position and net margin of banks in Oman.

Ali (2015) investigated the effect liquidity management on profitability in the Jordanian commercial banks during the period of 2005-2012. The result shows
that an increase in the quick ratio and investment ratio of the available funds lead to an increase in profitability of Jordanian commercial banks, while an increase in capital ratio and liquid assets ratio leads to a decrease in the profitability of Jordanian commercial banks. The paper concludes that there is a need for an optimum utilization of the available liquidity in various aspects of investment in order to increase bank’s profitability and that banks should adopt a general framework of liquidity management to ensure sufficient liquidity for executing their operations more efficiently.

Kurawa and Abubakar (2014) examined the impact of liquidity on banks’ profitability in Nigeria. Systematic random sampling method was adopted to select five banks over the period 2003 –2012. Linear regression analysis was employed. Results from the study shows the absence of a significant impact between liquidity and profitability among banks in Nigeria.

Bassy, et. al. (2016) explored the relationship between liquidity management and banks performance in Nigeria. The study concluded that efficient and effective management of liquidity is necessary for survival and successful operations of banks.

Macaulay (2008), investigated the effectiveness of liquidity risk management on financial institutions in the United States of America. He reported that over 70% of the financial institutions have adopted the best practices in the country. Macaulay opined that there has been an increased concern regarding effective credit risk management due to the fact that inadequate credit risk policies are the main source of vital problems in most of the financial institutions. He concluded that an effective credit risk management policy must therefore aim at maximizing an institution’s rate of return.

Bourke (1989) in his study on performance of banks in twelve countries in Europe, North America and Australia found evidence that there is a positive relationship between liquid assets and bank profitability. These results seem counterintuitive, as it is expected that illiquid assets have a higher liquidity premium and hence higher return.

Athanassoglou, Delis and Staikouras (2008) examined the determinants of performance of Greek banks during the period of European Union (EU) financial integration (1990-2002) using an unbalanced pooled time series data set of 23 banks and found that less liquid banks have lower rate of return on assets. This is consistent with the findings of Bourke (1989) who found out that there is a positive relationship between liquidity risk and bank profitability.

Kontus (2018) investigated whether there was a relationship between liquidity level expressed in terms of net working capital as well as cash to current liabilities ratio and profitability of small and medium sized enterprises and large companies in the Republic of Croatia in 2014. The study, however, does not in any way provided empirical evidence that liquidity is negatively related to profitability.

A critical examination of the literature above revealed that there have been mixed
results among the various empirical research that have been carried out by various researchers in both developed and developing countries.

For instance, in the review above concerning the Nigerian context, the works of Agbada and Osuji (2013) and that of Bassy et al (2016) revealed that there is a significant relationship between liquidity and profitability which is in tandem with the works of Macaulay (2008) for United States of America, Bourke (1989) for Europe, North America and Australia which also found a positive relationship between liquidity and profitability. The empirical works of Kurawa and Abubakar (2014) on Nigeria found a negative relationship between liquidity and profitability which is in line with the works of Kasekende and Ating-Ego (2003) on Ghanaian banking system. Findings from the empirical research of Bassey and Moses (2015) on effect of liquidity and profitability in Nigeria was a mixed result which concurs with the works of Salim and Bilal (2016) for Omani banking system and Ali (2015) for Jordanian banks. The mixed results from the above empirical review form the gap which this study intends to investigate.

3. Research Methods and Procedure

Sources of Data

Data for the study were collected mainly from secondary sources as they were obtained from five (5) sampled Deposit Money Banks’ financial reports and Central Bank of Nigeria (CBN) Statistical Bulletin for a period of ten years (2009-2018). The sampled banks are Fidelity Bank, Guaranty Trust Bank, United Bank for Africa, Unity Bank as well as Diamond Bank. The choice of the banks was done in such a way so as to make it representative of the whole banks in Nigeria hence banks were drawn from the old banks as well as the new banks. The five banks financial statements were obtained from their databases for the ten-year period (2009-2018).

Methodology

The model for this study is adapted from the works of Saleem and Rehman (2011) with modifications. The model captured bank performance which is represented by return on assets as well as the variables for liquidity which are loan to total assets ratio, loan to liquidity ratio and loan to deposit ratio respectively.

The formulated model is stated below:

\[ \text{ROA} = f (\text{LTA}, \text{LTD}, \text{LR}) \]  

(1)

Where:

\( \text{ROA} = \text{Return on Assets} \)
LTA = Loan to Total Assets Ratio  
LR = Liquidity Ratio  
LDR = Loan to Deposit Ratio

The model above is converted to econometric form by the introduction of the constant term ($\beta_0$) and error term ($\mu$) as follows:

$$\text{ROA}_{it} = \beta_0 + \beta_1 \text{LTA}_{it} + \beta_2 \text{LR}_{it} + \beta_3 \text{LTD}_{it} + \mu$$  \hspace{1cm} (2)

Where:
- ROA = Return on Asset
- $\beta_0$ = Intercept / constant
- LTA = Loan to Total Assets Ratio
- LR = Liquidity ratio
- LTD = Loan to Deposit Ratio
- $\beta_1$, $\beta_2$, $\beta_3$ = Coefficient of independent variables
- $\mu$ = Error term

Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Definition</th>
<th>Expected sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_1$</td>
<td>Loan to total assets</td>
<td>Positive</td>
</tr>
<tr>
<td>$\beta_2$</td>
<td>Liquidity ratio</td>
<td>Positive</td>
</tr>
<tr>
<td>$\beta_3$</td>
<td>Loan to deposit ratio</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Source: Authors Compilation (2020).

Table 2

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Measurement</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>Return on Assets</td>
<td>Profit after Tax/Net income divided by average total assets</td>
<td>Annual Reports and Statements of Accounts of selected banks.</td>
</tr>
<tr>
<td>LTA</td>
<td>Loan to Total Assets Ratio</td>
<td>Total Loan and Advances divided by Total Assets</td>
<td>Annual Reports and Statements of Accounts of selected banks.</td>
</tr>
<tr>
<td>LR</td>
<td>Liquidity Ratio</td>
<td>Using one of the divisions of liquidity ratio which is current ratio (Current assets divided by current liabilities)</td>
<td>Annual Reports and Statements of Accounts of selected banks.</td>
</tr>
</tbody>
</table>
4. Research Findings and Discussion

\[ \text{Table 3} \]

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>ROA</th>
<th>LTD</th>
<th>LTA</th>
<th>LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.002409</td>
<td>0.616130</td>
<td>0.422044</td>
<td>1.303565</td>
</tr>
<tr>
<td>Median</td>
<td>0.012397</td>
<td>0.633309</td>
<td>0.423320</td>
<td>1.086174</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.061537</td>
<td>1.063525</td>
<td>0.592183</td>
<td>13.68899</td>
</tr>
<tr>
<td>Minimum</td>
<td>-0.551452</td>
<td>0.035504</td>
<td>0.057238</td>
<td>0.001013</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.084066</td>
<td>0.214117</td>
<td>0.111586</td>
<td>1.800583</td>
</tr>
<tr>
<td>Skewness</td>
<td>-5.903663</td>
<td>-0.308572</td>
<td>-1.245764</td>
<td>6.694443</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>39.30252</td>
<td>3.523881</td>
<td>5.254857</td>
<td>46.62842</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>3036.013</td>
<td>1.365246</td>
<td>23.52518</td>
<td>4338.961</td>
</tr>
<tr>
<td>Probability</td>
<td>0.000000</td>
<td>0.505290</td>
<td>0.000008</td>
<td>0.000000</td>
</tr>
<tr>
<td>Sum</td>
<td>0.120427</td>
<td>30.80650</td>
<td>21.10219</td>
<td>65.17823</td>
</tr>
<tr>
<td>Sum Sq. Dev.</td>
<td>0.346286</td>
<td>2.246460</td>
<td>0.610124</td>
<td>158.8629</td>
</tr>
<tr>
<td>Observations</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>


Table 3 above shows the descriptive statistics of the study. It is observed that bank performance represented by ROA has an average value of 2.41% with a standard deviation of 8.41%. The minimum value for ROA -55.14% and a maximum of 6.15%. Loan to deposit ratio from the Table also has a mean value of 61.6% with a standard deviation of 21.4% as well as a minimum of 3.6% and maximum of 106.35%. The loan to assets ratio has a mean value of 42.2% with a standard deviation of 11.15% as well as a minimum 5.72% and maximum of 59.2%.

Liquidity ratio also shown in the Table has an average of 130.35%, standard deviation of 180.05%, minimum of 0.1013% and maximum of 1368.89%. The standard deviation values showed the extent at which the observations are dispersed around
their respective means. Also, considering the Skewness statistic whose threshold value appear to all (ROA, LTD, LTA) have a value less than zero thereby making them to be negatively skewed while LR shows otherwise.

On the other hand, the Kurtosis value whose threshold is three (3) indicates that only LTD is mesokurtic (normally peaked), that is, having a value which is approximately three (3), while others (ROA, LR, LTA) are leptokurtic (highly peaked), that is, having a value greater than three (>3). Neither Skewness nor Kurtosis can singularly confirm the normality of a series. Since the Jarque-Bera statistic combines Skewness and Kurtosis properties, hence, it provides more comprehensive information. Using this Jarque – Bera statistic, it can be observed that only LTD is normally distributed as its probability value is more than 5% while others, that is ROA, LTA and LR probabilities are less than 5% hence they are not normally distributed.

**Graphical Analysis**

Graphical Analysis illustration shows the movements, trends, fluctuation and structural breaks in the series. The figures below show the graphical expression of relevant variables used in the model. The trends of the selected variables were shown in Figures 1 and 2 with the analysis of the graphs of each variable.

**Figure 1: Trend of Return on Assets (ROA) and Loan to Deposit ratio (LTD)**

*Source: Computer Analysis using E-views (2020).*
The figure above shows the relationship between ROA (Return on assets) and LTD (loan to deposit ratio) for the selected banks from 2009-2018. It can be observed that both Fidelity bank and Guaranty Trust Bank have a constant and steady increase in ROA while United Bank for Africa and Diamond bank has an unstable ROA for the period, 2009-2018. Unity bank has a negative ROA which indicates a decrease in the graph above. On the other hand, it can be observed that LTD ratio for all the banks are not equal. There is a decrease in the LTD ratio for Fidelity bank between the periods of 2009-2011 while the LTD ratio for that bank (Fidelity) increased from the period of 2012-2018. It is also observed that Guaranty Trust Bank and United Bank for Africa LTD ratio fell between the periods of 2009-2018. For Unity and Diamond banks, there has been a serious reduction in their LTD ratio respectively as shown in the graph above. This indicates that the sampled banks have not been granting sufficient loans due to low deposits from their customers which latter results in a serious decrease in ROA.

![Figure 2: Trend of Loan to Assets ratio and Liquidity Ratio](image)

**Source:** Computer Analysis using E-views (2020).

The graph above shows the trend of Loan to Assets ratio and Liquidity Ratio of the sampled banks from 2009 to 2018. The graph indicates that Fidelity bank, United Bank
for Africa, and Guaranty Trust Bank have been on a constant ratio as regards their LTA and LR respectively. The LR represents the liquidity ratio which indicates that bank customers can easily get loans while the bank itself can meet its financial obligations to its customers as regards withdrawal of deposited funds by customers. Unity bank on the other hand, operates on a constant ratio as regards its LTA and LR between the periods of 2009-2011 while it experienced a fall in LR and a rise in LTA in years 2012-2013. Also, Unity bank experience decrease in both LTA and LR in year 2017 and 2018. Liquidity ratio (LR) for Unity bank has a negative ROA which is expected to be positive because of the relationship between Liquidity and profitability.

Diamond bank has a constant and positive relationship between LTA and LR, that is, they both increase at the same rate between the periods of 2009-2012. However, in year 2013 and 2014, LTA increased geometrically while LR ratio fell for the same periods which bring about a negative relationship between the two variables (LTA and LR).

### Table 4

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>LTD</th>
<th>LR</th>
<th>LAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTD</td>
<td>0.112604</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LR</td>
<td>0.1108</td>
<td>-0.02044</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>LAT</td>
<td>0.056852</td>
<td>0.946229</td>
<td>0.017991</td>
<td>1</td>
</tr>
</tbody>
</table>

*Source: Computer Analysis using E-views (2020).*

From Table 4 above, the correlation coefficient between the variables shows that there exists a positive correlation among the variables. The result indicates that some variables had negative correlation. While a negative correlation exists between liquidity ratio (LR) and loan-deposit ratio (LTD) of about 2 percent. However, the correlations between these variables are quite low.

**Formal Pre-test**

This section includes the test for stationarity of the variables at different levels of order of integration using the Augmented Dickey-Fuller (ADF) unit root test and as well as checking for the long-run relationship that exists between the dependent and independent variables.
Unit Root Test

Unit root test shows the results for the test of stationarity of the series used for model estimation. Following the assumptions of the Ordinary Least Square (OLS) technique, it is required that series must exhibit a constant mean, variance and covariance over time, that is, whether the series are time invariant in their unconditional moments. In other words, when series are not stationary, it is said to exhibit a unit root process. If non stationary, series are adopted in a regression analysis, the resulting model is termed as spurious, unstable, and misleading and thereby, cannot be used for forecast.

### Table 5

Augmented Dickey - Fuller (ADF) Unit root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>Level</th>
<th>First difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model I</td>
<td>Model II</td>
</tr>
<tr>
<td>ROA</td>
<td>11.4642</td>
<td>4.87206</td>
</tr>
<tr>
<td>LTA</td>
<td>12.7655</td>
<td>6.71337</td>
</tr>
<tr>
<td>LR</td>
<td>30.7016</td>
<td>21.2198</td>
</tr>
<tr>
<td>LTD</td>
<td>17.8177</td>
<td>7.16827</td>
</tr>
</tbody>
</table>

*Source: Computer Analysis using E-views (2020).*

Models 1, 2 and 3 are panel unit root with intercept, intercept and trend and without intercept and trend respectively. The results reported in Table 5 above reveals that not all the series of the examined variables are stationary at level. The Table shows that the series of LR and LTD are stationary at levels while ROA and LTA are stationary at first difference. These results imply that running a regression analysis on these variables in their levels using Ordinary Least Square technique can generate spurious results as some of the traditional least square assumptions have been violated. We will therefore proceed to Panel ARDL estimation which is the most appropriate model to be adopted when variables have different order of integration.

Co-integration Tests

Co-integration tests are usually used to determine whether or not there is a long run equilibrium relationship between the variables under consideration. Thus, given the unit root test results above, the most appropriate co-integration test is the Kao Co-integration test since the test shows the overall significance of the model.
Kao Residual Co-integration Test Result

<table>
<thead>
<tr>
<th></th>
<th>t-Statistic</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF</td>
<td>0.220644</td>
<td>0.4127</td>
</tr>
<tr>
<td>Residual variance</td>
<td>0.014125</td>
<td></td>
</tr>
<tr>
<td>HAC variance</td>
<td>0.002324</td>
<td></td>
</tr>
</tbody>
</table>


The Kao Co-integration test result shows that the computed probability value from the Augmented Dickey - Fuller (ADF) equation is greater than the chosen level of significance (0.4127 > 0.05) which signifies that we accept the null hypothesis and conclude that there is no presence of co-integrating relationship between the panel data variables.

Lag length structure for the Explanatory variables (ROA, LTD, LTA, and LR)

<table>
<thead>
<tr>
<th>Lag</th>
<th>LogL</th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21.74669</td>
<td>NA</td>
<td>4.26e-06</td>
<td>-1.014096</td>
<td>-0.836342*</td>
<td>-0.952736</td>
</tr>
<tr>
<td>1</td>
<td>39.27010</td>
<td>30.04014</td>
<td>3.94e-06</td>
<td>-1.101149</td>
<td>-0.212378</td>
<td>-0.794345</td>
</tr>
<tr>
<td>2</td>
<td>63.95930</td>
<td>36.68110*</td>
<td>2.49e-06*</td>
<td>-1.597674*</td>
<td>0.002112</td>
<td>-1.045428*</td>
</tr>
<tr>
<td>3</td>
<td>72.22280</td>
<td>10.38840</td>
<td>4.30e-06</td>
<td>-1.155589</td>
<td>1.155214</td>
<td>-0.357900</td>
</tr>
</tbody>
</table>

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
AIC: Akaike information criterion
FPE: Final prediction error
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion


According to LR, FPE, AIC and HQ above, the optimum lag length for the explanatory variables (ROA, LTD, LTA, & LR) is 2 while SC confirms the optimal lag period to be 0. This implies that in the proposed Panel ARDL equation, the optimal lag length for (ROA, LTD, LTA, & LR) in the equation is 2.

Model Estimation Result

Following the results of the unit root and co-integration tests reported and discussed above the regression analysis result of the estimation using the ARDL short-run (dynamic) model technique is presented below.
Table 8

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistics</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTD</td>
<td>-0.13031</td>
<td>0.037378</td>
<td>-3.48625</td>
<td>0.0021</td>
</tr>
<tr>
<td>LTA</td>
<td>0.201868</td>
<td>0.049518</td>
<td>4.076633</td>
<td>0.0005</td>
</tr>
<tr>
<td>LR</td>
<td>0.144847</td>
<td>0.104798</td>
<td>1.382155</td>
<td>0.1808</td>
</tr>
<tr>
<td>ECM (-1)</td>
<td>-0.95601</td>
<td>0.363692</td>
<td>-2.62861</td>
<td>0.0153</td>
</tr>
</tbody>
</table>


From Table 8 above, the coefficients of the variables, standard error, t-statistics and probability were shown. It can be deduced from the Table, that the coefficient of loan to deposit ratio (LTD) is negative (-0.1303), loan to total assets ratio (LTA) has a positive value of 0.2018 and liquidity ratio (LR) has a value of 0. 1448. Consequently, to adjust for variations from the equilibrium long-run relationship due to short-run systemic shocks, the Error Correction Model (ECM) is considered. The ECM estimation results in Table 8 above reveals that the independent variables jointly account for approximately 95.60% change on Return on assets. Therefore, a 95.60 % adjustment is required to attain the equilibrium long-run relationship.

Further analysis is indicated below on discussion of findings.

Table 9

<table>
<thead>
<tr>
<th>Test</th>
<th>F-Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jarque-Bera</td>
<td>65.72</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Source: Computer Analysis using E-views (2020)

Table 9 presents the results of the post estimation tests as a further evidence of the reliability of the estimates of the model. The error series generated from the estimated model satisfies the normality assumption since the Jarque-Bera test reveals that the null hypothesis of the series being normally distributed cannot be accepted at 5% level of significance.

Discussion of Findings

Following the result of the regression analysis in Table 8 above, it is evidenced that the coefficient of Loan-to-Deposit ratio (LTD) shows a negative relationship of
13.03%, implying that where other predictor variables are held constant, a 1% change in the LTD will precipitate in a 13.03% decrease in bank performance. The effect of this relationship could be traced to the fact that most of the total loans disbursed by the banks to the borrowers resulted to non-performing loans which tend to reduce the profitability level of the banks as shown in the result above.

On the other hand, Loan to Assets Ratio (LTA) and Liquidity Ratio (LR) show a direct effect as they possess coefficients of 0.2018 and 0.1448 respectively; indicating that where other variables are held at zero, a 1% increase in LTA will boost bank performance by 20.19% while 1% increase in LR will culminate in 14.48% expansion of bank performance where other variables are held constant. From these results above, and considering the signs of the individual coefficients, one could safely conclude that while the liquid ratio and loans to asset ratio seem to meet the apriori expectation, higher liquid ratios should exert negative effect on banks profitability just as they constrained the ability of banks to have more investable funds (loans and otherwise).

A consideration of the strength of relationships using the t-statistic shows that only Liquidity Ratio whose t-statistics is 1.3821 relates insignificantly or weakly with bank performance in the short run given its 0.1808 probability which is above the 0.0500 significant margins. Results obtained above are in tandem with the works of Ayunku (2017) for Nigeria, Kurotamunobaraomi, Giami and Obari (2017) for Nigeria, Ashraf, Nabeel and Hussain (2016) for Pakistan among others. The other explanatory variables show statistically significant short run relationships with the predictor variable – bank performance.

5. Conclusion

This study examines the effect of liquidity management on bank performance in Nigeria using five Nigerian deposit money banks, namely; Fidelity bank, Diamond bank, United bank for Africa, Guaranty Trust bank, and Unity bank as case study. The data used covered the period of 2009 to 2018 which was sourced from published annual reports of each selected bank as well as the Central Bank of Nigeria Statistical Bulletin. The methodology employed include Augmented Dickey Fuller unit root test, Panel co-integration test using Kao-cointegration test and Panel Autoregressive Distributed Lagged Model (ARDL) using the Pooled Mean Group Model. Specifically, a single model is estimated which describes how some liquidity ratios such as loan to assets (LTA), loans to deposit (LTD), and liquid ratio (LR) affect the performance of the sampled banks.

However, before the models were estimated, the statistical properties and trend of each of these variables were highlighted using descriptive statistics and graphical
analysis. The stability of the series of variables examined were tested using Panel Augmented Dickey Fuller unit root test, the result indicates that some of the variables were stationary at level and others after first differencing. The Panel Autoregressive Distributed Lag Model is adopted owing to the fact that the variables are I (0) and I (1). The Pooled Mean Group result for the explanatory variables shows that loan to deposit (LTD) and loan to assets (LTA) are only the significant variables that affect Return on assets in the short run since there is no long run relationship. In addition to the short run, this study found out that rise in loan to assets ratio and liquid ratio are positively related to return on assets while loan to deposit ratio revealed an inverse relationship with the value of return on assets.

Therefore, for banks to succeed in their operations, they should maintain optimal liquidity level in order to satisfy their financial obligations to customers and maximize profit for their shareholders. The optimal liquidity level could be attained if banks religiously maintain the minimum liquidity requirement as stated by the Central Bank of Nigeria. This will assist banks to reduce cases of bank distress. Excess liquidity and illiquidity are “financial diseases” that can easily erode the profit base of a bank as they affect bank’s attempt to attain high profitability level.

Conclusively, any bank that aims to maximize its profit level must adopt effective liquidity management. Findings from this research show that there is an inverse relationship between liquidity management and profitability. This means that as liquidity increases, profitability decreases and vice versa. Hence the findings of this work are in tandem with the works of Ayunku (2017), Kurotamunobaraomi, Giami and Obari (2017), Ashraf, Nabeel and Hussain (2016) among others.

References


ESTIMATING THE DETERMINANTS OF FOOD IMPORT DEMAND IN AFRICA

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JEL: Q17, Q18, Q11, D0

Abstract

This paper examines the determinants of food import demand in Africa taking the case of Nigeria using the ARDL bounds testing approach. Specifically, the study aims to estimates the short run and long run price and income elasticities of food import demand in Nigeria. The paper used annual time series data over the period 1981 to 2019. The empirical result indicates the existence of a long run equilibrium relationship between food import demand and its determinants. The long run price and income elasticities are -4.57% and 5.57%, respectively. The result shows that population and food production exert significant influence in determining food import demand in both the short run and long run while exchange rate is insignificant in the long run. The paper recommends that price and income-oriented policies will be effective measures in controlling food import demand in Nigeria.

Key words: Food, Import Demand, Trade Elasticities, ARDL bounds test, Nigeria

1. Introduction

Nigeria is Africa’s largest economy with estimated gross domestic product (GDP) of about $397.30 billion and has the largest population of 195.87 billion in 2018 (NBS, 2018). It is also Africa’s largest producer and exporter of oil and has the largest natural gas reserve in the continent. Agriculture has played an important role in the country’s development as a major source of income, food, raw materials, employment and
foreign exchange earnings (Adeniyi and Adeyemo, 2014 and Abdullahi, 2014). Prior to the 1970’s, the agricultural sector provides 60 percent of Nigeria’s GDP, 95 % of its food needs and 70 % of export earnings through exportation of six major items which are groundnut, cotton, rubber, cocoa, palm oil and palm kernel. During this period, agriculture provides enough food that sustained the economy and this continued until the oil boom in 1970. The huge revenue from oil led to the neglect of agriculture which led to decline in its productivity, then turns Nigeria into a net importer of food and an oil dependent economy.

Today, crude oil revenue accounts for 75% of Nigeria’s GDP while the revenue from the non-oil sector including agriculture account for only 25% or less annually (CBN, 2018). Despite the huge revenue generated from the oil sector, statistical estimates indicate that about 70 % of the population in Nigeria lives on less than US $1.25 per day and the country is characterized by threat of hunger which in 2012 ranked it the 40th out of 79 on the Global Hunger Index and in 2011 the 156th out of 187 on the UNDP Human Development Index (FSP, 2019). The World Bank (2007) reported that about 35% to 40% of the population in Nigeria suffers from food insecurity. The government of Nigeria has adopted food imports as a short-term measure to meet domestic demand which was later dropped due to high food import bills (Adeniyi and Adeyemo, 2014). Between 1990 and 2011, the estimated food import bills in Nigeria were about ₦1.0 billion per day which is equivalent to about US $9.28 million worth of food per day in the period (Olusoji et al 2014). The major drivers of the high level of food importation in Nigeria were rapid increase in population growth, urbanization and decline in agricultural productivity. FAO (2019) reported that for over 20 years, the value-added per capital increase by less than 1 % annually in Nigeria’s agriculture which indicates that the country lost USD 10 billion in its annual export of its major agricultural commodities due to decline in their production. To overcome these problems, the government introduced various programmes and measures to reform the agricultural sector and diversify the economy to boost domestic production, reduce food import and improve food security in Nigeria. However, the food production pace has still not met the domestic food demand in Nigeria.

Many studies have investigated the determinants of import demand in Nigeria (see Olayide, 1968; Ozo-Eson, 1984; Ajayi, 1975; Obadan, 1986; Egwaikhide, 1999; Suleiman and Abdullahi, 2012; Omoke, 2012; Omotor, 2014 and Ogbonna, 2016) among others. However, there are few studies on determinants of food import demand in Nigeria with focus on rice importation (see, Onu et al, 2015; Adeniyi and Adeyemo, 2014, Olusoji et al, 2014; Grace, 2010). Most of the studies on food import demand on selected items focused on Asia and advanced countries (see, Melo et al, 2015, Alnafissa and Alderiny, 2019; Cheng et al, 2015; Baiyegunhi and Sikhosana, 2012; Yazici, 2012;
The purpose of this paper is to examine the determinants of food import demand in Nigeria over the period 1981 to 2019. The motivation for this study is that understanding the factors that affect food import demand is important for effective policy decision that will help to improve food security, curb hunger and reduce food import in Nigeria. Melo et al (2015) showed that high response of food import demand to income shows that income-oriented policy is the best in controlling measure of food demand and undernutrition, while a low response indicates that other policy intervention would be more effective because increase in income will have limited effect on food demand. Yazici (2015) also pointed out that understanding the trade elasticities can help to assess the impact of policies on price and/or income in a country. The paper contributes to the literature in the following ways: first, it provides the elasticities estimates on food import demand in contrast to a majority of the previous studies that concentrated on aggregated import or rice import demand in Nigeria (for these studies see section 2). To my knowledge this is one of the first studies conducted on aggregated food import demand in Nigeria. Second, the paper employs the ARDL bounds testing approach to investigate both the long- and the short-run elasticities, unlike the previous studies that used the regression analysis and/or Johansen cointegrated model. The ARDL model has certain merits over the Johansen (1981) cointegration models: i) it can be use to estimate relationship between variables that are of different order of integration ii) it simultaneously estimates both the short-run and long-run parameters of the model (Yazici, 2015) iii) it provides better estimates especially when dealing with small sample (Mah, 2002).

The paper is structured as follows: section 2 reviews the relevant empirical studies on food import demand. Section 3 discusses the methodology and data for the study. Section 4 presents the empirical results and discussion. Section 5 concludes and summarizes and offers recommendations from the main findings of the research.

2. Literature Review

The modern international trade theories that explained the determinants of export and import demand are the theory of comparative advantage, the Keynesian trade multiplier, and new trade theory (or, the imperfect competition theory of trade). Each of these theories explained the influence of price and income in determining international trade. However, the empirical studies on the import demand function are based on the imperfect substitutes model proposed by Goldstein and Khan (1985). The model assumes that import demand is determined by real income, import price in local currency and price index for domestically produced goods. Since then this model or
its modification has been employed to estimate the import demand function in different countries using empirical analysis.

In the case of Nigeria there is a large number of literature that investigated the import demand using this model which includes; Olayide (1968), Ozo-Eson (1984), Ajayi (1975), Obadan (1986), Egwaikhide (1999), Suleiman and Abdullahi (2012), Omoke (2012), Omotor (2014) and Ogbonna (2016) among others. These studies examined the aggregate import demand in Nigeria using different methodology, data sets and variables in their analysis. However, there are little studies on food import demand of some selected food items which majority focused on rice import in Nigeria. Onu et al (2015) examined the trend in Nigeria’s rice production and imports over the period 1980 to 2013 using the exponential trend equation models. They found that the quantity of rice production and the quantity of imported rice exhibited significant growth and time trend variable is the major factor in determining both the production and import of rice during the study period. The results suggest that price and non-price factors should be considered when making policies of reducing rice imports in Nigeria in both the short and long terms. Adeniyi and Adeyemo (2014) investigate the determinants of total food imports and trend of some selected food items (sugar, rice and wheat) in Nigeria over the period 1981 to 2010 using the regression analysis. They found that the determinants of food import which are income, relative price, domestic food production, external reserves, exchange rate and population were all significant in explaining the changes in the quantity of the three selected food imports over the study period. Olusoji et al (2014) analyse the food import structure and bills in Nigeria over the period 1990 to 2010 using the review analysis. They found that the food import bills in the Nigeria were about ₦1.0billion per day which is equivalent to about USD$9.28million worth of food per day between 1990 and 2011. They found that the major food items imported are wheat, rice, sugar, fish and milk which account more than 84% of the total import bills in Nigeria during the study period. Grace (2010) investigates the how changes in policy and economic growth affects Nigeria’s rice import demand using the Generalized Least Squares over the period of 1972–2005. He found that real GDP, import price, urbanization area significantly explains import demand of rice. The result also shows that subsidy removal policy influences rice import demand while the rice import policy under the Structural Adjustment Programme (SAP) has insignificant impact on rice import in Nigeria. Nkang et al (2006) using the cointegration and error correction model investigated rice import in Nigeria over the period 1970-2002. They found that there is a long run relationship between rice import and domestic rice production, exchange rate, population, external reserves, import price, real GDP, total imports value and dummy for SAP in Nigeria. The result of the short run analysis indicates that changes in domestic rice production, total imports
value and level of external reserves influences rice import.

Studies on food import demand in other countries includes Melo et al (2015) using the Meta regression analysis investigate the income elasticities of food demand in some selected African countries over the period 1990 to 2006. The results of the analysis conducted in forty-eight out of 54 African countries indicate income elasticities are higher in demand of food that constitute more diet like protein and vegetables in majority of the countries. The author also found that countries with higher level of income have lower elasticities of food demand and calories, while the elasticities of demand for nutrients are higher. Furthermore, the result shows that the income elasticities of food demand in countries with a larger percentage of urban population is lower compared to those with population concentrated in the rural areas. The study concludes that food income elasticities across African countries differ by region. Alnafissa and Alderiny (2019) examine the import demand of natural honey in Saudi Arabia from Pakistan, Australia, Yemen, Mexico, Argentina, and Germany over the periods 1991 to 2017. Using AIDS model, the results shows that the own-price elasticities of import demand for natural honey were negative and significant in all the countries except from Pakistan while in Yemen their demand for imported honey is price inelastic. Cheng et al (2015) investigate the determinants of meat import in China and found that price and real GDP are the most important determinant of China’s import demand while tariffs show insignificant effect. The result indicates that increase in the real GDP and consumption capacity increases will increase China’s potential on meat imports demands. Yazici (2012) examined the import and export demand functions of Turkish agricultural using the ARDL bounds test over the period 1970-2003. The result shows that relative price has significant influence on import demand in both the short-run and long-run while domestic income is insignificant. However, their nominal effective exchange rate shows significant impact in determining Turkish agricultural import in the long-run over the study period. Baiyegunhi and Sikhosana (2012) analyse the determinants of Wheat import demand in South Africa over the period 1971 to 2007. They found that real gross domestic product; import price; domestic wheat production level and the price of sugar cane are significant in explaining quantity of South Africa’s wheat during the study period. Safoulanitou and Ndinga (2010) using the Johansen cointegration test investigate the determinants of Congo’s food import demand. They found that income, exchange rate of the local currency, the domestic production, re-export trade and armed conflicts all significantly influence food importation in both the short and/or long term. The authors show that massive food imports in Congo’s is a strategy used by the country to increase its food security and also to export food products to countries like Angola and DRC. Uzunozi and Akcay (2009) applied the double logarithmic-linear function to examine the determinant of Wheat import demand in Turkey over the period 1984-
2006. They result indicates that income per capital, exchange rate, domestic demand, level of wheat production and trend factors are significant in explaining wheat import in the country. They also found that wheat import demand can be strongly affected by changes in domestic wheat prices which will over time gradually the make consumers to buy more of domestic wheat than imported wheat in Turkey.

3. Material and Methods

3.1. Model

This paper adopted the traditional import demand function which considers the quantity demand of food import to be function of its major determinants i.e price and income. The model can be specified as follows:

\[ Qf_t = f(p, y) \]

The model can be specified in log-linear form as:

\[ Lf_t = \beta_0 + \beta_1 Lp_t + \beta_2 Ly_t + \epsilon_t \quad (1) \]

where \( f \) is the quantity demand of food import, \( p \) the food import price and \( y \) the real GDP. The coefficients \( \beta_1 \) and \( \beta_2 \) are of the price and income elasticities estimates, respectively. According to economic theory, the coefficient \( \beta_1 \) should be negative because increase in price will decrease food import demand while \( \beta_2 \) should be positive because the import demand of food is expected to increase with increase in income. Based on equation (1) the model to be estimated in this study can be specify as:

\[ Lf_t = \beta_0 + \beta_1 Lp_t + \beta_2 Ly_t + \beta_3 Lf p_t + \beta_4 Lpop_t + \beta_5 Lexg_t + \epsilon_t \quad (2) \]

where \( f \) is the quantity of food import, \( p \) is food import price, \( y \) is real GDP, \( fp \) is food production, \( pop \) is population and \( exg \) is the exchange rate. The coefficients \( \beta_1 \) to \( \beta_5 \) are the elasticities while \( \epsilon_t \) is the error term.

The Pesaran et al (2001) ARDL bounds testing approach will be used to examine the long run cointegration relationship between the variables and their elasticities. The long run specification of the model is as follows:

\[ \Delta Lf_t = \beta_0 + \sum_{t-l}^{k} \beta_1 \Delta Lp_t + \sum_{t-l}^{k} \beta_2 \Delta Ly_t + \sum_{t-l}^{k} \beta_3 \Delta Lf p_t + \sum_{t-l}^{k} \beta_4 \Delta Lpop_t + \sum_{t-l}^{k} \beta_5 \Delta Lexg_t + \alpha_1 f_{t-l} + \alpha_2 p_{t-l} + \alpha_3 y_{t-l} + \alpha_4 exf_{t-l} + \alpha_5 exg_{t-l} + \epsilon_t \quad (3) \]

Equation (3) test the hypothesis \( H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = 0 \), there is no cointegration relationship between the quantity of food import
conditional ARDL model is then estimated using the ordinary least square method.

### 3.2.2 Data and its properties

The Pesaran et al. (2001) ARDL bounds testing approach will be used to examine the long run cointegration relationship between the variables and their elasticities. The long run specification of the model is as follows:

\[
\Delta Lf_t = \beta_0 + \sum_{t-i}^k \beta_1 \Delta Lp_t + \sum_{t-i}^k \beta_2 \Delta Ly_t + \sum_{t-i}^k \beta_3 \Delta Lf p_t + \sum_{t-i}^k \beta_4 \Delta Lpop_t + \\
+ \sum_{t-i}^k \beta_5 \Delta Lex g_t + \delta ECT_{t-1} + \epsilon_t \tag{4}
\]

where, \( \epsilon_t \) represent the residual and \( \delta \) is the coefficient for the error correction model which measure the speed of convergence of the variables to the long run equilibrium position. In theory, the coefficient \( \delta \) is expected to be statistically significant and negative for short run convergence to take place.

### 3.2. Data and its properties

The data used consist of annual time series for total food import (FI), food import price (proxied by consumer price index) (P), real gross domestic product (Y), total food production (FP) population rate (POP), exchange rate (EXG) of Nigeria over the period 1981 to 2019. The data on real GDP was sourced from Central Bank of Nigeria Statistical Bulletin (2019) while other variables were sourced from National Bureau of Statistics (2019). Food import is the value of import of all food items including live animals in Nigeria. The study period was selected based on the availability of data. All the variables were transformed into natural logarithm form for possible interpretation of the coefficients into elasticities (Ziramba, 2010).

#### Table 1

<table>
<thead>
<tr>
<th></th>
<th>LFI</th>
<th>LP</th>
<th>LY</th>
<th>LPOP</th>
<th>LFP</th>
<th>LEXG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>10.9948</td>
<td>3.01837</td>
<td>8.71619</td>
<td>18.6182</td>
<td>15.4656</td>
<td>3.57048</td>
</tr>
<tr>
<td>Median</td>
<td>11.594</td>
<td>3.36331</td>
<td>8.70788</td>
<td>18.6141</td>
<td>15.2039</td>
<td>4.61196</td>
</tr>
<tr>
<td>Minimum</td>
<td>6.68698</td>
<td>-0.7056</td>
<td>4.97557</td>
<td>18.1427</td>
<td>14.3803</td>
<td>-0.5108</td>
</tr>
</tbody>
</table>
Table 1 reports the summary statistics of the time series variables used in the empirical analysis. The results show that all the series except food import and exchange rate exhibits positive skewness and their kurtosis is less than 3 except for real income which implies that they are platykurtic. The Jarque-Bera test shows that all the variables except income are normally distributed. Figure 1 plots the natural log values of each series used in this study. The plot illustrates that all the series show upward trend over the study period.

Note: **indicate significant at 5% levels

| Std. Dev. | 2.61506 | 2.36706 | 2.8139 | 0.28694 | 0.74338 | 1.99834 |
| Skewness  | -0.2832 | 0.17299 | 0.93289| 0.02946 | 0.13585 | -0.9301 |
| Kurtosis  | 1.6773  | 2.52858 | 5.10717| 1.82316 | 1.4896  | 2.42551 |
| Jarque-Bera| 3.27794 | 0.5414  | 12.5421| 2.19834 | 3.72898 | 6.00109 |
| Prob      | 0.19418 | 0.76284 | 0.00189| 0.33315 | 0.15498 | 0.04976 |
4. Result and Discussion

4.1. Unit root test

Before applying the cointegration test to estimate the food import demand model, the order of integration of the variables is investigated first. The Augmented Dickey Fuller (ADF) (1981) unit root test is applied to examine the properties of the time series variables. Table 2 reported the result of the unit root test carried out with intercept and trend specification. The result shows that all the variables contain a unit root at level and therefore are non-stationary. This implies that we cannot reject the null hypothesis of the unit root test at 1% significance level. However, the result of the unit root test for the first differences shows that all the variables except real income and population are stationary at 5% significance level. Since the variables have different order of integration, the ARDL bounds test is used to estimate the food import demand model in Nigeria.

Table 2

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>First difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFI</td>
<td>-2.0803(-3.5366)</td>
<td>-7.5841*(-3.5403)</td>
</tr>
<tr>
<td>LY</td>
<td>-2.4079(-3.5366)</td>
<td>-0.72392(-3.5403)</td>
</tr>
<tr>
<td>LP</td>
<td>-1.7733(-3.5366)</td>
<td>-5.9012*(-3.5403)</td>
</tr>
<tr>
<td>LFP</td>
<td>-2.1532(-3.5366)</td>
<td>-5.79250*(-3.5403)</td>
</tr>
<tr>
<td>LEXG</td>
<td>-1.12563(-3.5366)</td>
<td>-6.28936*(-3.5404)</td>
</tr>
<tr>
<td>LPOP</td>
<td>2.58472(-354428)</td>
<td>0.82989(-3.5578)</td>
</tr>
</tbody>
</table>

Note: * denotes rejection of a unit root null hypothesis based on MacKinnon’s critical value at 5% level. The values in parentheses of the t-statistics are the level and difference critical at 5% level.
4.2. Cointegration and VECM tests

Tables 3 reported both the short run and long run estimates of the food import demand model using the ARDL approach. The ARDL model is estimated with restricted constant using (4, 0, 4) selected based on the Schwarz Information Criterion (AIC). Panel A shows the short run elasticity estimates while the result in panel B reported the long run elasticities of the food import demand model. The result of the short run model indicates that the coefficient of the ECT is negative and statistically significant at 5% significance level. The value of the adjustment coefficient is -1.314 which implies that about 1.314% of the disequilibrium errors in the previous period can converge quickly to form a long run equilibrium in the current period. The result of the estimated elasticities indicate that the current and lag coefficients of the independent variables have the expected signs and are statistically significant except two-period and one-period lag coefficients of price and income, respectively. The estimates of the short run price and income elasticities are -7.41 and 10.79, respectively. This implies that a 1% increase in price will decrease food import demand by 7.41%, while increase in income will increase food import demand by 10.79% in the short run. Therefore, the short run price and income elasticities are elastic because food import demand response to small changes in price and income.

Furthermore, the short run estimated elasticities of other variables food production, population rate and exchange rate have the expected signs and are elastic with the values -6.69, 573.6, -1.18, respectively. The result implies that these variables are important in determining short run food import demand behaviour in Nigeria. The diagnostic tests indicate the absence of serial correlation and heteroskedasticity in the residuals of the model at 5% significance level which confirms the fitness of the model. The result of the Jarque-Bera normality test also indicates that the residuals are not normally distributed.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(LFI(-1))</td>
<td>0.652885</td>
<td>0.135043</td>
<td>4.83465</td>
</tr>
<tr>
<td>D(LFI(-2))</td>
<td>0.169872</td>
<td>0.103725</td>
<td>1.63772</td>
</tr>
<tr>
<td>D(LFP)</td>
<td>-6.698566</td>
<td>0.671802</td>
<td>-9.971</td>
</tr>
<tr>
<td>D(LFP(-1))</td>
<td>7.777911</td>
<td>0.937564</td>
<td>8.29587</td>
</tr>
<tr>
<td>D(LFP(-2))</td>
<td>5.705782</td>
<td>0.726273</td>
<td>7.85625</td>
</tr>
<tr>
<td>D(LP)</td>
<td>-7.149012</td>
<td>0.750589</td>
<td>-9.5245</td>
</tr>
</tbody>
</table>
### D(LP(-1))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.632823</td>
<td>0.908842</td>
</tr>
<tr>
<td>7.29811</td>
<td></td>
</tr>
</tbody>
</table>

### D(LP(-2))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.66681</td>
<td>0.521158</td>
</tr>
<tr>
<td>-1.2795</td>
<td></td>
</tr>
</tbody>
</table>

### D(LP(-3))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.32457</td>
<td>0.592363</td>
</tr>
<tr>
<td>3.92423</td>
<td></td>
</tr>
</tbody>
</table>

### D(LPOP)
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>573.68405</td>
<td>61.34858</td>
</tr>
<tr>
<td>9.35122</td>
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### D(LPOP(-1))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>578.55633</td>
<td>60.714722</td>
</tr>
<tr>
<td>9.5291</td>
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</table>

### D(LPOP(-2))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1098.938328</td>
<td>109.33288</td>
</tr>
<tr>
<td>-10.051</td>
<td></td>
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### D(LY)
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.791652</td>
<td>0.992478</td>
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<tr>
<td>10.8734</td>
<td></td>
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### D(LY(-1))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.236172</td>
<td>0.635247</td>
</tr>
<tr>
<td>-0.3718</td>
<td></td>
</tr>
</tbody>
</table>

### D(LY(-2))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5.285948</td>
<td>0.842854</td>
</tr>
<tr>
<td>-6.2715</td>
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</tbody>
</table>

### D(LY(-3))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.66373</td>
<td>0.663708</td>
</tr>
<tr>
<td>8.53347</td>
<td></td>
</tr>
</tbody>
</table>

### D(LEXG)
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.180908</td>
<td>0.231654</td>
</tr>
<tr>
<td>-5.0977</td>
<td></td>
</tr>
</tbody>
</table>

### D(LEXG(-1))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.535984</td>
<td>0.237346</td>
</tr>
<tr>
<td>-6.4715</td>
<td></td>
</tr>
</tbody>
</table>

### D(LEXG(-2))
<table>
<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.175965</td>
<td>0.202912</td>
</tr>
<tr>
<td>5.79544</td>
<td></td>
</tr>
</tbody>
</table>

### ECT(-1)
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<thead>
<tr>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.314087</td>
<td>0.122823</td>
</tr>
<tr>
<td>-10.699</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th>Value of statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normality$^1$</td>
<td>0.9774</td>
<td>0.6134</td>
</tr>
<tr>
<td>No serial correlation$^2$</td>
<td>1.9072</td>
<td>0.2285</td>
</tr>
<tr>
<td>No heteroskedasticity$^3$</td>
<td>0.8480</td>
<td>0.6501</td>
</tr>
</tbody>
</table>

Note: *, **, *** indicate significant at 1%, 5% and 10% levels, respectively. 1: Jarque-Bera normality test with $x^2$ distribution, 2: Breusch-Godfrey serial correlation LM test and 3: Breusch-pagan-Godfrey heteroskedasticity test. The upper bound critical value at 10% significance level is 3.00 less than F-statistic value of 9.41 Peseran et al. (2001).

The long run estimate of the food import demand model is reported in panel B, Table 3. The result indicates that all the independent variables have the expected signs except exchange rate and are statistically significant at 5% significance level. The long run income and price elasticity are 5.57% and -4.57, respectively. The estimate indicates that 1% increase in income will lead to 5.57% increase in food import demand while increase in price will reduce food import demand by 4.57% in the long run. The short run and long run income and price elasticities are both elastic. Therefore, food demand is a normal good in Nigeria. However, the result indicates that income has more effect on food import demand than price in both the short run and long run.
Table 4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFP</td>
<td>-10.866024</td>
<td>2.142176</td>
<td>-5.072423*</td>
</tr>
<tr>
<td>LP</td>
<td>-4.577345</td>
<td>1.64051</td>
<td>-2.790196*</td>
</tr>
<tr>
<td>LPOP</td>
<td>24.911988</td>
<td>5.811723</td>
<td>4.286506*</td>
</tr>
<tr>
<td>LY</td>
<td>5.574318</td>
<td>1.685312</td>
<td>3.307588*</td>
</tr>
<tr>
<td>LEXG</td>
<td>-0.276834</td>
<td>0.482564</td>
<td>-0.573674</td>
</tr>
<tr>
<td>C</td>
<td>-321.208423</td>
<td>90.3801</td>
<td>-3.553973</td>
</tr>
</tbody>
</table>

Note: *, **, *** indicate significant at 1%, 5% and 10% levels, respectively

In the case of food production, the elasticity coefficient is negative -10.86 and significant which suggests that a 1% increase in domestic food production will reduce food import demand. The elasticity of the population coefficient is positive and statistically significant with value of 24.91 which implies that a 1% increase in population will induce larger change in quantity of food import. The result shows that the small increase in population will lead to large change in food import demand because domestic food production cannot meet consumer demand. Lastly, the exchange rate elasticity is negative but insignificant. The long run exchange rate elasticity is -0.27, which means that change in exchange rate policy will exert no effect on food import demand in the long run. In sum, the result of the short and long run analysis indicates that both price and income are important determinants of food import demand and are elastic in Nigeria. The result also indicates that food production and population have strong influences on food import demand while exchange rate has no effect on food import demand in the long run.

5. Conclusion

This paper investigates the determinants of food import demand in Nigeria using the ARDL cointegration bounds testing approach. The paper used annual time series data over the period 1981 to 2019. The estimated result indicates that both the short run and long run price and income elasticities are significantly negative and positive, respectively. The result indicates that the short run and long run price and income elasticities are greater than unity, they are both elastic. The result further shows that while population and food production exert significant influence in determining food import demand in both the short run and long run exchange rate is insignificant in the
long run.

The policy implication of the findings is as follows: that the estimate of the long run elasticity suggests that food import demand is price and income elastic in Nigeria. The result suggests that both price and income-oriented policies will be effective in controlling food import without affecting economic activities. There is need to implement strong policies and strategies that will boost domestic food production because it will reduce food import demand and curb food insecurity. Finally, trade policies such as increase charges and banning of import of selected food items will help improve local food production which will reduce food import demand in the Nigeria.

Reference


26. Omoke, C.P. Aggregate Import Demand and Expenditure Components in Nigeria. Mathematical and Quantative Methods, Economica, 8, 149-163


