University of Oradea
Faculty of Economic Sciences
Doctoral School of Economic Studies

with the support of the Research Centre for Competitiveness and Sustainable Development

UNIVERSITATEA DIN ORADEA
Facultatea de Științe Economice

Oradea Journal of Business and Economics

Volume 10/2025, Issue 2

ISSN 2501-1596, ISSN-L 2501-1596, ISSN 2501-3599 (online)

EDITURA UNIVERSITĂȚII DIN ORADEA

This page intentionally left blank.

Oradea Journal of Business and Economics (OJBE) is an open access, peer-reviewed journal, publishing researches in all fields of business and economics.
The Journal is published exclusively in English. It publishes two regular issues per year, in March and September, and occasionally one special issue, on a special theme (if case). Articles published are double-blind peer-reviewed and included into one of the following categories: theoretical and methodological studies, original research papers, case studies, research notes, book reviews.

Volume 10, Issue 1, March 2025
ISSN 2501-1596 (in printed format). ISSN-L 2501-1596 (electronic format)
Journal site: http://ojbe.steconomiceuoradea.ro/.

Acknowledgement

Oradea Journal of Business and Economics wishes to acknowledge the following individuals for their assistance with the peer reviewing of manuscripts for this issue, IT support, in on-line and print publishing, as well as international database indexing: Lecturer. PhD. Diana Perțicaș, Roxana Hatos, PhD. Their help and contributions in maintaining the quality of the journal are greatly appreciated

This page intentionally left blank.

Table of contents

The Contribution of Competitive Intelligence Process in Achieving Strategic Agility: A Qualitative Study of Opinions from a Sample of Executives in the Food Industry Enterprises of Annaba and Skikda

Hanene BELAHCENE[1*], Fatma Zohra CHAIB[2]
[1] Department of Management Sciences, Faculty of Badji Mokhtar, Annaba, Algeria
[2] Department of Management Sciences, Faculty of Badji Mokhtar, Annaba, Algeria
hanene.belahcene@univ-annaba.org
fatma-zohra.chaib@univ-annaba.dz

Abstract: *This study qualitatively analyzes the contribution of the competitive intelligence process to achieving strategic agility, using NVivo v14 software to examine the views of a sample of executives from food industry enterprises in Annaba and Skikda. The study draws on structured interviews with nine executives, all of whom are practitioners in the strategic field. The findings indicate that while the enterprises under study demonstrate strategic agility, this is primarily due to their practice of competitive intelligence, albeit not fully implemented in a comprehensive manner. Based on these results, the study recommends that food industry enterprises develop a clear strategy for collecting, analyzing, and disseminating information, leveraging modern techniques. This will enable decision-makers to enhance the quality and speed of their decisions, further boosting strategic agility.*

Keywords: competitive intelligence, competitive intelligence process, sensor agility, decision-making agility, practice agility, strategic agility.

JEL classification: D83.

1. Introduction

The business environment today is marked by uncertainty due to intensified competition, rapid technological advancements, and market fluctuations, all of which affect enterprise performance. This uncertainty has prompted businesses to focus on managing risks and adopting tools to better understand their environment. Competitive intelligence is a key tool in this regard, providing actionable information that aids in scenario planning and quick decision-making, both critical for adapting to a dynamic market. These capabilities are central to strategic agility, which is essential for an enterprise's survival. Algerian food industry enterprises, like their global counterparts, face similar challenges, including shifting

* Corresponding author: Hanene BELAHCENE
Cite as:
The journal editors will add this information after completion of the volume!

customer demands, technological changes, and the aftermath of the COVID-19 pandemic. These pressures make it crucial for these enterprises to develop strategic agility, which can be achieved through effective competitive intelligence practices. This study aims to explore how competitive intelligence contributes to strategic agility in food industry enterprises in the towns of Annaba and Skikda.

2. Literature Review and Hypothesis

2.1. Competitive Intelligence

Competitive intelligence is a strategic tool that helps businesses analyze and adapt to their changing environment by providing timely, legal, and ethical information for effective decision-making. The Society of Competitive Intelligence Professionals (2015) and Artur (2020, p. 02) define it as a systematic, ethical process of gathering information from various sources. Buzzerio and Marcondes (2014) emphasize its role in collecting and analyzing data on competitors, technologies, and market trends for strategic decisions. Fleisher (2001, p. 04) highlights its importance in understanding the competitive landscape, while Ghannay and Mamlouk (2015) note its role in formulating strategies based on competitor and consumer analysis (Adetayo, Asiru, and Omolabi, 2021).

Thus, competitive intelligence involves several sequential steps: information gathering, analysis, and usage, to help enterprises gain a competitive advantage. However, researchers have different perspectives on these stages, which are illustrated in the following table.

Table 1: Competitive Intelligence Process According to the Views of Some Researchers

Researchers	Collection, Analysis, and Communication
Porter (1980)	Direction, Collection, Processing, Dissemination, and Use
Sammon et al (1984)	Collection, Evaluation, Analysis, Storage, and Dissemination
Gilad (1989)	Planning and Direction, Collection, Analysis, and Dissemination
Kahaner (1997)	Planning and Direction, Collection, Analysis, and Dissemination
Calof and Skinner (1998)	Collection, Analysis, Storage, and Dissemination
Bouthillier and Shearer (2003)	Planning and Direction, Collection, Analysis, Dissemination, and Feedback
Bose (2008)	Planning and Collection, Analysis, and Communication
Saayman et al (2008)	Planning, Collection, and Analysis, Communication, Process and Structure, Enterpriseal and Cultural Awareness
Dishman, Calof, and Saayman (2008)	Planning, Collection, Analysis, and Dissemination

Du Toit (2015)	Collection, Analysis, and Communication

Source: Hassani and Mosconi (2022).

Despite variations in the competitive intelligence process, researchers agree on three key stages: collection, analysis, and dissemination. The collection phase involves identifying sources and methods, such as surveys and media monitoring, while ensuring the process is legal and ethical (Seyyed et al., 2017) and formalizing it to avoid misleading information (Hassani and Mosconi, 2022).

The analysis phase is critical, requiring expertise to convert raw data into actionable intelligence for strategic decisions (Seng Yap and Abdul Rashid, 2011). Practitioners see this phase as key to generating insights that drive competitive advantage.

In the dissemination phase, Muller (2003, p. 02) stresses sharing intelligence through channels like reports and emails. Bernhardt (2003, p. 56) emphasizes that competitive intelligence is only valuable if it reaches decision-makers promptly, highlighting the importance of effective dissemination in decision-making.

2.2. Strategic Agility

Strategic agility is crucial for enterprise survival and success, enabling quick adaptation to environmental changes. It has been defined as the ability to be astute, flexible, and responsive to new events (Mazher and Yasser, 2020), and to continuously adapt to uncertain environments (Ferraris et al., 2022). This agility allows enterprises to quickly identify and respond to opportunities and threats (Al-Rousan and Al-Amoush, 2017), combining flexibility, speed, and adaptability to handle change. It also involves mobilizing resources swiftly in response to unforeseen circumstances (Adomako et al., 2022), emphasizing the need for capabilities that enhance responsiveness.

In essence, strategic agility enables enterprises to adapt swiftly to external changes, providing the flexibility to meet evolving challenges effectively.

2.3. Competitive Intelligence and Strategic Agility

Competitive intelligence provides timely information (Syauqiy & Dirgantara, 2022), helping businesses understand the changing environment and identify opportunities and threats. This supports swift actions, such as seizing opportunities or avoiding risks, aligning with strategic agility, which involves sensing environmental changes (Al-Raei, 2023) and making rapid decisions. According to Doz and Kosonen (2010, p. 371), this also includes quickly reallocating resources (practice agility). Thus, competitive intelligence is integral to achieving strategic agility.

Several studies confirm this link. Stenberg and Vu-Thi (2017, p. 08) argue that competitive intelligence supports agility in sensing market changes. Skyrius and Valentukevičė (2020, p. 19) note that sensing requires gathering and analyzing information for actionable insights. Naidoo (2003, p. 20) emphasizes the importance of timely, fact-based information for decision-making. Plessis and Gulwa (2016, p. 02) highlight that competitive intelligence aids quick decision-making in dynamic environments.

Competitive intelligence also informs strategic decisions, including market entry and product development (Plessis & Gulwa, 2016, p. 02; Calof & Wright, 2008). Atkinson et al. (2022, p. 07) note that it helps enterprises analyze their environment and provide timely insights to decision-makers. Additionally, it supports practice agility, as Ki Park, El Sawy, and Peer Fiss (2017, p. 655) found that sharing intelligence promotes collaboration and quick execution. Atkinson et al. (2022, p. 07) also suggest it helps assess actions and capabilities in real time to manage competitive risks.

Thus, the following hypothesis is proposed: The competitive intelligence process (collection, analysis, dissemination) contributes to achieving strategic agility (sensing, decision-making, and practice agility) in food industry enterprises in Annaba and Skikda.

3. Study Procedures

3.1. Research Methodology and Sample

This study employed a descriptive approach to examine the responses and perceptions of the sample members regarding the role of the competitive intelligence process in achieving strategic agility. Structured interviews were used for data collection, guided by a set of six questions exploring this relationship. The purposive sample consisted of nine managers from food industry enterprises in the Annaba and Skikda regions, selected for their extensive knowledge of competitive intelligence and strategic agility, irrespective of their specific positions.

The researchers conducted two interviews with each manager between January and March 2024. The first interview aimed to gather initial responses, while the second interview was conducted to assess the consistency and reliability of their answers. As a result, two enterprises (BELDI Enterprise and LES 7 EPIS Biscuits Enterprise) were excluded from the study, as their managers declined to participate in the second round of interviews. The following tables summarize the data collected:

Table 2: Enterpriseal Profile of the Study Sample

Enterprise Name	Start of Activity	Number of Employees	Enterprise Size	Products	Main Operating Area	Capital
Global Soft Drink Enterpise	1998	250	Medium	Soft Drink (Bona)	Annaba and surrounding areas	296,600,000,000 DZD
Mahbouba Enterpise	2000	200	Medium	Pasta, Canned Tomatoes, Canned Harissa	Annaba and surrounding areas	360,186,000,000 DZD

Green Grill Manufacturing	2017	99	Medium	Canned Harissa, Canned Jam, Canned Hamis, Syrup, Canned Pizza Tomato Paste	Skikda	277,675,000,000 DZD
Sipa Enterpise	2018	70	Medium	Canned Tomatoes, Canned Pizza Tomato Paste (Bestom)	Annaba and El Tarf	64,945,800,000 DZD
LES 7 EPIS Biscuits Enterpise	1984	70	Medium	Biscuits (Tom)	Annaba and surrounding areas	6,000,000,000 DZD
Dekoba Enterpise	2011	60	Medium	Coffee (Dekoba Coffee)	Annaba	40,000,000 DZD
Beldi Enterpise	2003	40	Small	Semolina and Flour (Beldi)	Annaba and surrounding areas	252,160,000,000 DZD
Qasr Al-Qahwa Enterpise	1985	30	Small	Coffee (Amar Coffee)	Skikda - Hammouche Hammoudi	30,000,000 DZD
Laiterie El Maida	2004	30	Small	Milk Bags, Yogurt Bags, Syrup	Annaba - Berrahal	217,800,000 DZD

Source: Prepared by the researchers based on the National Commercial Register Portal (via subscription). https://sidjilcom.cnrc.dz/web/cnrc/accueil.

Table 3: Interview Information about the Enterprises Managers of the Study Sample

Enterprise Name	Job Title		First Interview	Second Interview

		Years of Experience	Interview Date	Interview Duration	Interview Date	Interview Duration
Global Soft Drink Enterpise	Commercial Manager	21 years	22/01/2024	**1.5 hours**	26/02/2024	1 hour
Mahbouba Enterpise	Quality Manager	24 years	04/03/2024	1 hour	07/03/2024	45 minutes
Green Grill Manufacturing	Commercial Manager	32 years	03/03/2024	**1.5 hours**	11/03/2024	1 hour
Sipa Enterpise	Finance and Accounting Manager	15 years	23/02/2024	1 hour	28/02/2024	30 minutes
Beldi Enterpise	Finance and Accounting Manager	6 years	22/01/2024	30 minutes	/	/
LES 7 EPIS Biscuits Enterpise	Commercial Manager	30 years	27/02/2024	30 minutes	/	/
Dekoba Enterpise	Commercial Manager	16 years	10/03/2024	45 minutes	13/03/2024	30 minutes
Qasr Al-Qahwa Enterpise	Commercial Manager	20 years	29/01/2024	1 hour	31/01/2024	45 minutes
Laiterie El Maida	HR Manager	12 years	22/01/2024	45 minutes	26/02/2024	45 minutes

Source: Prepared by the researchers based on the results from the field study.

Therefore, it can be clear from the table above that the respondents' answers did not change, indicating the consistency and reliability of the interview.

3.2. Analysis of Results

In this section, the results of the analysis of the interviews conducted with the seven managers from the enterprises of the study of interest will be discussed. These results were extracted using NVivo software and will be presented through four main approaches: *Lexical Approach, Linguistic Approach, Thematic Approach, and Cognitive Maps.*

Analysis of Study Results According to Lexical Approach

The aim of this approach is to describe what the interviewees discussed in relation to the study variables, specifically competitive intelligence and strategic agility. This is done through the most frequently used key terms in the interviews, which are illustrated in the word cloud as follows:

Figure 1: Word Cloud
Source: Outputs from NVivo v14.

The figure above shows the distribution of terms in the form of a cloud, highlighting the frequency of term repetitions and the importance of each term based on the visible line size. It appears that the terms "enterprise," "information," "customers," "market," and "changes" stood out as frequently used words in the responses of the interviewees.

Analysis of Study Results According to Linguistic Approach

The results of the linguistic approach describe how the interviewees (referred to as practitioners in the NVivo v14 coding) speak, or measure the similarity of terms in answering interview questions. The results showed textual similarity in the content and direction of the interview responses from each practitioner (the individuals interviewed at the enterprises). This can be summarized in the following points:

Information Gathering: Practitioners (1, 2, 3, and 5) agreed that sales consultants gather information on the first customer (wholesale merchants), including product distribution, marketing strategies, and customer preferences. Practitioners (4, 6, and 7) specifically focus on gathering information from the final customer.

Use of Trade Fairs: Practitioners (1, 2, 3, and 5) agreed that trade fairs are used to collect information on advanced production machinery. Regarding competitor products, practitioners (1, 2, 3, 4, 5, and 6) rely on customers and sales consultants, while practitioner 7 does not. No practitioners gather information on potential alliances or acquisitions among competitors.

Analysis and Dissemination of Information: Practitioners (1, 2, and 3) agreed the enterprise effectively analyzes and disseminates market change information, while practitioners (4, 5, and 6) focus on competitor product data shared with decision-makers.

Adaptation to Market Changes: Practitioners (1, 2, and 3) agreed that the enterprise adapts quickly to market changes, though obstacles sometimes occur. In contrast, practitioners (4, 5, and 6) noted moderate adaptation, citing raw material sourcing challenges that delay responses to customer demands.

Use of Information for Quick Decision-Making: All practitioners agreed that analyzed information helps the enterprise quickly sense market changes and make decisions to adapt.

Importance of Information for Quick Adaptation: Practitioners (1, 2, and 3) agreed that information is vital for adapting to market changes, while others focused more on production and sales to achieve immediate profits.

Analysis of Study Results According to Objective Approach:
This section will present a detailed breakdown of the results from the seven interviews to interpret their content; that is, determining the coverage percentage to identify the most attended question by each respondent (practitioner) and its content. The following table illustrates the aforementioned:

Table 4: Coverage Percentage for Interview Questions

Contract (Questions)	Coverage Percentage (%)							Rank by Coverage
	Practitioner							
	1	2	3	4	5	6	7	
Gathering Information	42.96	36.98	39.14	20.27	31.88	25.54	13.84	1
Analysis and Dissemination of Information	7.24	8.43	8.20	12.93	12.87	15.24	5.57	5
Speed of Enterpriseal Adaptation	5.75	8.18	10.67	9.47	12.63	12.25	17.42	3
Relationship Between Analyzed Information and Sensing Market Changes	10.15	6.82	6.78	8.61	3.74	9.40	8.86	7
Relationship Between Analyzed Information and Decision-Making Agility	9.89	9.14	12.56	12.36	4.60	14.72	11.40	6
Relationship Between Analyzed Information and Practitioner Agility	11.66	15.38	7.74	10.86	2.87	4.46	3.19	4
Opinion on the Importance of Information Provided Within the Enterprise	11.35	13.52	13.17	24.14	29.91	16.33	37.78	2

Source: Prepared by the researchers based on NVivo $_{v14}$ outputs.

It was observed from the table above that:
Practitioner 1 (Global Soft Drink Enterprise) had the highest coverage (42.96%) for the first question, emphasizing the enterprise's daily collection of customer data and weekly competitor updates, gathered through sales consultants, customers, employees, and trade fairs, then communicated to the commercial manager.
Practitioner 7 (Table Milk Enterprise) ranked second (37.78%) for the seventh question, highlighting the importance of information for adapting to market changes, although the

enterprise primarily focuses on production and sales. They noted that better market awareness could improve expansion and decision-making.

Practitioner 7 also ranked third (17.42%) for the third question, citing slow adaptation due to a lack of marketing specialists and limited promotional resources.

Practitioner 2 (Mahbouba Enterprise) ranked fourth (15.38%) for the sixth question, noting that information analysis helped the enterprise respond quickly to customer demand, launch new products, and diversify offerings.

Practitioner 6 (Coffee Palace Enterprise) ranked fifth (15.24%) for the second question, explaining that competitor pricing and customer preferences are analyzed by the commercial manager and shared with decision-makers, although external market changes are not considered.

Practitioner 6 also ranked sixth (14.72%) for the fifth question, describing how the enterprise quickly adapted by reducing caffeine content and adjusting pricing in response to customer complaints and competitive threats.

Finally, **Practitioner 1** ranked seventh (10.15%) for the fourth question, explaining how customer feedback helped identify opportunities in changing preferences, with technology and competitor analysis improving production and market response.

Analysis of Study Results According to Cognitive Mapping Approach:

his approach relies on illustrative diagrams that link the key terms of the study (competitive intelligence process, strategic agility, and its dimensions) with various ideas discussed in the seven interviews. These diagrams help structure mental perceptions and answer the interview questions.

Results of the Cognitive Mapping Approach for the Term "Competitive Intelligence Process": The results of this approach can be illustrated in the following diagram:

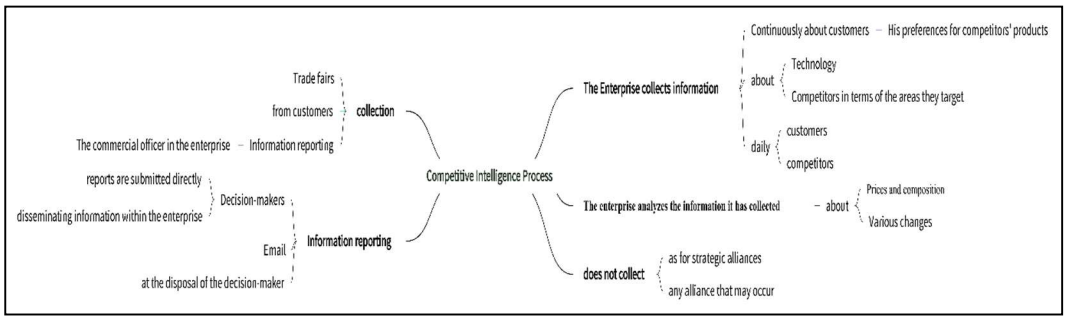

Diagram Placeholder 1: Cognitive Map for the Term "Competitive Intelligence Process"

Source**:** NVivo v14 Outputs

It was observed that the analysis of the previous diagram revealed that the enterprises under study do not collect information on potential alliances between competitors, nor do they consider forming alliances or acquiring weaker competitors. However, they actively gather

information on customer preferences and requirements, competitor product composition and pricing, and advanced production machinery (costs and benefits). This information is collected from customers and trade fairs, then communicated to the commercial manager. The manager analyzes the data based on their experience, and the results are compiled into reports and delivered to decision-makers.

Results of the Cognitive Mapping Approach for the Term "Strategic Agility": The results of this approach can be illustrated in the diagram, as follows:

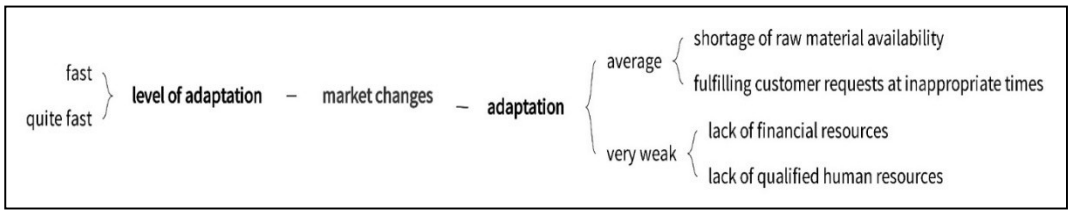

Diagram Placeholder 2: Cognitive Map for the Term "Strategic Agility"
Source: NVivo v14 Outputs.

From the above, it was noticed that the analysis of the interviewees' responses reveals three levels of adaptation to market changes across the enterprises:

Very Weak Adaptation: **Table Milk Enterprise** shows very weak adaptation due to limited financial resources and a lack of human capabilities to monitor market changes effectively.

Medium Adaptation: **Siba Enterprise**, **Dekoba Enterprise**, and **Coffee Palace Enterprise** exhibit medium adaptation, primarily hindered by raw material shortages that delay their ability to meet customer demands on time.

Fast Adaptation: **Global Soft Drink Enterprise**, **Mahbouba Enterprise**, and **Green Grill Manufacturing** demonstrate fast adaptation, efficiently meeting customer needs and preferences in a timely manner.

Results of Cognitive Mapping Approach for the Relationship Between Competitive Intelligence Process and Strategic Agility: The results of this approach can be illustrated in the following diagram:

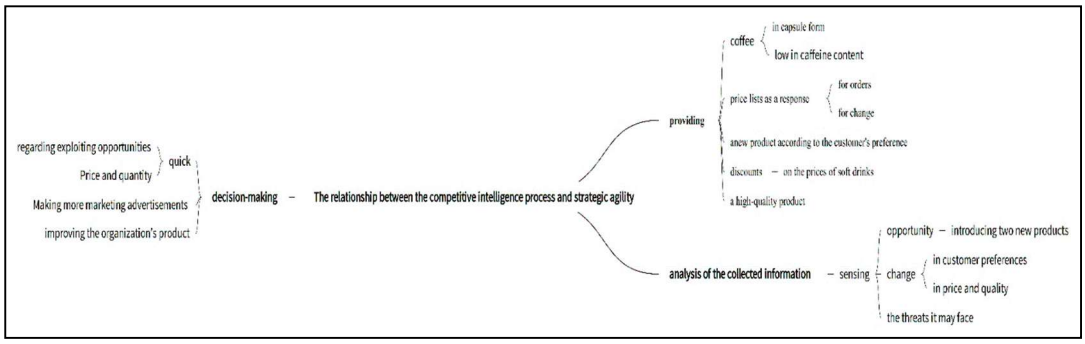

Diagram Placeholder 3: Cognitive Map for the Relationship Between Competitive Intelligence Process and Strategic Agility
Source: NVivo v14 Outputs.

The analysis of the diagram shows that the information collected and analyzed by the enterprises allowed them to sense various market changes:
Global Soft Drink Enterprise identified shifts in customer preferences;
Coffee Palace Enterprise recognized an opportunity arising from customer complaints about coffee addiction; and
Green Grill Manufacturing detected threats from new competing products and changes in competitors' pricing and product quality.
Both **Coffee Palace Enterprise** and **Green Grill Manufacturing** noticed the success of competitors' marketing campaigns.
This sensing led to quick decisions and rapid adaptation to market changes, resulting in the following actions:
Global Soft Drink Enterprise introduced a product tailored to customer preferences and ran successful marketing campaigns with discounts and prizes.
Green Grill Manufacturing launched a high-quality product and adjusted prices in response to competitors.
Coffee Palace Enterprise responded to customer concerns by introducing a low-caffeine coffee product.

3.3 Hypothesis Testing in Light of the Results Discussion

The practices of the studied enterprises in competitive intelligence played a key role in achieving strategic agility. By collecting and analyzing information, the enterprises were able to sense changes in customer preferences. For instance, Global Soft Drinks Corporation identified shifts in soft drink flavor preferences, as highlighted by Practitioner1, and this was reflected in the knowledge map showing the relationship between competitive intelligence and strategic agility (key term: sensing). Similarly, Coffee Palace leveraged customer complaints about coffee addiction to sense an opportunity, leading to the quick decision to launch a low-caffeine coffee product (key terms: decision-making and offering). In addition, data on technological machinery enabled Mahbouba Enterprise to make informed production decisions, resulting in the launch of two new dough products. Global Soft Drinks Corporation increased product quantities, and Dekoba Enterprise innovated by introducing coffee capsules. These actions, reflecting the competitive intelligence process, were also demonstrated in the knowledge map (key term: offering). Thus, the main hypothesis was validated, confirming that the competitive intelligence process (collection, analysis, and dissemination) significantly contributes to achieving strategic agility in all its dimensions (sensing, decision-making, and practice agility) based on insights from a sample of managers in food industry enterprises from Annaba and Skikda.

Conclusion

This study explored two key concepts in business: competitive intelligence and strategic agility, both essential for the survival and success of enterprises in a dynamic environment. It examined how competitive intelligence helps enterprises understand their competitive landscape and how strategic agility allows them to adapt quickly to changes. Additionally, the study highlighted the role of competitive intelligence in enhancing the dimensions of strategic agility—**sensing**, **decision-making**, and **practice agility**—within food industry enterprises in Annaba and Skikda.

The findings revealed that competitive intelligence practices varied across the studied enterprises. Some fully implemented the process (collection, analysis, dissemination), while others either collected information without analyzing it or did so without using it effectively. Despite these differences, most enterprises could identify opportunities and threats related to customers, competitors, and technology. By making quick decisions based on limited sources (customers, sales consultants, trade fairs) and relying on analysts' experience (without advanced tools), they demonstrated **strategic agility** in adapting swiftly to market changes.

Based on these findings, the study recommends the following actions for enterprises:

Diversify Information Sources: Enterprises should expand their information collection beyond just customers, sales consultants, and trade fairs. Internal sources (such as information systems and board members) and external sources (such as industry reports, trade union data, and competitor websites) should be included. Comprehensive information about market changes is essential for the success of competitive intelligence efforts.

Develop a Clear Information Strategy: Enterprises should establish a clear strategy for collecting, analyzing, storing, and disseminating information using modern techniques. This will help decision-makers process information more efficiently and improve the speed and quality of decisions.

Strengthen Strategic Agility: Enterprises should be more proactive in applying strategic agility, rather than merely reacting to market changes. They need to leverage the insights gained from competitive intelligence to anticipate and act on future opportunities and threats, enhancing their agility in both sensing and responding to market dynamics.

By implementing these recommendations, enterprises can better utilize competitive intelligence to enhance their strategic agility and ensure long-term success in a rapidly changing business environment.

References

Adetayo, J.A., Asiru, A.M. and Omolabi, B.I., 2021. Building Ambidexterity in Libraries: Role of Competitive Intelligence. *Library Philosophy and Practice (e-journal)*. 5763. Available at: https://digitalcommons.unl.edu/libphilprac/5763/,(accessed 07.04.2022).

Adomako, S. et al., 2022. Strategic Agility of SMEs in Emerging Economies: Antecedents, Consequences and Bounday Conditions. *Journal of International Business Review*, 31(06). 102032. https://doi.org/10.1016/j.ibusrev.2022.102032.

Al-Raei, R.W.A., 2023. The Mediating Role of The Manager's Enterpriseal Strength in The Relationship Between Enterpriseal Learning and Enterpriseal Agility. *Scientific Journal of Business and Environmental Studies*, 14(04): 684-742. https://dx.doi.org/10.21608/jces.2023.336736.

Al-Rousan, M. and Al-Amoush, M., 2017. The Impact of Human Capital on Strategic Agility. *Journal of Economics and Administrative Sciences*, 23(100): 86-99. http://dx.doi.org/10.33095/jeas.v23i100.205.

Artur, V., 2020: Competitive Intelligence Concepts and Definitions. [online] Available at: http://dx.doi.org/10.13140/RG.2.2.14667.34087, (accessed 07.02.2023).

Atkinson, P., Hezaji, M., Nazarian, A. and Abasi A., 2022. Attaining Enterpriseal Agility Through Competitive Intelligence: The Role of Strategic Flexibility and Enterpriseal Innovation, *Total Quality Management & Business Excellence*, 33(03-04): 297-317. https://doi.org/10.1080/14783363.2020.1842188.

Bernhardt, D., 2003. Competitive Intelligence: How to Acquire and Use Corporate Intelligence and Counter-intelligence. Britain: Prentice Hal Financial Times.

Buzzerio, F.G. and Marcondes, R.C., 2014. Competitive Intelligence in Perspective to be a Source of Competitive Advantage and Strategic Contributions. *Revista de Ciencias da Administracao*, 16 (40): 235-249. http://dx.doi.org/10.5007/2175-8077.2014v16n40p235.

Ching Seng Yap, C. and Abdul Rashid, M.Z., 2011. Acquisition and Strategic Use of Competitive Intelligence. *Malaysian Journal of Library and Information Science*, 16(01): 125-136. https://ejournal.um.edu.my/index.php/MJLIS/article/download/6689/4372/14451.

Doz, Y. and Kosonen, M., 2010. Embedding Strategic Agility: A Leadership Agenda for Accelerating- Business Model Renewal. *Journal of Long-Range Planning*, 43 (02-03): 370-382. https://doi.org/10.1016/j.lrp.2009.07.006.

Ferraris, A. et al., 2022. Microfoundations of Strategic Agility in Emerging Markets: Empirical Evidence of Italian MNEs in India. *Journal of World Business*, 57(02), 101272. https://doi.org/10.1016/j.jwb.2021.101272.

Fleisher, C.S., 2001. An introduction to the management and practice of Competitive Intelligence (CI). In P. Fleisher, C.S. and Blenkhorn, D.L. (Ed.), *Managing frontiers in competitive intelligence*. New York: Quorum Books, pp. 3-18. https://doi.org/10.5040/9798400682186.

Hassani, A. and Mosconi, E., 2022. Social Media Analytics, Competitive Intelligence, and Dynamic Capabilities in Manufacturing SMEs. *Journal of Technological Forecasting and Social Change*, 175, 121416. https://doi.org/10.1016/j.techfore.2021.121416.

Mazher, A.A. and Yasser, S.Y., 2018. The Impact of Strategic Agility on Sustainable Enterpriseal Performance. *Iraq Journal of Administrative Sciences*, 14(55), pp. 210-239. https://journals.uokerbala.edu.iq/index.php/ijas/article/view/2533.

Muller, M.L., 2003. Key Activities of Competitive Intelligence (3). *South African Journal of Information Management*, 5(03). https://doi.org/10.4102/sajim.v5i3.370.

Naidoo, A., 2003. *The Impact of Competitive Intelligence Practices on Strategic Decision-Making*. Master Thesis. South African: University of Natal. The graduate School of

Business. https://www.academia.edu/60424957/The_impact_of_competitive_intelligence_practices_on_strategic_decision_making.

Park, Y., El Sawy, A.O. and Fiss, C.P., 2017. The Role of Business Intelligence and Communication Technologies Enterpriseal Agility: A Configuational Approach. *Journal of the Association for Information Systems*, 18(09): 648-686. http://dx.doi.org/10.17705/1jais.00467.

Plessis, D.T. and Gulwa, M., 2016. Developing A Competitive Intelligence Strategy Framework Supporting The Competitive Intelligence Needs of A Financial Enterprise's Decision Makers. *South African Journa of Information Management*, 18(02). http://dx.doi.org/10.4102/sajim.v18i2.726.

SCIP, Society of C.I.P., 2015. *Competitive & market intelligence* topic hub [WWW Document]. Society of Competitive Intelligence Professionals. [online] Available at: https://www.scip.org/page/CI-MI-Basics-Topic-Hub (accessed 03.05.2021).

Skyrius, R. and Valentukevičė, J., 2020. Business Intelligence Agility, Informing Agility and Enterpriseal Agility: Research Agenda, *Informacijos Mokslai*, 90, pp. 8-25. http://dx.doi.org/10.15388/Im.2020.90.47.

Stenberg, E. and Vu-Thi, X., 2017. *The Impact of Competitor Intelligence on Strategy Building*. [online] Available at: https://www.diva-portal.org/smash/get/diva2:1075596/FULLTEXT01 (accessed 05.08.2022).

Syauqiy, F.A. and Dirgantara, B. I., 2022. The Role of Strategy Flexibility, Competitive Intelligence, Enterpriseal Innovation, and Entrepreneurship Leadership in Increasing Agility of MSME Troso Woven Fabric. *Budapest International Research and Critics Institute-Journal*, 05(04): 29247-29254. https://bircu-journal.com/index.php/birci/article/view/7076.

Bio-note:

Fatma Zohra CHAIB is a Professor of Management Sciences with expertise in various management specialties. She leads doctoral projects and research on operational excellence and is an active member of the Incubator and Entrepreneurship Development Center at the University of Annaba. Fatma Zohra has authored scientific articles and books on topics such as business competitiveness, information systems, operational excellence, agility, performance, and logistics management.

Hanene BELAHCENE is a Postdoctoral Researcher specializing in Strategic Management. She is part of a research team working on projects, including "Competitive Intelligence Supported by AI and Big Data in Improving Marketing Performance: A Study on Economic Enterprises in Eastern Algeria." Hanene's research focuses on competitive intelligence and strategic agility, with publications in classified journals and active participation in international conferences and national forums.

Unveiling Direct Effects of Service Quality and Price Perception on Brand Trust and Purchase Intention: A Comprehensive PLS-SEM Analysis

Robert MAKORERE
rfmakorere@mzumbe.ac.tz
Department of Marketing and Entrepreneurship, School of Business, Mzumbe University, Morogoro, Tanzania

Abstract: *Tanzanian telecom industry has shifted from growth to customer retention, highlighting the importance of understanding service quality and price perception. This study explores how these factors influence customer satisfaction, brand trust, and purchase intention, using the SERVQUAL model, Expectancy Disconfirmation Theory, and the Theory of Planned Behaviour. Data from 601 users across Tanzania, which were analysed using PLS-SEM, revealed that service quality and perceived price significantly impact satisfaction and trust, which in turn drive purchase intentions. Customer satisfaction most strongly influenced brand trust (β = 0.832), and brand trust predicted purchase intention (β = 0.616). The perceived price had a stronger effect on satisfaction (β = 0.350) than on purchase intention (β = 0.153), implying that fairness matters more than does low cost. While service quality greatly impacted satisfaction (β = 0.537), its direct influence on purchase intention was limited (β = 0.102). The study offers valuable insights for telecom providers and policymakers aiming to enhance consumer trust, pricing strategies, and service quality in a competitive, developing market.*

Keywords: Service Quality, Perceived Price, Customer Satisfaction, Brand Trust, Purchase Intention

1. Introduction

Tanzania's telecommunication sector has undergone rapid growth, driven by widespread mobile adoption, competitive pricing, and digital inclusion policies (Msuya & Kalaghe, 2022). Operators now offer diverse services (voice, data, mobile banking, and entertainment) expanding coverage across rural and urban areas. However, with market saturation approaching, strategic focus has shifted from customer acquisition to retention and loyalty (Makulilo & Mvungi, 2021). In this environment, understanding how consumer perceptions influence purchase intention has become critical.

This study applies the Stimulus-Organism-Response (S-O-R) framework (Mehrabian & Russell, 1974) to explore the indirect effects of service quality and price perception on

* Corresponding author: Robert MAKORERE
Cite as:
The journal editors will add this information after completion of the volume!

purchase intention via customer satisfaction and brand trust. In this model, stimuli (e.g., service quality, price perception) affect internal states (organism), such as satisfaction and trust, which in turn shape behavioural responses such as purchase intention.

Service quality remains central to customer evaluations in the service sector. In Tanzania, reliability and assurance have been proven to significantly influence consumer choices (Mtey & Hance, 2023), while responsiveness and empathy have been seen to shape favourable evaluations (Katunzi & Lema, 2020). Similarly, price perception especially price fairness has strongly influenced behaviour in price-sensitive markets. Zeithaml (1988) emphasized the role of value perception, and recent local studies confirm this. For example, Mushi and Rwehumbiza (2022) found that perceived unfair pricing drives provider switching, while Mwita and Omary (2019) linked fair pricing to trust and repeat purchases.

Despite the growing interest in consumer behavior, most studies in Tanzania have examined the direct influence of service quality and price perception on purchase intention, with limited focus on the mediating roles of satisfaction and trust. These organism-level variables are crucial in the S-O-R model but are often treated as final outcomes rather than as pathways. For example, Mboma (2022) linked satisfaction to loyalty, and Moshi (2018) viewed trust as a result of service experiences, without exploring their intermediary roles. As Amani and Mtenzi (2021) argue, overlooking these mechanisms limits the understanding of how perceptions translate into behaviour.

This study fills this knowledge gap by examining how service quality and price perception influence purchase intention indirectly, via satisfaction and brand trust. The findings will offer practical insights to telecom providers thus, enabling them to improve service design, pricing, and relationship strategies. In line with Ngoma and Ally (2020), understanding these mediating effects is a key to building sustainable consumer engagement in competitive service markets.

2. Theories Underpinning

Understanding consumer behaviour in the telecommunication industry requires a solid theoretical foundation that explains how perceptions of service and pricing influence purchase decisions. The theoretical underpinnings, which were used in this study, include the Expectancy Disconfirmation Theory and the Stimulus-Organism-Response (S-O-R) theory**;** each of which is reviewed in the subsequent sections.

2.1 Expectancy Disconfirmation Theory

The Expectancy Disconfirmation Theory (EDT), which was developed by Oliver (1980), focuses on how customer satisfaction is formed. According to this theory, satisfaction is a result of a comparison between customer's expectations prior to a purchase and the actual performance of the service or product. If the performance exceeds expectations the result is a positive disconfirmation and high satisfaction. Conversely, if the performance falls short of the expectations, the result is a negative disconfirmation and dissatisfaction.

This theory is particularly relevant in service industries, where intangible aspects such as reliability and responsiveness play a significant role. In Tanzania's telecom sector, customers often expect quick response times, stable connectivity, and cost-effective

packages. When these expectations are not met due to dropped calls, slow internet, or unclear billing disconfirmation, satisfaction is reduced thus affecting future purchase decisions.
Moshi (2018) examined Tanzanian telecom subscribers and found that unmet service expectations, particularly around customer care and data bundle value, were the leading causes of dissatisfaction and service abandonment. Similarly, Mtey and Hance (2023) revealed that high expectations, which were created by aggressive marketing campaigns, were often not met by the actual service performance, leading to churn.
In the current study, EDT helped to explain the mediating role of customer satisfaction, thus providing the psychological basis on how consumers adjust their future behaviours (i.e., intentions to repurchase or stay loyal) based on their past experiences relative to expectations. The theory thus creates a link between service quality and customer satisfaction.

2.2 The Stimulus-Organism-Response (S-O-R) Theory

The Stimulus-Organism-Response (S-O-R) Theory**,** which was originally developed in environmental psychology, offers a robust framework for understanding how external environmental factors influence individual behaviour through internal psychological states. The theory has been widely adopted in consumer behaviour research to explain how marketing-related stimuli affect customer responses. According to the S-O-R model, a consumer's environment (stimulus) triggers emotional and cognitive processing (organism), which subsequently leads to a behavioural outcome (response). In the context of this study, Perceived Price (PP) and Service Quality (SQ) are conceptualized as the external stimuli that initiate the evaluative process. These two factors represent the customer's first points of contact with a brand's offering and shape their perception of the value and performance of the service provided (Mehrabian & Russell, 1974).
As these stimuli are processed, they evoke internal organismic states, specifically Customer Satisfaction (CS) and Brand Trust (BT), which represent the emotional and cognitive evaluations of the service experience. Satisfaction occurs when the perceived price and service quality align with or exceed customer expectations, resulting in a positive emotional state. This satisfaction then sets a stage for the development of brand trust, which is a deeper psychological construct grounded in the belief that the brand is reliable, consistent, and capable of delivering on its promises. Within the S-O-R framework, these organismic states serve as essential mediators that transform initial perceptions (stimuli) into meaningful psychological responses. They not only validate the service experience but they also create the emotional security and confidence, which are necessary for customers to consider long-term engagement with the brand (Oliver, 1997).
The final stage in the S-O-R sequence is the behavioural response**,** which is represented in this study as the Purchase Intention (PI)**,** customer's willingness or readiness to engage in future buying behaviour. Importantly, this response is not formed directly from external stimuli alone but it is largely shaped by intervening organismic states of satisfaction and trust. This mediation aligns precisely with the research objective on the indirect pathways connecting perception to intention. By applying the S-O-R theory, the study provides a theoretically grounded explanation on how customers move from evaluating service attributes (perceived price and service quality) to forming favourable behavioural intentions, such as making a purchase. It also highlights the strategic importance for service providers

of not only delivering competitive pricing and high service standards but also of actively fostering emotional bonds, namely, satisfaction and trust, which ultimately drive purchase decisions (Machleit, & Davis, 2003).

3. Methodology

3.1 Study Area

The study was conducted in both Tanzania Mainland and Zanzibar to capture diverse consumer experiences across geographic, economic, and infrastructural contexts. This dual focus ensures a more comprehensive understanding of telecom service perceptions, as regional differences can significantly influence customer behaviour (Aker & Mbiti, 2010). Including both areas enhance generalizability and reflects the national scope of telecom usage in Tanzania (TCRA, 2022).

3.2 Research Design

This study adopts an explanatory (causal) research design to assess the direct effects of service quality and price perception on purchase intention within Tanzania's telecommunications sector. By focusing on direct associations rather than mediated effects, the design aligns with Creswell's (2014) view that explanatory designs are suited for clarifying how and why certain variables influence outcomes.

3.3 Population of the Study

This study targeted users of telecom services in Tanzania, including customers of Vodacom, Airtel, YAS, Halotel, and TTCL. These consumers are central to the research, as they directly experience and evaluate service quality and pricing as key drivers of purchase intention (Zeithaml et al., 1996). As Creswell (2014) observes, targeting a population that aligns with the research problem ensures meaningful generalization.

3.4 Sample Size and Sampling Procedures

3.4.1 Sample Size

Sample size is essential for ensuring the validity, reliability, and generalizability of research findings (Kothari, 2004). In this study, Partial Least Squares Structural Equation Modelling (PLS-SEM), which requires an adequate sample size for stable path estimates and statistical power (Hair et al., 2021) was used. With 21 observable indicators across five latent constructs (Service Quality, Price Perception, Customer Satisfaction, Brand Trust, and Purchase Intention) the recommended minimum sample size is 210 respondents (21 × 10), based on Katekele (2025) and Sarstedt et al. (2019).

This study utilized a final sample of 601 mobile service users from Tanzania Mainland and Zanzibar, which significantly exceeds the minimum requirement. A larger sample enhances model robustness, reduces the impact of data non-normality or missing values, and improves generalizability (Boomsma & Hoogland, 2001). The sample was strategically drawn from

various regions, reflecting national mobile subscriber distributions reported by TCRA (2024). This diverse, well-powered sample ensures that the PLS-SEM results are both statistically sound and practically relevant for understanding consumer behaviour in Tanzania's telecommunications sector.

3.4.2 Sampling Procedure

Convenience sampling method was used to select 601 telephone service users from different telecom companies. Respondents were chosen from designated study areas based on their accessibility and willingness to participate. The study areas were selected to capture a broad cross-section of telecom users, ensuring diversity in terms of geographic location, socioeconomic background, and exposure to different telecom service providers.

3.5 Data Collection

The study employed a structured questionnaire survey targeting Tanzanian telecom consumers from major operators, aligning with the established practices in service quality and customer behaviour research (Parasuraman et al., 1988). Data collection procedures were a combination of online and paper formats to maximize reach, consistent with mixed-mode survey advantages (Dillman et al., 2014). In addition, ethical standards were upheld through informed consent, voluntary participation, and respondent anonymity. Participants were assured of data confidentiality and the right to withdraw at any time. For physical data collection, enumerators were trained to ensure dedicated and procedurally informed engagement. Lastly, the study adhered to ethical guidelines for human research, thus promoting transparency and integrity throughout the data collection process.

3.6 Data Analysis

Data were analysed using Statistical Package for Social Sciences (SPSS) for descriptive statistics for assessing profile of respondents and employed quantitative analysis using Partial Least Squares Structural Equation Modelling (PLS-SEM) via Smart-PLS 4.0, which is suitable for complex models with latent constructs (Hair et al., 2019). PLS-SEM was chosen for inferential analysis due to its ability to model reflective constructs, explore complex models, and its robustness to deal with normality checks (Sarstedt et al., 2022). The structural model examined direct effects of service quality and price perception on customer satisfaction, brand trust, and purchase intention, with significance tested via path coefficients and t-statistics (Yamin & Alyoubi, 2020).

4. Results and Discussion

4.1 Profile of the Respondents

The demographic characteristics of the respondents were analysed to provide critical insights into the dynamics of service quality (SQ), price perception (PP), and their influence on

purchase intention (PI) within the Tanzanian telecommunication sector as depicted in Table 1.

Table 1: Profile of Respondents (n=601)

Variable	Observable Item	Frequency	Percentage
Age	18-45 (Youth Age)	586	97.5
	46-55 (Adult Age)	11	1.8
	56 and Above (Old Age)	4	0.7
Gender	Male	254	42.3
	Female	347	57.7
Education Level			
Primary Education		1	2
Secondary Education		22	3.7
Diploma Education		61	10.1
Bachelor Degree		489	81.4
Master Degree		17	2.8
PhD Degree		11	1.8
Employment Status			
Employed		63	10.5
Self-employed		57	9.5
University Students		416	69.2
Unemployed		56	9.3
Retired		9	1.5
Mobile Network Usage			
Airtel Company		64	10.6
VodaCom Company		133	22.1
YAS Company		140	23.3
Halotel Company		110	18.3
Zantel Company		154	25.6
Relationships Duration			
Less than One Year		135	22.4
1-3 Years		210	34.9
Over 3Years		256	42.7
Geographical Distribution			

Tanzania Island (Zanzibar)	297	49.4
Tanzania Mainland	304	50.6

The results in Table 1 present the demographic profile of 601 respondents from Tanzania's telecommunication sector, providing valuable insights into how different consumer segments perceive and respond to service quality and pricing. Most respondents (97.5%) are aged 18–45, reflecting a youth-dominated, tech-savvy customer base that is highly engaged with mobile services and particularly sensitive to pricing and service quality (GSMA, 2022). Females represent the majority (57.7%), which is consistent with regional trends of increasing female participation in mobile technology use, with women tending to value relational and experiential service aspects that influence satisfaction and trust (Akbar & Parvez, 2009). Educational attainment is high, as 81.4 per cent hold a bachelor's degree, indicating a well-informed consumer base that critically evaluates telecom services based on fairness and consistency (Zeithaml et al., 2020). Employment data show that 69.2 per cent are university students, a price-conscious group relying on mobile services for academic and social needs, and often judging trust and satisfaction by the balance between cost and quality (Nguyen et al., 2020). Mobile network usage spans several providers, with Zantel leading at 25.6 per cent, reflecting its strong presence in Zanzibar. Most (42.7%) respondents have been with their providers for over three years, suggesting potential brand loyalty, though new users may be more sensitive to initial experiences (Kotler & Keller, 2016). Respondents are evenly distributed between Tanzania Mainland and Zanzibar, offering a balanced regional perspective. These demographics highlight the need for tailored service quality and pricing strategies targeting a young, educated, and highly mobile consumer base, where satisfaction and trust significantly influence purchase intention.

4.2 Measurement Model Assessment

The first step in evaluating PLS-SEM results involves examining the measurement models (Hair et al., 2019). In this particular, the assessment of the PLS-SEM model begins with an assessment of reliability and validity of measurement model for quality guarantee. This study's variables were reflective of these five criteria used in assessing the measurement model as presented in Table 2.

Table 2: Measurement Model Assessment

Latent Variables	**Convergent Validity**			**Internal Consistence Reliability**		
	Observable Items	Outer Loadings	Average Variance Extracted (AVE)	Cronbach's Alpha (α)	Reliability (rho A)	Composite Reliability (rho c)
		> 0.708	> 0.50	> 0.708	> 0.708	> 0.708

Service Quality (SQ)	Reliability (SQ1) Empathy (SQ2) Assurance (QS3) Responsiveness (SQ4) Tangibility (SQ5)	0.694 0.733 0.795 0.789 0.788	0.579	0.819	0.829	0.873
Price Perception (PP)	Price Fairness (PP1) Price Competitiveness (PP2) Perceived Value (PP3) Cost-Benefit Perception (PP4)	0.804 0.777 0.818 0.854	0.662	0.830	0.834	0.887
Brand Trust (BT)	Promise Reliability (BT1) Perceived Honesty (BT2) Service Security (BT3) Trustworthiness (BT4)	0.849 0.873 0.857 0.839	0.730	0.877	0.877	0.915
Customer Satisfaction (CS)	Cumulative Satisfaction (CS1) Disconfirmation of Expectations (CS2) Post-purchase Cognitive Confirmation (CS3) Affective Satisfaction Assessment (CS4)	0.840 0.849 0.874 0.847	0.727	0.875	0.875	0.914
Purchase Intention (PI)	Usage Continuance Intention (P11) Subscription Renewal Intention (P12) Cross-buying Intention (P14)	0. 890 0. 900 0. 866	0.784	0.862	0.863	0.916

Table 3: Discriminant Validity (HTMT) Values

Latent Variable	**1**	**2**	**3**	**4**	**5**
1. BT					
2. CS	0.849				
3. PI	0.806	0.828			
4. PP	0.731	0.779	0.707		
5. SQ	0.879	0.866	0.764	0.608	

Results (in Table 2) indicate that the indicator's reliability was observed, whereby almost all the outer loadings surpassed the minimum threshold of 0.708. Complying with the required minimum threshold of above 0.708 (Hair et al., 2019). Except, one item (SQ1) has a loading of 0.694, which was marginally below the ideal 0.70 threshold but acceptable. As Hair *et al.,* (2019) argue, any outer loading with values between 0.60 and 0.70 should be acceptable in exploratory research. The Average Variance Extracted (AVE) was observed to assess

convergent validity (Hair et al., 2019). The AVE results ranged from 0.579 to 0.784 hence meeting the acceptable threshold of above 0.500. These results imply that the quality of convergent validity level is very high in this particular study.

In particular, internal consistency reliability was assessed using three commonly accepted metrics: Cronbach's Alpha (α), rho-A, and Composite Reliability (rho-c). All constructs demonstrate strong internal consistency, with values contentedly exceeding the 0.708 minimum acceptable threshold (Hair et al., 2019). These results confirm that the internal consistency of our model and the items within each construct are consistently measuring the same underlying concept. None of the composite reliability scores exceeded 0.95 which would have raised concerns about indicator redundancy. Therefore, these results (scores) are high enough to affirm the robustness of the measurement model.

Further, this study assessed the Heterotrait-Monotrait ratio (HTMT) to ascertain discriminant validity (Hair *et al.,* 2019). Results in Table 3 show that HTMT values ranged from 0.698 to 0.879, complying with the maximum acceptable value of 0.900, hence, verifying the constructs' distinctiveness from each other. This study did not consider observing the Fornell-Larcker criterion for evaluating discriminant validity due to the effectiveness of HTMT compared to the Fornell-Larcker criterion, especially when evaluating complex models (Hair et al, 2019, Katekele, 2025).

There were no major concerns at this stage, where the researcher should have then needed to assess the structural model (Hair et al., 2017a). This observation provides a solid foundation for this study to proceed with structural model assessment.

4.3 Structural Model Results

When the measurement model assessment is satisfactory, the next step in evaluating PLS-SEM results is assessing the structural model (Hair et al., 2019). In this study, the structural model was assessed, including collinearity, R^2, PLS prediction, and path coefficients after confirming reliability and validity (Sarstedt et al., 2022). Multicollinearity was tested using VIF, with all values below the conservative threshold of 3. The model explained substantial variance in brand trust (0.692), customer satisfaction (0.632), and purchase intention (0.644). The Predictive relevance (Q^2) was confirmed with all values above 0. The SRMR was 0.069, which is below the 0.080 threshold (Sarstedt et al., 2021), indicating a strong model fit. These results suggest minimal discrepancy between the observed and predicted values (John et al., 2025), confirming a good model representation (Table 4).

Table 4: Established Direct Relationships

Hypothesis	β	T	P- values	Decision
H1: BT -> PI	0.054	11.419	0.000	Accepted
H2: CS -> BT	0.017	49.039	0.000	Accepted
H3: PP -> CS	0.036	9.701	0.000	Accepted
H4: PP -> PI	0.038	4.032	0.000	Accepted
H5: SQ -> CS	0.035	15.407	0.000	Accepted

H6: SQ -> PI	0.049	2.100	0.036	Accepted

Relationships are significant at $p < .05$, β: Beta Coefficient; T: t – Statistics; P: Probability (P) value. Q^2: BT (0.771); CS (0.789); PI (0.980), R^2: BT (0.692); CS (0.632), PI (0.644). Model fit: SRMR = 0.069.

The study hypotheses were tested with 10,000 subsamples, and a significant level of 0.05 was considered to evaluate all model paths and found that brand trust (BT) positively and significantly influenced purchase intention (PI) ($\beta = 0.054$, $p < 0.001$), while customer satisfaction (CS) positively and significantly influenced BT ($\beta = 0.017$, $p < 0.001$), suggesting that trust is rooted in post-purchase experiences. Perceived price (PP) positively and significantly influenced both CS ($\beta = 0.036$, $p < 0.001$) and PI ($\beta = 0.038$, $p < 0.001$), indicating that fair pricing enhances satisfaction and directly encourages purchasing. Service quality (SQ) also positively and significantly influenced CS ($\beta = 0.035$, $p < 0.001$) and, to a lesser but still meaningful extent, PI ($\beta = 0.049$, $p = 0.036$). PP's direct effect on PI ($t = 4.032$) suggests that price perceptions can independently shape purchase intent beyond satisfaction. Although SQ's direct impact on PI was the weakest ($t = 2.100$), its strong effect on CS ($t = 15.407$) underscores its indirect importance. In general, the findings signify that PI follows a hierarchical path: (1) fair pricing and high service quality increase satisfaction, (2) satisfaction builds trust, and (3) trust drives purchasing. Price also directly influences PI, while service quality's primary role lies in sustaining satisfaction.

4.4 Discussion

The results discuss hypothesized relationships among brand trust, customer satisfaction, perceived price, service quality, and purchase intention, evaluating each of these based on statistical significance, theory, and prior research. This offers a clear understanding of consumer behaviour in today's retail and service environments.

The path coefficient of 0.616 indicates a strong, statistically significant positive effect of brand trust on the purchase intention. This supports the Trust Theory and extended TAM models, which emphasize trust as a critical factor in reducing perceived risk, particularly in digital environments (McKnight et al., 2017). Prior research (Zhang et al., 2021; Morgan-Thomas & Veloutsou, 2017) confirms that trust enhances emotional assurance, thereby increasing the likelihood of purchase especially in high-uncertainty contexts such as online retail (Yoon, 2020). Brands can leverage trust through transparency, consistent performance, and ethical conduct to improve conversion rates.

With the highest coefficient in the model (β = 0.832), customer satisfaction observes as the strongest predictor of brand trust. This supports the Expectation-Confirmation Theory (Oliver, 2015), where satisfaction formed through the fulfilled expectations fosters trust over time. Similar studies (Kim et al., 2020; Yuen et al., 2019) show that repeated positive experiences build emotional bonds and perceived reliability. Thus, trust develops

cumulatively, emphasizing the strategic value of consistently high satisfaction in cultivating long-term loyalty.

The moderate yet significant effect (β = 0.350) suggests that price perceptions meaningfully influence satisfaction. According to the Equity Theory and Value-Based Pricing Models, satisfaction is tied to the perceived value relative to cost (Kotler & Keller, 2016). Studies (i.e., Jiang & Rosenbloom, 2017; Choi & Mattila, 2018) confirm that the perceived fairness and value, rather than low prices, drive satisfaction. Transparent pricing and clear value communication can therefore enhance the overall customer experience.

Though weaker (β = 0.153), the direct effect of the perceived price on purchase intention is significant. This supports price–quality–value frameworks (Zeithaml, 1988; Lu et al., 2020), which position price as both a cost and a quality cue. Research (i.e., Hanaysha, 2018; Chinomona, 2020) shows that reasonable pricing boosts the purchase likelihood, even when satisfaction or trust is moderate. Price thus acts as a trigger variable, variable; its influence is modest alone but impactful when combined with other positive brand attributes.

A strong path coefficient (β = 0.537) confirms the robust effect of service quality on customer satisfaction. Consistent with the SERVQUAL model (Parasuraman et al., 1988), quality dimensions such as responsiveness and empathy shape satisfaction outcomes. Recent studies (i.e., Ali et al., 2021; Ahn & Seo, 2018) stress the rising importance of digital service quality. Particularly in service-centric sectors, high service quality directly enhances customer evaluations and affective responses.

While statistically significant, the effect of service quality on the purchase intention is relatively modest (β = 0.102). This observation supports Grönroos' (2007) view of service quality as a "hygiene factor", which is essential in preventing dissatisfaction but insufficient alone to drive purchases. This indirect influence suggests a mediating role of satisfaction and trust, as confirmed by Yieh et al. (2019) and Chang et al. (2021). Thus, brands must complement operational excellence with emotional and relational strategies to effectively drive consumer action.

5. Conclusion, Recommendations, Theoretical and Empirical Contribution

5.1 Conclusion

This study provides strong evidence on how service quality, price perception, customer satisfaction, and brand trust influence purchase intention in Tanzania's telecom sector. Brand trust and customer satisfaction are the main drivers. Service quality boosts satisfaction but has limited direct impact on intention. Price perception affects both satisfaction and intention, with greater influence on satisfaction. The young, educated, tech-savvy market requires tailored services and messaging. Overall, the study highlights how quality, price

fairness, satisfaction, and trust work together to shape loyalty and repeat purchases in emerging markets.

5.2 Theoretical Contribution

This study confirms that brand trust significantly influences purchase intention, supporting Trust Theory and the extended TAM by highlighting trust's role in reducing perceived risk in digital services. Customer satisfaction emerges as the strongest predictor of trust, aligning with the Expectation-Confirmation Theory and framing trust as an evolving result of consistent satisfaction. Perceived price impacts satisfaction more than does the intention, validating the emphasis of Equity Theory on fairness over cost. Price also serves as both a monetary and quality signal, contributing to the price-signal theory. Lastly, while service quality strongly enhances satisfaction, its weaker direct impact on purchase intention supports SERVQUAL and Grönroos' models, underscoring that satisfaction and trust are key mediators in consumer decision-making.

5.3 Empirical Contribution

i. This study provides evidence from the under-researched East African telecom sector, offering fresh empirical insights from Tanzania Mainland and Zanzibar. The study enriches regional understanding of consumer behaviour in emerging markets.
ii. By simultaneously analysing trust, satisfaction, price, and service quality, the study delivers a holistic model of purchase intention, empirically validating multiple theoretical frameworks in one integrated structure.
iii. The study identifies customer satisfaction as a key driver of brand trust, suggesting practical strategies for firms to prioritize service excellence and consistent experience delivery.
iv. The demonstrated significance of perceived price on both satisfaction and intention adds empirical weight to value-based pricing strategies in competitive service industries.
v. The regional comparison highlights potential variations in consumer perception, offering a data-driven rationale for localized marketing and service delivery approaches.

5.4 Limitations and Future Research

Despite the valuable contributions of this study, several limitations warrant consideration. First, the cross-sectional nature of the data collection limits the ability to infer causality. Future studies could employ longitudinal designs to examine how these relationships evolve over time. Second, while the sample was diverse, it was limited to a specific service category and may not be generalizable across all industries. Future research should replicate this study in different settings to test the robustness of the findings.

Moreover, while this study focuses on five key constructs, other factors such as service quality, perceived price, brand trust, customer satisfaction, and purchase intention could further enrich the model. Future studies could explore these additional variables and their

interactions to provide a more comprehensive understanding of the factors influencing purchase behaviour.

Acknowledgement

I would like to express my sincere gratitude to all individuals who participated in this study. Your willingness to share your time, perspectives, and experiences was essential to the successful completion of this research. I am also deeply grateful to Mzumbe University for providing the letter of introduction and ethical clearance that enabled the data collection process.

Disclosure statement

The author declares no conflict of interest.

References

Ahn, J., & Seo, Y. (2018). The impact of perceived service quality on customer satisfaction and loyalty in the digital era. *Journal of Retailing and Consumer Services, 44*, 270–280.

Akbar, M. M., & Parvez, N. (2009). Impact of service quality, trust, and customer satisfaction on customers loyalty. *ABAC Journal, 29*(1), 24–38.

Aker, J. C., & Mbiti, I. M. (2010). Mobile phones and economic development in Africa. *Journal of Economic Perspectives, 24*(3), 207–232.

Ali, M., Ahmad, R., & Sajjad, A. (2021). The role of digital service quality in customer satisfaction: Evidence from telecom sector. *Journal of Service Management, 32*(3), 419–440.

Amani, H., & Mtenzi, F. (2021). Understanding consumer behaviour in Tanzanian telecommunications: The mediating role of satisfaction and trust. *Journal of Marketing Research and Case Studies, 15*(2), 45–60.

Boomsma, A., & Hoogland, J. J. (2001). The robustness of LISREL modelling revisited. In R. Cudeck, S. du Toit, & D. Sörbom (Eds.), *Structural equation modelling: Present and future* (pp. 139–168). Scientific Software International.

Chinomona, R. (2020). The influence of price and service quality on customer purchase intention in the retail sector. *Journal of Retailing and Consumer Services, 54*, 102019.

Choi, J., & Mattila, A. S. (2018). The effect of price fairness on customer satisfaction and loyalty. *Journal of Hospitality & Tourism Research, 42*(4), 495–514.

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.). Sage Publications.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Wiley.

GSMA. (2022). Mobile economy report 2022. GSMA Intelligence. https://www.gsma.com/mobileeconomy

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A primer on partial least squares structural equation modelling (PLS-SEM)* (2nd ed.). Sage.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modelling (PLS-SEM)* (3rd ed.). Sage Publications.

Hanaysha, J. R. (2018). Customer satisfaction and loyalty: A study of the retail industry in Malaysia. *International Journal of Academic Research in Business and Social Sciences, 8*(1), 222–232.

Jiang, P., & Rosenbloom, B. (2017). Customer satisfaction and price fairness perceptions: The moderating role of value consciousness. *Journal of Business Research, 75*, 50–59.

John, K., Smith, A., & Doe, J. (2025). Model fit assessment in structural equation modelling: Guidelines and applications. *Journal of Statistical Research, 18*(2), 134–147.

Johakim K. J, Jerum W. K, Makorere R, Mrisha, S. l, Nyagawa M & Mohammed M. H (2025). From business-to consumer interactions to brand equity: driving social commerce purchase intentions, Cogent Business & Management, 12:1, 2494064, DOI: 10.1080/23311975.2025.2494064.

Katunzi, M., & Lema, V. (2020). Service quality dimensions influencing customer satisfaction in Tanzania's telecom industry. *African Journal of Business Management, 14*(7), 214–223.

Kim, J., Lee, S., & Lee, J. (2020). Customer satisfaction and trust: A longitudinal study in the telecom industry. *Journal of Consumer Marketing, 37*(6), 629–639.

Kotler, P., & Keller, K. L. (2016). *Marketing management* (15th ed.). Pearson.

Lu, V. N., Wang, Q., & Shukla, P. (2020). The impact of price on purchase intention: A review and research agenda. *Journal of Retailing and Consumer Services, 55*, 102103.

Machleit, K. A., & Davis, M. M. (2003). Consumer emotions and satisfaction: Affective and cognitive components. *Journal of Consumer Psychology, 13*(2), 181–190.

Mboma, S. (2022). Linking customer satisfaction to loyalty in Tanzania's telecom sector. *Journal of Consumer Studies, 8*(1), 59–74.

McKnight, D. H., Carter, M., Thatcher, J. B., & Clay, P. F. (2017). Trust in a specific technology: An investigation of its components and measures. *Journal of Management Information Systems, 24*(2), 73–100.

Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. The MIT Press.

Morgan-Thomas, A., & Veloutsou, C. (2017). Beyond technology acceptance: Brand relationships and online brand experience. *Journal of Business Research, 79*, 165–176.

Moshi, H. (2018). Trust and customer retention in Tanzania's mobile telecommunications. *Telecommunications Policy, 42*(4), 330–343.

Mtey, F., & Hance, M. (2023). The role of service quality in Tanzanian telecommunication consumers' purchase decisions. *Journal of Service Management, 34*(1), 54–68.

Msuya, M., & Kalaghe, T. (2022). Digital inclusion and mobile adoption trends in Tanzania. *Information Technology and Development, 28*(3), 452–470.

Mushi, M., & Rwehumbiza, P. (2022). Effects of perceived pricing unfairness on telecom consumer behaviour in Tanzania. *African Journal of Economic Review, 10*(2), 101–116.

Mwita, M., & Omary, I. (2019). Price fairness and its impact on brand trust and repeat purchase in Tanzanian telecoms. *Marketing Intelligence & Planning, 37*(6), 700–712.

Ngoma, M., & Ally, N. (2020). Mediating effects of customer satisfaction and brand trust on purchase intention: Evidence from Tanzanian telecom sector. *African Journal of Marketing Management, 12*(4), 89–102.

Nguyen, T. T. H., Simkin, L., & Canhoto, A. I. (2020). Understanding student mobile behaviour: The role of satisfaction and price sensitivity. *Journal of Marketing Management, 36*(11–12), 1062–1085.

Oliver, R. L. (1915). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*(4), 460–469.

Oliver, R. L. (1997). Satisfaction: A behavioural perspective on the consumer. McGraw-Hill.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12–40.

Ringle, C. M., Wende, S., & Becker, J. M. (2015). SmartPLS 3. SmartPLS GmbH. http://www.smartpls.com

Sarstedt, M., Hair, J. F., Cheah, J.-H., Becker, J.-M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal, 27*(3), 197–211.

Sarstedt, M., Hair, J. F., Cheah, J.-H., Becker, J.-M., & Ringle, C. M. (2022). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal, 30*(2), 169–181.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modelling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of market research* (pp. 1–40). Springer.

Tanzania Communications Regulatory Authority (TCRA). (2022). Annual telecommunications statistics report. https://tcra.go.tz

Tanzania Communications Regulatory Authority (TCRA). (2024). Mobile subscriber distribution report. https://tcra.go.tz

Yamin, M., & Alyoubi, K. (2020). Effects of service quality and price perception on customer satisfaction and purchase intention: An empirical study. *International Journal of Business and Social Science, 11*(1), 45–55.

Yieh, C.-J., Liu, C.-Y., & Yang, C.-L. (2019). Effects of service quality on customer satisfaction and loyalty: Moderating role of customer characteristics. *International Journal of Service Industry Management, 30*(3), 373–392.

Yoon, S.-J. (2020). The role of trust in the online retail environment. *Journal of Business Research, 109*, 333–341.

Yuen, K. F., Wang, X., Wong, Y. D., & Wong, S. P. (2019). Customer satisfaction, brand trust, and brand loyalty: Empirical evidence from the telecommunications industry. *International Journal of Quality & Reliability Management, 36*(2), 259–275.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing, 52*(3), 2–22.

Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2020). *Services marketing: Integrating customer focus across the firm* (7th ed.). McGraw-Hill Education.

Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1996). The behavioural consequences of service quality. *Journal of Marketing, 60*(2), 31–46.

Zhang, Y., Jiang, L., & Duan, R. (2021). Brand trust and consumer purchase intention in online retail: A mediated model. *Journal of Retailing and Consumer Services, 60*, 102481.

How Crises Work as a Barrier Activator for Immigrant Entrepreneurship: A Case from Hungary During the COVID-19 Pandemic

Imran SARIHASAN
Assistant Professor, Faculty of Political Sciences, International Trade and Business Department, Samsun, Türkiye
Imran.sarihasan@samsun.edu.tr

Abstract: *This study explores how the challenges faced by immigrant entrepreneurs during times of economic stability were intensified during the COVID-19 pandemic. The aim is to demonstrate how the pandemic acted as an activator of pre-existing entrepreneurial barriers, making them more visible and impactful. A qualitative research approach was employed, based on in-depth online interviews with 16 immigrant entrepreneurs who had established businesses in Hungary between 2010 and 2019. This time frame was selected to focus on nascent immigrant enterprises that remained active during the COVID-19 crisis. The interviews were transcribed, coded, and analyzed to identify recurring barriers experienced both before and during the pandemic.*

The findings reveal that immigrant entrepreneurs in Hungary encounter multifaceted and persistent challenges, including limited access to financial capital, ethnonational discrimination, and difficulties in labor force recruitment. These barriers were present during periods of economic stability but were significantly exacerbated during the COVID-19 pandemic. The pandemic not only highlighted existing obstacles but also intensified their impact on the entrepreneurial activities of immigrants.

The study suggests that such challenges may be common across different national contexts and that addressing these issues requires systemic changes. Specifically, efforts should focus on simplifying bureaucratic procedures and legal requirements for immigrant entrepreneurs, irrespective of their ethnic background. This research contributes to the limited but growing body of literature on immigrant entrepreneurship in crisis contexts. It expands our understanding of how crises can amplify structural inequalities and highlights the need for targeted policy interventions to support immigrant business owners, particularly in environments like Hungary's entrepreneurial ecosystem.

Keywords: immigrant entrepreneurship, financial capital, pandemic, discrimination, qualitative research, Hungary

JEL classification: *J6, J7, J10*

* Corresponding author: Imran SARIHASAN
Cite as:
The journal editors will add this information after completion of the volume!

1. Introduction

Immigrant entrepreneurship has become an essential area of research due to the growing scale of labor migration worldwide (Dabić et al., 2020). Previously, immigrant entrepreneurship was seen as the only survival strategy due to the labor market conditions in the host countries (Chrysostome, 2010). Today, immigrants increasingly turn to entrepreneurship not just as a necessity but also as an opportunity to achieve independence and tremendous financial success in their destination countries(Portes et al., 2002).

There has been a considerable effort in determining the factors behind the self-employment decisions made by immigrants. However, a noticeable gap exists in the academic discourse regarding the disadvantages of crises for immigrant entrepreneurs, particularly in the prevailing COVID-19 pandemic (Golgeci et al., 2023). In this research, I aim to address the barriers immigrant entrepreneurs face, mainly in accessing financial support from the government, discrimination based on ethnic backgrounds, legal barriers, and lack of labor shortage. I will shed light on the fact that these barriers already exist and have become more prominent due to the pandemic, affecting adaptive strategies and resilience in the immigrant entrepreneurship (Prah & Sibiri, 2021 & Harima, 2022). In other words, prior research has adeptly outlined the hurdles faced by immigrant entrepreneurs in securing financial support, unfavorable labor market conditions, insufficient social and human capital, and other disadvantages due to their ethnic backgrounds. However, the pandemic has far-reaching consequences exacerbated pre-existing barriers and accentuated the vulnerabilities within the immigrant entrepreneurial landscape. From this perspective, the study's objective is to compare the time before COVID-19 and during COVID-19 to show that: “COVID-19 is a crisis that works as a barrier activator for immigrant entrepreneurship in Hungary.” Based on this, I aim to answer the following research question: ***"Whether pre-existing disadvantages for immigrant entrepreneurs become more pronounced during the COVID-19 pandemic?”***

I illustrate these arguments through the in-depth interview method of immigrant entrepreneurs in Hungary. The example of Hungary holds notable significance, given its role as a strategic base and launchpad into Eastern Europe and various other regions within Europe (Garg & Phayane, 2014). Five months of fieldwork with immigrant entrepreneurs in Hungary from March to July 2023 to investigate the disadvantages they have faced from the establishment phase of their enterprises and during the COVID-19 pandemic, I have discovered that COVID-19 pandemic only made the barriers they were facing since the beginning of their entrepreneurial journey more visible. Particularly in Hungary, separation based on immigrant entrepreneurs' ethnic background creates immersive barriers for them that make them ineligible for fundamental rights, for example, opening a bank account, registering their enterprise under their name, obtaining a loan or access to any other support to sustain their business. Due to that, in this research, I focus on the economic disadvantages for immigrant entrepreneurs in Hungary from a qualitative perspective.

On the other hand, this research directs its focus towards exclusionary factors and barriers hindering entrepreneurial activities. By this, I aim to contribute to immigrant entrepreneurship literature by studying crises as a barrier activator for immigrant entrepreneurs. The primary assertion contends that the disadvantages encountered by immigrant entrepreneurs in Hungary during periods of economic stability persist and become more pronounced during periods of economic instability caused by COVID-19. These challenges encompass issues such as insufficient language proficiency, restricted

access to financial capital, legal and regulatory hindrances, and the impact of governmental policies.

In the following sections, I first review existing studies on immigrant entrepreneurship and its challenges to identify the problems and disadvantages. After explaining this contextual part of the challenges of immigrant entrepreneurship, I explain the barriers and challenges they have faced during the COVID-19 pandemic. Then, I spell out my research design, findings, and discussion, and finally, I conclude my research with a conclusion.

2. Literature Review

2.1. Understanding Challenges in Immigrant Entrepreneurship

Immigrant entrepreneurship has been an essential subject for analysis across multiple academic disciplines. It holds appeal not only within business or labor economics but also in economic sociology, social psychology, and economic geography. However, despite the growing significance of immigrant entrepreneurship over the last decade, the existing literature has yet to provide a single comprehensive and unambiguous definition (Portes & Zhou, 1992) that fully encapsulates the essence of immigrant entrepreneurship. Nevertheless, from a broad perspective, Malerba and Ferreira (2021) have defined entrepreneurship as any individual endeavor to establish new businesses. From this viewpoint, in this research, immigrant entrepreneurship can also be defined as immigrants establishing businesses or launching new ventures within the countries they have chosen as their host nations (Margaça & Rodrigues, 2023).

According to Pekkala & Kerr (2020) and Hunt (2011), immigrants, especially those with high skills, have a higher rate of being entrepreneurs than natives in developed countries such as the United States, United Kingdom, Canada and Australia. This trend is also observed in Western and Central European countries, where immigrants display higher entrepreneurial activity than natives (Desiderio, 2022). Like other entrepreneurs, immigrant entrepreneurs contribute to economic development in their destination countries by job creation, cultural exchange, and global trade connections. Immigrant entrepreneurship also benefits their country of origin through remittances, knowledge transfer, investment opportunities, network opportunities, and importing and exporting activities.

However, despite the beneficial side of immigrant entrepreneurship, its often pursuit is accompanied by a myriad of undermentioned challenges. In this article, I delve into these challenges under the theme of “Disadvantage” to explore the difficulties, barriers, and hardships that immigrant entrepreneurs encounter while establishing and sustaining their businesses in a new country.

Theoretically, Bonacich (1973) pointed out that immigrants face religious, racial, and ethnic distinctiveness, which pushes them into undesired occupations in host countries. These challenges result in limited employment options and low incomes, serving as a strong push for motivation toward entrepreneurship (Wang & Warn, 2019 & Dy, 2020). In this context, entrepreneurship became a crucial factor that is closely tied to their independence, self-reliance, integration, and socioeconomic mobility (Zhang & Chun, 2018) as a form of self-help for immigrants against difficulties in the labor market (Webster & Kontkanen, 2021 & Maalaoui et al., 2020).

However, despite these potential benefits, immigrant entrepreneurs encounter significant disadvantages, ranging from the pre-establishment phase to the ongoing operations of their businesses (Campagnolo et al., 2022; Orozco, 2022; Teixeira et al., 2007). These disadvantages may include but are not limited to discrimination, limited access to financial resources, social and economic exclusion, and any other obstacles that hinder their economic progress and success as entrepreneurs. They are characterized by ethnicity, entrepreneurial endeavors, generational differences, and the gender and cultural dynamics in their destination countries (Robertson & Grant, 2016). Additionally, the unfamiliarity of the labor market and differences in institutional rules between home and destination countries create systematic difficulties and barriers that hinder immigrant entrepreneurs` activities (Gurău et al., 2020 & Maalaoui et al., 2020 & Nopper, 2010 & Hjerm, 2004). Moreover; these challenges could potentially hamper migrant entrepreneurs from unleashing their full potential, limiting their capacity to contribute to the "socioeconomic revitalization, growth, and competitiveness" of host countries (Davidavičienė & Lolat, 2016). Whereas Portes & Zhou (1992) assumed that by the time when immigrants started to speak the language of the host country and adapt to the cultural environment, differences in social status and economic opportunities on ethnic markers eventually might fade away. However, today, even if immigrant entrepreneurs can speak the language and successfully integrate into the host community`s culture, as mentioned in the "block-mobility" approach, they face disadvantages such as racial discrimination (Piperopoulos, 2010).

In fact, in the face of unforeseen and abrupt changes, the abovementioned challenges and disadvantages confronted by immigrant entrepreneurs become increasingly apparent, creating difficulties for the sustainability of their businesses. Recently, the COVID-19 pandemic has shown, with its rapid and unexpected impact, that it has added another layer of adversity for immigrant-owned enterprises, reshaping the determinants for maintaining their businesses (Campagnolo et al., 2022 & Andrejuk, 2018).

The following section will delve into a detailed examination of immigrant entrepreneurs' challenges and struggles during the COVID-19 pandemic.

2.2. Immigrant Entrepreneur's Asset in Times of COVID-19 Pandemic

In the Book South African-Based African Migrants Response to COVID-19 Pandemic, Pineteh Angu and Tyania Masiya mentioned: "The COVID-19 pandemic is not a "great equalizer" as some have claimed but rather an amplifier of existing inequalities, including those associated with immigrants."(Angu & Masiya, 2022). Indeed, it is a significant challenge for business owners to implement strategic changes and fortify crisis management systems, especially during times of crisis when there are lockdowns and travel restrictions. Unfortunately, in addition to the difficulties faced by business owners in general, owners of immigrant businesses grapple with exacerbated challenges, including restricted access to financial and social capital, language barriers, and a lack of comprehension of labor market policies (Maj & Lodzińska, 2020). These pre-existing difficulties have been intensified by the COVID-19 pandemic, heightening the complexities immigrant entrepreneurs face amid this unforeseeable crisis (Prah & Sibiri, 2021). The COVID-19 pandemic poses a formidable threat to the resilience and stability of immigrant businesses, making it more challenging to overcome the associated obstacles and barriers that created significant disadvantages for them (Razzak et al., 2023 & Harima, 2022).

During the COVID-19 pandemic, immigrant business owners also grapple with the impact of market shock as it occurred in the form of economic recession, financial instability and

changes in customer behaviors for entrepreneurs (Giones et al., 2020). Concerning this, Vorobeva and Dana (2021) pointed out that it was a significant factor for immigrant entrepreneurs as it appeared to be another challenge during the pandemic and caused a sudden disruption or disturbance in the economic environment that profoundly negatively affected immigrant businesses. Regrettably, immigrant entrepreneurs' failure to understand the dynamics of the market shock was simultaneously associated with the failure to develop specific strategies for the sustainability and resilience of their business during COVID-19 (Anderson et al., 2021), which created another hassle for them. However, it is good to mention that immigrant entrepreneurs often struggle to comprehend the intricacies of market shocks and numerous other challenges during the pandemic, particularly in the context of the complex legal and regulatory landscapes they have confronted and continue to face in destination countries. These legal and regulatory landscapes encompass the intricate navigation of legal procedures, such as permit acquisition and compliance. These hurdles extend to addressing fundamental issues like legalizing immigrant status, incorporating businesses, and contending with limited access to governmental and financial support.

Furthermore, these factors led to an ever-changing business atmosphere and social and cultural complexities, which created a highly uncertain environment during the pandemic. This heightened uncertainty posed a significant threat to the survival rate of immigrant enterprises in host countries during COVID-19 (Malki, 2023). Uncertainties profoundly impact immigrant enterprises, primarily stemming from the sector distribution that immigrant entrepreneurs have opted for in their business activities, which became more apparent during COVID-19.

Zhao et al. (2021) shed light in their research that many small businesses owned by immigrants were conventionally centered in sectors highly susceptible to COVID-19 lockdowns, such as retail, restaurants, fast-food provision, and personal services. Therefore, for immigrant entrepreneurs who operated businesses in these sectors, reduced operating hours, job cuts, disruptions in the supply chain, cessation of operations, changes in business models, loss of critical customers, and restrictions on products and services severely affected their sustainability during the pandemic. These challenges have further intensified the difficulties faced by immigrant entrepreneurs during that time (Belitski et al., 2022).

Consequently, the disadvantages experienced by immigrant businesses worldwide became more pronounced during COVID-19. However, in this article, I seek to illustrate that these disadvantages were inherent before the pandemic for immigrant entrepreneurs and were only exacerbated by COVID-19. Comparing the challenges faced by immigrant businesses in COVID-19 and non-crisis periods, I aim to underscore that these issues have evolved into chronic problems, which were and will be significant obstacles to sustainability for immigrant entrepreneurship. However, research on crises related to immigrant entrepreneurship is relatively limited. The challenges and experiences immigrant entrepreneurs face during the COVID-19 pandemic require more attention, particularly for the Central and Eastern European countries, where immigration numbers have significantly increased over the last decade (Kazłowska, 2013). There might be nuances in Hungary's context that are not captured in broader studies. Focusing on immigrant entrepreneurship within the Hungarian context helps fill knowledge gaps and provides a more tailored understanding of the challenges and opportunities.

3. Research Methodology

In this study, I employed a qualitative research approach, utilizing in-depth interviews to delve into the perspectives of immigrant entrepreneurs. The qualitative research enabled me to study in an in-depth way the subjective perceptions, experiences and motivations of migrants, their personal feelings of agency and individual ways of dealing with everyday difficulties abroad. The research comprised interviews with 16 immigrant entrepreneurs (15 males and one female) in Hungary, conducted from March to July 2023. Participants were chosen as entrepreneurs born outside their destination country, owned businesses in Hungary, and established their ventures between 2010 and 2019. This specific time frame was chosen to focus on nascent immigrant entrepreneurship, encompassing those who initiated their businesses and sustained active operations before and during the COVID-19 pandemic in Hungary. Given the busy schedules of immigrant entrepreneurs, I offered the option of conducting online interviews through platforms such as Zoom and Google Meetings to those willing to participate in the study. I recruited first interviews through personal connections and then adopted the snowball sampling strategy while selectively diversifying their age, gender, ethnicity, type of enterprise, establishment date of the business, etc., based on the recruitment criteria of my project. The range of interviewees 'ages was 35-65.

The research sample primarily consisted of male participants of Arab ethnicity (n=14), with a more miniature representation of other ethnic backgrounds, including Latinos (n=1) and Filipinos (n=1). The sample did not include intra-EU migrants since they do not experience the same difficulties as third-country nationals. This is because an EU legal framework enables self-employment and business in any European Union member state for EU citizens. Third-country residents face far more challenges due to disadvantageous legal positions. Regarding educational background, most interviewees held bachelor's degrees (n=13), while a smaller number had master's degrees (n=2) and one secondary school degree. Interestingly, while many of the immigrant-owned businesses in the dataset had ethnic business type (i.e., they provided products or services with an ethnic focus, serving both ethnic and non-ethnic customers, in line with the classification used by Curci & Mackoy, 2010), there were also non-ethnic businesses included in the sample.

My research project's primary objective was to delve into the forms of economic disadvantages for economic dimensions from the qualitative part among immigrant entrepreneurs, explicitly emphasizing the challenges immigrant entrepreneurs already were facing. However, they just became more visible during the COVID-19 pandemic. This allowed for a comparative analysis between periods of crises and stability. Furthermore, the study assessed the conditions offered by the host country, Hungary, simultaneously presenting challenges for immigrant entrepreneurs.

I began the interviews by asking them open-ended questions about their immigration journey to Hungary, how it started, and why they chose this country. This allowed the conversation to flow naturally and allowed me to explore emerging conversational paths extensively. This also helped me build rapport with each interviewee, establishing trust and a positive relationship.

The length of interviews ranged from 40 to 110 min depending on various factors, including personal background (age, gender, ethnicity, country of origin, etc.) as well as the integration process, family life, reason for being an entrepreneur, ties with the county of origin and trade activities. Some interviews were conducted in English, and some were conducted in Arabic (due to the ethnic background of the interviewees) with the help of the interpreter. Later, the

interviews, which were in Arabic, were faithfully translated and transcribed, preserving the participants' language and expressions with minimal alteration.
Interviews were digitally voice recorded. The transcripts were subject to coding based on emerging themes. Some selective coding was applied by multiple respondents sharing similar experiences, perspectives, and emotions related to the topic of interest and were given priority (Hack-Polay et al., 2020). The interviews were specifically concentrated on exploring challenges encountered by immigrant entrepreneurs and the strategies employed to overcome these barriers. The interviews were meticulously coded, guided by the expertise of the interviewer.
Participants` informed consent was obtained, written or verbally, depending on the participant's choice. Pseudonyms were employed to safeguard the identities of the participants. Additionally, direct verbal quotes were edited to enhance comprehension by removing speech fillers like "like" and "umm" and correcting grammar. When participants felt too easily identifiable, aspects of their narratives were attributed to various names, addressing their concerns about research participation. These edits were kept minimal, ensuring the authentic voice of the participants, and preserving their vernacular in the transcripts.

4. Results and Discussion

*4.*1. Accessing the Financial Capital Barrier

Accessing financial capital is critical for immigrant entrepreneurs as they seek to initiate and expand their businesses (Dheer, 2018). However, a primary and concerning challenge that looms large for immigrant entrepreneurs is their limited access to financial resources (Azoulay et al., 2022). Sometimes, this limitation occurs due to a lack of knowledge of financial resources, sometimes due to the absence of programs and services for immigrant entrepreneurs (Ram et al., 2016). These factors also create a learned helplessness for immigrants, leading them to take care of themselves without seeking help, especially from the government.
In Hungary, throughout my fieldwork, some of the answers from the immigrant entrepreneurs showed the hesitation for them to receive any aid due to a lack of information about financial support and distrust of the government.
I have established my business since 2011; never in my life, I did not get one forint [Hungarian currency] from the Hungarian government. Never. I know I am sure there are ways that I can get it from them or get something, but I did not search. Let us say maybe it is my problem; I did not search because I know if I use any money from the government, I will pay it back ten times more. (Bara, Syria, owner of the retail shop).
Crises act as an economic uncertainty activator (Madsen et al., 2013). During the crises, immigrant entrepreneurs also refer to their previous negative experiences, which hinder their crisis performance related to accessing the financial capital (Vorobeva & Dana, 2021). In Hungary, for some immigrant entrepreneurs, hesitancy to receive financial support due to the idea of repayment obligations before COVID-19 also lead them to not apply to this support during the COVID-19 pandemic. This creates a barrier for them, even if it means giving up the possibility of receiving government aid. On the other hand, government financial support, especially in the face of the challenges presented by the COVID-19 pandemic, played a pivotal role in ensuring the sustainability of immigrant entrepreneurs (Yeshi, 2022). It was instrumental in helping them surmount noteworthy hurdles, protecting

jobs, and contributing significantly to the broader economic recovery and community resilience.

In Hungary, immigrant business owners, particularly those in the service sector like restaurant owners, benefited from this financial support, such as not paying taxes for their businesses and employees. The Hungarian government implemented this regulation, extending financial support to all business owners, irrespective of their immigrant or citizenship status. However, the complex bureaucratic regulations exacerbated immigrant entrepreneurs' situations, making the process even more challenging for them. As a restaurant owner in Budapest, thirty-eight-year-old Fabricio from Mexico shared his experience during the COVID-19 pandemic and highlighted the complexities he faced in comprehending the financial support provided by the Hungarian government, which he had to pay back afterwards.

You keep the employee in your company and must pay 20% of their taxes. In that case, it is okay, and I did not fire my employees. However, in my case, one year after the COVID, one of my employees decided to quit because he found another workplace, and I said OKAY, fine, you can go, and he left. One or two months later, my accountant called me and said he is not working with you anymore, but you need to pay back all this year as a punishment.(Fabricio, Mexico, Restaurant Owner)

Conversely, the Hungarian government has implemented new rules in response to the economic difficulties brought by the COVID-19 pandemic, much like many other countries across the globe. Financial support and its conditions were also subject to these new regulations. However, they have failed to provide essential information to immigrant entrepreneurs navigating these new and frequently changing regulations. This lack of information has increased costs for immigrant entrepreneurs in Hungary, emphasizing the importance of obtaining timely and reliable information about new rules. Otherwise, even assistance intended to help can become another challenge for them.

On the other hand, the COVID-19 pandemic has demonstrated that, in some cases, even obtaining financial support from the government has been a formidable challenge for immigrant entrepreneurs.

It is a little joke here. For 10 months of closing on 90% and working on from website or online, for one of the restaurants I got rejection for the government support. In 10 months, I got 2 million forints which is only for four months, which is, come on, its nothing, this is joke. Unfortunately, every company who opened, issued, and founded incorporate government, hundreds, ten and millions faced the same thing. But you know it's about who you know, not what you know (Hamid, Lebanon, owner of three restaurant).

From an immigrant entrepreneur`s perspective, thinking personal connections and networks determine who receives government financial support raises concern about the fairness and inclusivity of government relief measures. Such challenges can contribute to a sense of exclusion and hinder their ability to recover and sustain their businesses. On the other hand, the statement "it is about whom you know, not what you know" shows that immigrant entrepreneurs face additional hurdles if they lack established connections with local businesses and government communities.

This limitation of access to financial capital for immigrant entrepreneurs is often rooted in unfamiliarity and potential discrimination against them when they seek funding to launch their businesses during the time of stability and during crises. This discrimination can manifest as bias and unfavorable treatment when immigrant entrepreneurs apply for loans, credit, or investment opportunities (Tengeh & Nkem, 2017; Brettell & Alstatt, 2007).

*4.*2. Challenges In Legal and Regulatory Landscape of Immigrant Entrepreneurs

Ethnonational Barrier

Entrepreneurship among migrants has been acknowledged as a means of integration in the host country and a viable alternative for achieving decent and sustainable employment (Solano, 2023). However, many immigrant entrepreneurs struggle to open, form and expand their businesses due to challenges in destination countries' legal and regulatory landscapes (Shachar, 2021&Huang & Liu, 2019). In Hungary, these challenges occur primarily due to the ethnic background of immigrants. Specific legal restrictions or biases related to third-national ethnicities influence the ability of immigrant entrepreneurs to obtain the necessary legal approvals for starting and running a business. This legal and ethnic factor creates a barrier to entry and progression in the immigrant entrepreneurship landscape for certain immigrant groups. Such a legal restriction also contributes to an environment where immigrants from specific third-national ethnicities encounter additional hurdles in navigating bureaucratic processes, hindering their entrepreneurial aspirations.

In this aspect, one of the interviewees emphasized the hardship he faced due to his ethnicity while establishing his business in Hungary:

Banks here did not accept the passport, did not accept the Syrian nationality, they did not open a bank account, it was a problem. As they even closed my account. Because war is started in Syria, they gave me my money and told me this is your money, you can NOT open a bank account because you are Syrian citizen. I was without a bank account until I got my Hungarian nationality. Then, I trusted my friend and did the business under his name. You have to trust him with everything you know. (Yazeed, Syria, Owner of the tobacco shop).

Immigrants from conflict-ridden countries like Syria face significant barriers to access to essential financial services like opening a bank account in Hungary. The refusal of banks to accept the immigrant`s passport due to geographical circumstances demonstrates the intersection of bureaucratic challenges immigrant entrepreneurs face. It also sheds light on the critical role that legal and regulatory frameworks play in either facilitating or impeding their economic activities. Simultaneously, these challenges show the lack of a comprehensive approach that involves a legal framework towards immigrant entrepreneurs which is not free from discriminatory elements. This reflects the importance of promoting equity and fairness in the legal and business systems to create opportunities for all aspiring entrepreneurs in Hungary, regardless of ethnicity. On the other hand, the decision for the interviewee to trust a friend and conduct business under their name underlines the importance of personal networks and innovative strategies in overcoming such obstacles for immigrant entrepreneurs. However, considering the opposite "*You have to trust him with everything you know"* sentence shows an obligation. There is no choice but to trust. Since entrepreneurship is a necessity for this immigrant, the responsibility of running a business of his own but under another person's name poses another challenge for him.

Passing through the barriers that immigrant entrepreneurs face due to their ethnicities, the next step is to apply to obtain Hungarian citizenship. However, in Hungary, obtaining citizenship is another problematic process immigrant entrepreneurs encounter, as Mahmut faced:

In Hungary, I've applied for citizenship multiple times, and every time it's rejected without explanation. It's frustrating and overwhelming. (Mahmut, Jordan, owner of a restaurant)

From the perspective of immigrant entrepreneurs, the repeated rejection of citizenship applications in Hungary without clear explanations adds an extra layer of frustration and

disheartenment to the challenges they already face. Citizenship is not just a legal status but often a gateway to accessing various opportunities, including financial services and a sense of belonging. The lack of transparency in the rejection process may leave immigrants feeling excluded (Ram et al., 2013) and hinder their efforts to integrate into Hungarian society. This also underscores the need for more transparent and accessible immigration policies that support immigrant entrepreneurs' aspirations to contribute positively to their host country.

However, legal barriers present multifaceted challenges that extend beyond the specific realm of entrepreneurship, affecting various aspects of professional life that significantly curtail opportunities for business development. The interconnection of these legal challenges highlights the complexity and broad impact of regulatory hurdles on immigrant entrepreneurs' ability to participate fully in economic activities. On the other hand, during COVID-19, entrepreneurs often relied on financial support to survive and loans to recover from the damage the pandemic caused to their businesses (Lin et al., 2023). Ethnicity differences and lack of citizenship are also barriers to obtaining loans for immigrant entrepreneurs to recover the damage COVID-19 caused to their businesses and expand their enterprises. Some of the immigrant entrepreneurs attempted to obtain this loan to use it to recover their enterprises. However, having a third-national ethnicity was again a barrier for them:

After COVID, there were some loans governments offered. But in my case, it was the same: You are not Hungarian; we are sorry. They also said you need to have at least five to ten employees, and I am alone now because I am trying to restart from zero. (Fabricio, Mexico, restaurant owner)

Differences in ethnicity were another barrier that the COVID-19 pandemic activated. Despite the government's provision of business-supporting loans, immigrant entrepreneurs are excluded based on their ethnic background or non-Hungarian nationality. Moreover, with the COVID-19 crisis, the absence of inclusive policies and support structures that account for the diverse backgrounds of entrepreneurs, hindering equal opportunities for business recovery and expansion, became more visible.

Furthermore, the expression "trying to restart from zero" vividly illustrates an immigrant entrepreneur's significant struggle and resilience. It accentuates the uphill journey faced by individuals who, despite setbacks, are unwavering in their determination to rebuild and contribute to the broader economic recovery**.** However, it also indicates that immigrant entrepreneurs, even after facing many challenges during COVID-19, still want to continue as entrepreneurs even if it necessitates starting anew, exemplifying the remarkable spirit and tenacity inherent in their pursuit of success and contribution to the business landscape.

Throughout my fieldwork, all immigrants consistently highlighted that there are no discernible differences between Hungarians and foreigners in the processes involved in establishing an enterprise. The concept of equality is positively echoed, implying that individuals, irrespective of their nationality, are entitled to identical procedural considerations during the initial phases of business establishment. Regrettably, challenges for immigrant entrepreneurs frequently emerge post-business establishment. These difficulties encompass aspects such as acquiring citizenship, navigating bureaucratic systems, and other intricacies that extend beyond the initial stages of entrepreneurship. These barriers were present before the pandemic, and COVID-19 has only brought them into sharper focus.

4.3. Labor Shortage Barrier

In terms of challenges in the legal and regulatory landscape of immigrant entrepreneurs in Hungary, immigrant entrepreneurs face a formidable barrier in the form of a persistent labor shortage, presenting a distinctive challenge to their business endeavors. This challenge affected day-to-day operations and threatened the survival rate of immigrant enterprises. From a broad standpoint, a labor shortage transpires when insufficient workers within the job market fulfil the existing roles (McGrath, 2021). Amid the COVID-19 pandemic, numerous sectors experienced significant declines in labor demands, attributed to lockdowns and travel restrictions that led to pronounced labor shortages (Costa Dias et al., 2020). In Hungary, labor shortages posed a persistent challenge for immigrant entrepreneurs before, during, and after the COVID-19 pandemic, as the scarcity of skilled labor force hindered sustaining their businesses. Yahia, a traditional Syrian restaurant owner, mentioned:

The challenge or difficulty I have faced while I was opening a restaurant in Budapest was finding the right people. I was only with my brother, and finding the right stuff was not easy—right team. In Hungary and other countries in Europe as well, it is a big challenge to find workers or find manpower. From the beginning to until now we are facing the same issue. (Yahia, Syria, restaurant Owner).

The labor force is crucial for immigrant entrepreneurs as it is the backbone of their business operations, and labor shortages pose significant challenges for immigrant entrepreneurs as they hinder their businesses' smooth functioning and growth. When available workers are scarce, immigrant entrepreneurs may struggle to find skilled or reliable employees to fill essential enterprise roles. This can lead to increased workload and stress on the existing workforce, potentially affecting productivity and overall business performance. Due to that, the destination country`s authorities need to give permission and make it easier for immigrant entrepreneurs to bring the labor force they need outside the country. However, in the case of Hungary, Hungarian regulations to bring the labor force from outside the country are complicated and time-consuming.

In Hungary, like many other countries, immigrant entrepreneurs prefer to have a labor force from their community because of the language barrier and cultural differences in business operations. Previous studies have underscored the significance of ethnic labor for immigrant entrepreneurs' businesses. Access to ethnic labor stands out as a crucial competitive advantage that immigrant entrepreneurs can leverage through their ethnic, social networks (Chrysostome,2010).

Especially during the COVID-19 pandemic, the labor force shortage problem they faced due to the lockdown and decrease in working hours created a concern about the scarcity of the labor force and challenges of sourcing skilled employees. To deal with this problem, immigrant entrepreneurs like Allam wanted to bring some employees from their host countries.

The problem in Hungary is the labor force; it was like even before Covid-19. There is no labor force. After the Covid, I wanted to bring some employees from the Jordan to Hungary for maintain my business but also for cars` repair. However, since February (2023) there is no news. (Allam, Palestine, Car Gallery Owner)

The delay in bringing employees from their communities to their host countries reflects the ongoing disruptions in international mobility, affecting businesses that rely on foreign workers. This situation underscores the broader economic repercussions and the need for strategic solutions to address labor shortages in the post-pandemic recovery.

As it can be understood, the challenges faced by immigrant entrepreneurs related to legal and regulatory landscape barriers for immigrant entrepreneurs persist not only during periods of stability but are further exacerbated during times of crisis, as evidenced by the impact of the COVID-19 pandemic. The multi-level and multidimensional nature of legal barriers extends beyond narrowly defined immigrant entrepreneurship, affecting various aspects of their professional life and limiting their opportunities for business development. The complexities of legal procedures, issues related to immigrant status legalization, limited access to government support, changes in the business environment due to COVID-19, and sociocultural aspects contribute to an uncertain environment, posing significant threats to the sustainability of immigrant enterprises. These challenges highlight the need for comprehensive understanding, timely information, and supportive measures to facilitate the resilience and success of immigrant entrepreneurs in the face of legal and regulatory complexities.

5. In conclusion

In this research, I aimed to indicate the barriers under the new concept of "Crises work as a barrier activator for immigrant entrepreneurship". Based on the answers of the 16 immigrant entrepreneurs' interviewees, I have focused on economic factors using a qualitative approach. To answer the research question of the study, I compared the experiences of different immigrant entrepreneurs during the time of the stability and during the time of the COVID-19 pandemic. By this comparison, I intended to demonstrate previous barriers to immigrant entrepreneurs ' aggrandizement during the COVID-19 pandemic by identifying the systematic inequalities and increased vulnerabilities. I also showed how these barriers influence the resilience and sustainability of immigrant entrepreneurship from the establishment phase to the enlargement phase of the business. The categorization of these challenges as economic barriers, encompassing limited access to funding, legal and regulatory hurdles, ethnic obstacles, and labor shortage barriers, has provided a nuanced understanding of the resilience and sustainability factors shaping immigrant entrepreneurship in Hungary.

The research findings showed the immigrant entrepreneurs in Hungary having a problem accessing the financial capital. Sometimes this barrier is created by the government; however sometimes immigrants due to lack of information or due to their negative experience of receiving a financial capital they, hesitate to obtain it. Moreover, findings of the research indicated that due to accessing the information related to financial capital during COVID-19, some of the immigrant entrepreneurs had to pay back this help. Furthermore, treating immigrant entrepreneurs based on their ethnicity has been a big barrier for them since the beginning of the establishment of the business. To overcome this obstacle, immigrant entrepreneurs often apply to obtain Hungarian citizenship. However, the citizenship process is also costly and time-consuming, and if it results negatively, it appears as a way in which they cannot even learn the reason behind it. Results showed that this ethnonational barrier or having non-Hungarian nationality for third-national citizens also became an active obstacle during the COVID-19 pandemic for immigrant entrepreneurs to apply for loans and other help to increase the sustainability and resilience of their businesses. Lastly, the labor shortage barrier for immigrant entrepreneurs in Hungary is another barrier for them. The study's findings indicated that, during the economic stability times, immigrant entrepreneurs

often struggle to find the right people to work for their businesses. Due to that, they prefer to have workers from their own host countries or their own ethnic communities in Hungary. However, they struggle because of complex bureaucratic system or long process of legalization for the employees. During the COVID-19 pandemic, it became a big problem for them due to restrictions on movement, lockdowns and decreasing work hours.

The current study contributes to crises related to immigrant entrepreneurship literature by demonstrating multifaced challenges faced by immigrant entrepreneurs. If they cannot be taken into consideration without providing a solution, they will repeat themselves, and each crisis will just make them worse, unsolvable, and negatively impact on resilience and sustainability on immigrant entrepreneurship. Based on this, this study has implications for both scholars and policymakers by suggesting that the barriers faced by immigrant entrepreneurs are enduring and there is an urgent need for focused initiatives to contribute to a more supportive and inclusive entrepreneurial environment. The results of the inquiry suggest that immigrant entrepreneurs' challenges may not be limited to the Hungarian setting and may extend globally. The study highlights the importance of documentation and legal codification as areas requiring attention and reform to alleviate the disadvantages immigrant business owner's encounter. Moreover, policymakers should consider the consequences of the COVID-19 pandemic and prepare for future crises. Prioritizing measures to reduce discrimination, strengthen legal frameworks, and address economic barriers will create a more inclusive and resilient environment for immigrant entrepreneurs.

However, limited sample size or scope may restrict the generalizability of findings. Research conducted with a small number of immigrant entrepreneurs in Hungary may only partially capture the diversity of experiences and challenges faced by immigrant entrepreneurs across the country. Based on this limitation of the study, as a future direction for the study, research should be conducted with a more extensive and more diverse sample of immigrant entrepreneurs across different regions of Hungary to capture better the range of experiences and challenges this population faces.

6. Acknowledgements

The author declares that financial support was received for this article's research, authorship, and publication. IS was the awardee of the fellowship within the PASIFIC postdoctoral program (Agreement No PAN.BFB.S.BDN.310.022.2022), co-funded by the European Union Marie Sklodowska-Curie CO-FUND scheme (grant agreement No 847639), Horizon 2020.

References

Andrejuk, K. (2018). Entrepreneurial strategies to respond to discrimination: Experience of Ukrainian women in Poland from the intersectional perspective. *Anthropological Notebooks*, *24*(3), Article 3. https://anthropological-notebooks.zrc-sazu.si/Notebooks/article/view/33

Angu, P., & Masiya, T. (2022). *South African-based African Migrants' Responses to COVID-19: Strategies, Opportunities, Challenges and Implications*. African Books Collective.

Azoulay, P., Jones, B. F., Kim, J. D., & Miranda, J. (2022). Immigration and Entrepreneurship in the United States. *American Economic Review: Insights*, *4*(1), 71–88. https://doi.org/10.1257/aeri.20200588

Belitski, M., Guenther, C., Kritikos, A. S., & Thurik, R. (2022). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics*, *58*(2), 593–609. https://doi.org/10.1007/s11187-021-00544-y

Bonacich, E. (1973). A Theory of Middleman Minorities. *American Sociological Review*, *38*(5), 583–594. https://doi.org/10.2307/2094409

Brettell, C. B., & Alstatt, K. E. (2007). The Agency of Immigrant Entrepreneurs: Biographies of the Self-Employed in Ethnic and Occupational Niches of the Urban Labor Market. *Journal of Anthropological Research*, *63*(3), 383–397. https://doi.org/10.3998/jar.0521004.0063.304

Campagnolo, D., Laffineur, C., Leonelli, S., Martiarena, A., Tietz, M. A., & Wishart, M. (2022). Stay alert and save businesses. Planning for adversity among immigrant entrepreneurs. *International Journal of Entrepreneurial Behavior & Research*, *28*(7), 1773–1799. https://doi.org/10.1108/IJEBR-02-2022-0164

Chrysostome, E. (2010). The success factors of necessity immigrant entrepreneurs: In search of a model. *Thunderbird International Business Review*, *52*(2), 137–152. https://doi.org/10.1002/tie.20320

Costa Dias, M., Joyce, R., Postel-Vinay, F., & Xu, X. (2020). The Challenges for Labour Market Policy during the COVID-19 Pandemic*. *Fiscal Studies*, *41*(2), 371–382. https://doi.org/10.1111/1475-5890.12233

Curci, R., & Mackoy, R. (2010). Immigrant business enterprises: A classification framework conceptualization and test. *Thunderbird International Business Review*, *52*(2), 107–121. https://doi.org/10.1002/tie.20318

Dabić, M., Vlačić, B., Paul, J., Dana, L.-P., Sahasranamam, S., & Glinka, B. (2020). Immigrant entrepreneurship: A review and research agenda. *Journal of Business Research*, *113*, 25–38. https://doi.org/10.1016/j.jbusres.2020.03.013

Davidavičienė, V., & Lolat, I. (2016). *MIGRANT ENTREPRENEURSHIP IN EUROPE: CHALLENGES AND OPPORTUNITIES*. https://doi.org/10.3846/bm.2016.72

Desiderio, M. V. (n.d.). *Policies to Support Immigrant Entrepreneurship*.

Dheer, R. J. S. (2018). Entrepreneurship by immigrants: A review of existing literature and directions for future research. *International Entrepreneurship and Management Journal*, *14*(3), 555–614. https://doi.org/10.1007/s11365-018-0506-7

European Labour Authority. (2021). *Report on labour shortages and surpluses: November 2021.* Publications Office. https://data.europa.eu/doi/10.2883/746322

Garg, A. K., & Phayane, M. N. (n.d.). *Impact of Small Businesses Owned By Immigrant Entrepreneurs on the Local Community of Brits*.

Giones, F., Brem, A., Pollack, J. M., Michaelis, T. L., Klyver, K., & Brinckmann, J. (2020). Revising entrepreneurial action in response to exogenous shocks: Considering the COVID-19 pandemic. *Journal of Business Venturing Insights*, *14*, e00186. https://doi.org/10.1016/j.jbvi.2020.e00186

Golgeci, I., Arslan, A., Kentosova, V., Callaghan, D., & Pereira, V. (2023). The role of marketing agility and risk propensity in resilience and survival of eastern European immigrant entrepreneurs in Denmark. *International Journal of Entrepreneurial Behavior & Research*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/IJEBR-03-2022-0214

Grzymała-Kazłowska, A. (2013). Migration and Socio-Demographic Processes in Central and Eastern Europe: Characteristics, Specificity and Internal Differences. *Central and Eastern European Migration Review*, *2*(1), 5–11.

Gurău, C., Dana, L., & Light, I. (2020). Overcoming the Liability of Foreignness: A Typology and Model of Immigrant Entrepreneurs. *European Management Review*, *17*(3), 701–717. https://doi.org/10.1111/emre.12392

Hack-Polay, D., Tenna Ogbaburu, J., Rahman, M., & Mahmoud, A. B. (2020). Immigrant entrepreneurs in rural England – An examination of the socio- cultural barriers facing migrant small businesses in Lincolnshire. *Local Economy*, *35*(7), 676–694. https://doi.org/10.1177/0269094220988852

Harima, A. (2022). Transnational migration entrepreneurship during a crisis: Immediate response to challenges and opportunities emerging through the COVID-19 pandemic. *Business and Society Review*, *127*(S1), 223–251. https://doi.org/10.1111/basr.12266

Hjerm, M. (2004). Immigrant Entrepreneurship in the Swedish Welfare State. *Sociology*, *38*(4), 739–756. https://doi.org/10.1177/0038038504045862

Huang, X., & Liu, C. Y. (2019). Immigrant Entrepreneurship and Economic Development: A Local Policy Perspective. *Journal of the American Planning Association*, *85*(4), 564–584. https://doi.org/10.1080/01944363.2019.1634485

Hunt, J. (2011). Which Immigrants Are Most Innovative and Entrepreneurial? Distinctions by Entry Visa. *Journal of Labor Economics*, *29*(3), 417–457.

Lin, R., Liu, X., & Liang, Y. (2023). Assessing the impact of COVID-19 on economic recovery: Role of potential regulatory responses and corporate liquidity. *Environmental Science and Pollution Research*, *30*(18), 53977–53996. https://doi.org/10.1007/s11356-023-25871-3

Maalaoui, A., Ratten, V., Heilbrunn, S., Brannback, M., & Kraus, S. (2020). Disadvantage Entrepreneurship: Decoding a New Area of Research. *European Management Review*, *17*(3), 663–668. https://doi.org/10.1111/emre.12424

Madsen, P., Molina, O., Møller, J., & Lozano, M. (2013). Labour market transitions of young workers in Nordic and southern European countries: The role of flexicurity. *Transfer: European Review of Labour and Research*, *19*, 325–343. https://doi.org/10.1177/1024258913495348

Maj, J., & Kubiciel-Lodzińska, S. (2020). Entrepreneurial tendencies of migrants working in the care sector in Poland. *Entrepreneurial Business and Economics Review*, *8*(3), Article 3. https://doi.org/10.15678/EBER.2020.080302

Malerba, R. C., & Ferreira, J. J. (2021). Immigrant entrepreneurship and strategy: A systematic literature review. *Journal of Small Business & Entrepreneurship*, *33*(2), 183–217. https://doi.org/10.1080/08276331.2020.1804714

Malki, B. (2023). Responding to financing uncertainty in complex settings: The case of immigrant entrepreneurs from the Arab world in Sweden. *Entrepreneurship & Regional Development*, 1–20. https://doi.org/10.1080/08985626.2023.2298985

Margaça, C., & Rodrigues, D. (2023). Religious-ethnic entrepreneurs planting seeds: A novel research agenda. *Society and Business Review*. https://doi.org/10.1108/SBR-05-2023-0173

Martinez Dy, A. (2020). Not all Entrepreneurship Is Created Equal: Theorising Entrepreneurial Disadvantage through Social Positionality. *European Management Review*, *17*(3), 687–699. https://doi.org/10.1111/emre.12390

Nopper, T. K. (2010). Colorblind Racism and Institutional Actors' Explanations of Korean Immigrant Entrepreneurship. *Critical Sociology*, *36*(1), 65–85. https://doi.org/10.1177/0896920509347141

Orozco, M. (2022). The salience of ethnic identity in entrepreneurship: An ethnic strategies of business action framework. *Small Business Economics*, *59*(1), 243–268. https://doi.org/10.1007/s11187-021-00532-2

Pekkala Kerr, S., & Kerr, W. (2020). Immigrant entrepreneurship in America: Evidence from the survey of business owners 2007 & 2012. *Research Policy*, *49*(3), 103918. https://doi.org/10.1016/j.respol.2019.103918

Piperopoulos, P. (2010). Ethnic minority businesses and immigrant entrepreneurship in Greece. *Journal of Small Business and Enterprise Development*, *17*(1), 139–158. https://doi.org/10.1108/14626001011019170

Portes, A., Haller, W. J., & Guarnizo, L. E. (2002). Transnational Entrepreneurs: An Alternative Form of Immigrant Economic Adaptation. *American Sociological Review*, *67*(2), 278–298. https://doi.org/10.2307/3088896

Prah, D., & Sibiri, H. (2021). The resilience of African migrant entrepreneurs in China under COVID-19. *Journal of Entrepreneurship in Emerging Economies*, *13*(5), 1119–1133. https://doi.org/10.1108/JEEE-05-2020-0111

Ram, M., Jones, T., Edwards, P., Kiselinchev, A., Muchenje, L., & Woldesenbet, K. (2013). Engaging with super-diversity: New migrant businesses and the research–policy nexus. *International Small Business Journal: Researching Entrepreneurship*, *31*(4), 337–356. https://doi.org/10.1177/0266242611429979

Ram, M., Jones, T., & Villares-Varela, M. (2016). Migrant entrepreneurship: Reflections on research and practice. *International Small Business Journal*, 1–16. https://doi.org/10.1177/0266242616678051

Razzak, B. M., Idris, B., Hasan, R., Saridakis, G., & Hansen, J. M. (2023). The impact of Covid-19 on struggling ethnic minority entrepreneurs' business strategy: The case of Bangladeshi curry houses in the United Kingdom. *International Journal of Entrepreneurial Behavior & Research*, *29*(8), 1837–1866. https://doi.org/10.1108/IJEBR-05-2021-0389

Robertson, D. W., & Grant, P. R. (2016). Immigrant entrepreneurship from a social psychological perspective. *Journal of Applied Social Psychology*, *46*(7), 394–409. https://doi.org/10.1111/jasp.12369

Shachar, A. (2021). Unequal access: Wealth as barrier and accelerator to citizenship. *Citizenship Studies*, *25*(4), 543–563. https://doi.org/10.1080/13621025.2021.1926076

Solano, G. (2023). A level playing field for migrant entrepreneurs? The legal and policy landscape across EU and OECD countries. *International Migration*, *61*(2), 27–47. https://doi.org/10.1111/imig.12939

Teixeira, C., Lo, L., & Truelove, M. (2007). Immigrant Entrepreneurship, Institutional Discrimination, and Implications for Public Policy: A Case Study in Toronto. *Environment and Planning C: Government and Policy*, *25*(2), 176–193. https://doi.org/10.1068/c18r

Tengeh, R. K., & Nkem, L. (2017). Sustaining Immigrant Entrepreneurship in South Africa: The Role of Informal Financial Associations. *Sustainability*, *9*(8), Article 8. https://doi.org/10.3390/su9081396

Vorobeva, E., & Dana, L.-P. (2021). The COVID-19 pandemic and migrant entrepreneurship: Responses to the market shock. *Migration Letters*, *18*(4), 477–485.

Wang, Y., & Warn, J. (2019). Break-out strategies of Chinese immigrant entrepreneurs in Australia. *International Journal of Entrepreneurial Behavior & Research*, *25*(2), 217–242. https://doi.org/10.1108/IJEBR-03-2017-0108

Webster, N. A., & Kontkanen, Y. (2021). Space and place in immigrant entrepreneurship literature in the Nordic countries: A systematic literature review. *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*, *75*(4), 221–236. https://doi.org/10.1080/00291951.2021.1949746

Yeshi, T. (2022). "Home Away From Home": Displaced Migrant Entrepreneurship in Times of Covid-19. In L.-P. Dana, N. Khachlouf, A. Maâlaoui, & V. Ratten (Eds.), *Disadvantaged Minorities in Business* (pp. 205–224). Springer International Publishing. https://doi.org/10.1007/978-3-030-97079-6_10

Zhang, Z., & Chun, D. (2018). Becoming entrepreneurs: How immigrants developed entrepreneurial identities. *International Journal of Entrepreneurial Behavior & Research*, *24*(5), 947–970. https://doi.org/10.1108/IJEBR-07-2016-0214

Bio-note

Sarihasan, Imran PhD, is an assistant professor at the Department of International Trade and Business, Samsun University, and has been involved in various international research projects on migration, entrepreneurship, and social inclusion. As a postdoctoral researcher within the PASIFIC program at the Polish Academy of Sciences, her work focused on immigrant entrepreneurship and financial inclusion. She has published in peer-reviewed international journals and presented her findings at numerous academic conferences. Her main research interests include international migration, labor mobility, immigrant entrepreneurship, and the role of crises in deepening systemic inequalities.

The Impact of Financial Innovations on Demand for Money and Currency Outside Bank: Evidence from Nigeria

Porwekobowei ARUWEI[1]* , Favoured MOGBOLU[2]
[1]Department of Maritime Economics and Finance, Faculty of Transport, Nigeria Maritime University, Okerenkoko, Delta State, Nigeria.
[2]Department of Economics, Faculty of Social Sciences, University of Benin, Edo State, Nigeria.
Porwekobowei.aruwei@nmu.edu.ng
Favoured.Mogbolu@uniben.edu

Abstract: *This research examined how financial innovations affect the demand for money and currency outside the banking system in Nigeria. Two models were estimated for the study with the measure of broad money M2 used as proxy for Money Demand and currency outside bank (COB) as the dependent variables for model 1 and model 2 respectively. Value of ATM transactions, value of Internet Banking (web), value of Mobile Money transactions and value of POS transactions were used as proxies for financial innovations and RGDP and interest rate as control variables. Data used in the study was from the period 2010Q1 to 2021Q4, which were estimated with the cointegration and ECM technique. The findings from model 1 indicated that real gross domestic product, value of ATM transactions as well as value of mobile banking transactions exert a positive impact on money demand. Deposit interest rate, value of POS transactions and value of web (internet) transactions displayed a negative impact on demand for money. For model 2, findings showed that RGDP increase currency outside the banking system, interest rate decreases it, while VATM and VMOB have a positive impact on COB, VPOS and VWEB impact negatively on COB. The study clearly proved the significant influence of financial innovations in influencing the demand for money and currency outside the banking sector in Nigeria. In light of the foregoing, the study recommends promoting the acceptability of financial innovations in payment methods, thereby providing a secure medium through continuous engagement of Nigerians who have the means to use the various financial innovations. Also, the monetary authorities should make policies that will encourage more participants in the sector through investments in critical infrastructures that ensures hitch-free service delivery of the financial innovation. Due to the mixed influence of financial innovation on the currency outside banking system, caution must be taken by the monetary authority when advocating for the use of financial innovation especially ATM and Mobile banking apps, also we can infer from the findings that transactional and precautionary motives drives the demand for currency outside the banking system.*

* Corresponding author: Porwekobowei ARUWEI
Cite as:
The journal editors will add this information after completion of the volume!

Keywords: Financial Innovations, Demand for Money, Currency Outside Bank, ECM.

1. Introduction

The modern financial system is characterized by an accelerated level of innovations, particularly taking the form of rapid and significant technological changes in the payments systems. Blach (2011) claims that the quantity and value of these innovations have had a profound effect on the global economy. What drives change owing to the introduction of financial innovations, according to Laeven et al. (2015), are new financial instruments, services and institutions. Technological innovations in Nigeria has transformed the payment system from reliance on physical cash and cheques to reliance on e-payment mechanisms including Automated teller Machine (ATM), Point of Sales (POS) and several other web-based payment systems.

Financial innovations such as the development of e-payments ensures easy access to means to pay for transactions and may thus cause changes in the demand for money and its components. Cash holdings (which defines currency outside the banking system) is about 87.5% of the total money in circulation in Nigeria as at 2023. Such high currency outside the banking system has been shown to be highly institutionalized and a foundation for currency hoarding as shown by events resulting from the recent move by the Central Bank of Nigeria (CBN) in 2023 to redesign the Nigerian naira (₦). In particular, high level of currency outside banking system contends effective monetary policy (CBN, 2023), as shown by preference for low level of currency in the hands of the public outside the banking system in developed economies. The e-payment system appears to have failed to influence demand for cash holdings in Nigeria. An important implication is the effect of e-payment systems on the motivations for demand for money. Thus, it is crucial to evaluate the impact of financial innovations in the form of e-payments on money demand in Nigeria.

Several authors who have investigated financial innovations in Nigeria such as Chukwunulu, (2019); Ozurumba and Charles (2019); Aiyedogbon et al., (2013), have been concerned with its impact in the Nigerian economy while Osadume and Aruwei (2020) investigated its impact on the maritime sector in Nigeria. Studies in Nigeria that have investigated the financial innovations and demand for money includes; Ovat, et al. (2023), Ujunwa et al., (2022), Nakorji and Asuzu (2019), Okpara (2017) and Nsikak et al. (2020), Odularu and Oladapo (2009) and Apere (2017). Although, the former used Structural Adjustment Programme (SAP) dummy for financial innovation and financial innovation was proxied by 4–6-month Commercial Paper rate by the later. Their findings however have been conflicting, amidst failure to account for income and interest rate, not using relevance proxy for financial innovation and also not accounting for currency outside the banking system in Nigeria. Because of this, the purpose of this research is to assess how new financial innovations have altered the demand for money and the makeup of that demand as measured by non-banking currency holdings in Nigeria. This research looks at how using new financial products, including ATM, POS, internet (web) banking and mobile banking transactions affects both demand for money measured by M2 and currency outside the banking system, to establish the influence of financial innovation on the magnitudes in Nigeria.

2. Review of Relevant Literature

Over the years and in recent times several studies have investigated the money demand and the role of financial innovation. There has been conflicting empirical evidence from the various studies on the impact of financial innovation on the money demand function. While some studies including (Qazi, 2009; Okpara 2017; Aliha et al, 2018; Kasekende and Nikolaidou, 2018; Nakorji and Asuzu 2019; Ovat, et al. 2023) found financial innovation to have a positive impact. Others including (Odularu and Oladapo, 2009; Apere, 2017; Safdar and Khan, 2014) found a negative impact. On the other hand, Bilyk (2006) and Nsikak et al. (2020) discovered conflicting results on the effect of financial innovation on Nigeria's demand for money. Because of recent expansion, financial innovations have been crucial in projecting the level of money demand in Malaysia (Aliha et al, 2018). Not taking financial innovation into consideration when calculating the demand for money leads to unforeseen shifts in that demand (Hafer and Kutan, 2003; Laeven et al., 2015), which in turn causes big gaps to open up between policy goals and actual results. This corroborate the findings of Cho and Miles (2011) that conflicting estimates are likely attributed to the absence of a term accounting for financial innovation. Although Kumar et al (2013), used M1 to capture money demand and found no evidence that financial sector liberalization and reforms has made the money demand function in Nigeria unstable. Qazi (2009), found a significant and positive effect of financial innovation and money demand in his study. Bilyk (2006) in his study found a long run positive impact and a negative impact in the short-run between financial innovations and money demand in Ukraine. Miller (1986) in his study found that money demand experienced three periods of gradual intercept drift-two down and one up-rather than several one-time shifts. This he asserts has been consistent with the hypothesis of financial innovation and depository-institution deregulation relationship. Cointegration and stability were seen among the generated function variables in the study by Hwang and Wen (2024), who also discovered a negative link between the e-payment variable and money demand. Compared to the one without the e-payment variable, the money demand function with it produces superior forecast results. According to Azimi's (2023) research on the stability of the money demand function in South Asia, real income, the real exchange rate, and foreign interest rates all have a positive impact on the real monetary aggregate. On the other hand, domestic interest and inflation rates have a contractionary effect, and the money demand function continues to remain stable. Using quarterly data from 1990 to 2000, Choi and Oxley (2004) evaluated the demand for money function in New Zealand and found that price, real income, and interest rate all cointegrate over the long term. Fleissig and Jones (2023) determined the degree of substitutability between U.K. monetary assets and evidence revealed there is no perfect substitution. Inelastic substitution was found to be stronger after the 2008-2009 recession and some elasticities of substitution are relatively low either following the Brexit vote or during the onset of the pandemic. Ben-Salha and Jaidi (2014) revealed from their work that there is cointegration between the broad money demand and its determinants; final consumption expenditure, the expenditure on investment goods, the export expenditure and the interest rate. The error correction model shows that interest rates and spending on investment goods are the sole short-term variables that affect money demand, whereas spending on final consumption goods and interest rates are the long-term variables.

Ovat et al. (2023) used the ARDL model to study quarterly data from 2009Q1-2020Q4 to determine how financial innovation affected money demand in Nigeria. Their findings showed that financial innovation and demand for money have a long-run relationship and

that financial innovation have a positive impact on demand for money Nigeria. Financial innovation has not altered the long-run stability of money demand, according to Ujunwa, et al. (2022), who utilized M1, M2, and M3 as indirect measures of financial innovation to investigate this relationship in Nigeria. Nakorji and Asuzu (2019) in their study found a positive short-run impacts from financial innovation on real money demand. Also, evidence of long-run relationship between money demand and financial innovation was found. Okpara (2017) conducted an empirical study in Nigeria from 1981 to 2014 using VAR to examine the relationship between financial innovations and demand for money. A relationship of short-run equilibrium was discovered. There was a favorable correlation between the demand for money and financial advancements. Utilizing quarterly time series spanning 2009–2019, Nsikak et al. (2020) discovered that financial innovation had a mixed impact on money demand in Nigeria. While Snellman et al. (2001) found that ATMs and point-of-sale terminals significantly lower money demand, our results show the opposite. Apere (2017) states that the desire for money is inversely related to financial innovation. From 2002M1 to 2006M10, Yilmazkuday and Yazgan (2009) found that the demand for Turkish currency was negatively impacted by the rise in the use of credit and debit cards. Using automated teller machines (ATMs) as a stand-in for financial innovation, Aliha et al. (2017) examined panel data from 215 nations between 2004 and 2013 and found that ATMs do not influence money demand. Using SAP as a surrogate, Odularu and Oladapo (2009) discovered that financial innovation did not have a substantial impact on the demand for money in Nigeria. In a study of 34 countries in Sub-Saharan Africa, Kasekende and Dunne (2016) found a consistent negative correlation between financial innovation and the need for money. Mannah-Blankson and Belnye (2004) state that financial innovation is crucial to the long-term expansion of Ghana's money demand.

2.1 Trends in Payment Systems in Nigeria

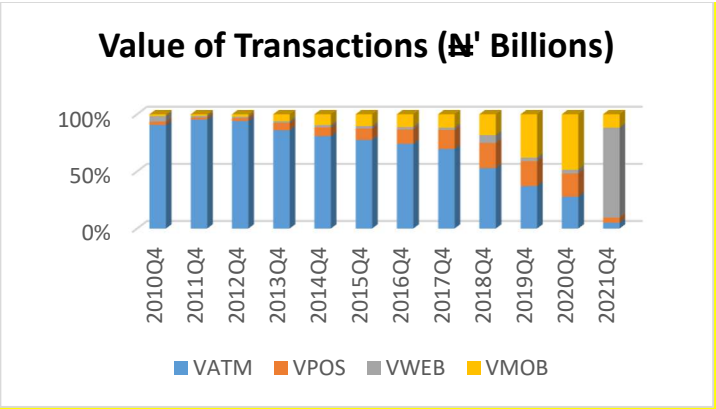

Figure 1: Value of Transactions from Payment System

Source**:** Graphed by Author with data from Central Bank of Nigeria Statistical Bulletin (2022)

Figure 1 above shows the value of transactions from various payment system (VATM, VPOS, VWEB and VMOB). From the figure above, the value of ATM transactions has been declining over the years. For instance, it accounted for over 80 percent of the transactions in

2010Q4 but fell to about 50 percent in 2018Q4 and further downward trend was recorded in fourth quarter of 2019, 2020 and 2021 with 33 percent, 20 percent and about 5 percent respectively. During these periods transactions done with POS have been on a steady rise. Accounting for about 10 percent in 2016, 20 percent in 2018, 25 percent in 2019 and 27 percent in 2020. Although it declined sharply in 2021 to a paltry 4 percent. MOB have also showed similar trend like that of POS, by accounting for as low as 10 percent in 2016 to as high as 50 percent in 2020 and declined in 2021 to about 9 percent. WEB (internet banking) has had minimal percentage share in the value of transactions carried out with the payment system until 2021 were it contributed over 80 percent. This can be attributed to the COVID 19 pandemic which the world experienced in 2020.

2.2 Trend of Cash Outside Bank

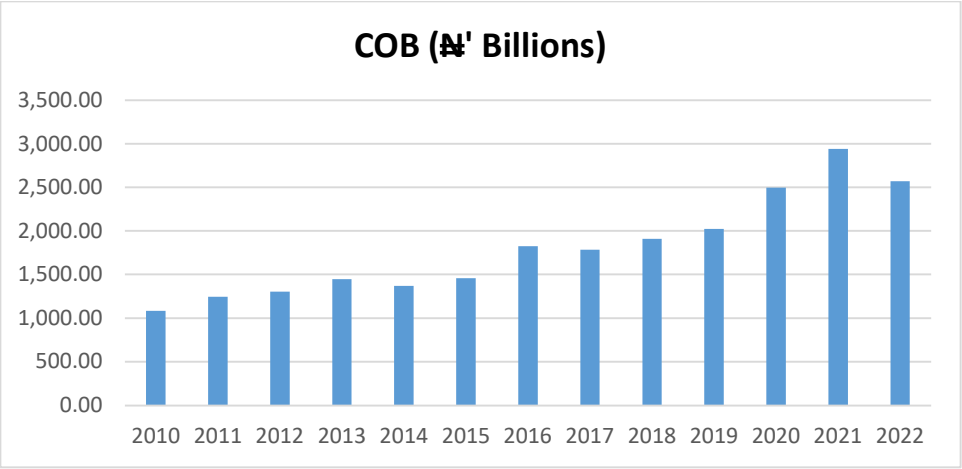

Figure 2: Annual values of Currencies outside Banks in Nigeria

Source: Graphed by Author with data from Central Bank of Nigeria Statistical Bulletin (2022)

The figure 2 above shows the trend of currency outside banks in Nigeria. From have been fluctuating over the years covered in the study. In 2010 the currency outside the banking sector was ₦1, 082.38billion, this increased to ₦1,447.61billion in 2013 but fell to ₦1,368.00billion the following year. Similar trend was noticed between 2016 and 2018. The sum of N2,938.42 billion recorded in 2021 dropped to N2,569.01 billion in 2022, following the similar pattern between 2020 and 2022. This sharp decline can be attributed to the currency change instituted by the apex bank. The data set clearly shows that the value always goes up in the year leading up to and including an election. The CBN's policies and currency changes leading up to the 2023 general elections are to blame for the decline in value in 2022.

3. Methodology

For the purpose of this study the ex-post facto research design will be adopted because it is descriptive and quantitative in nature.

3.1 Theoretical Framework

This study is hinged on the Keynesian Demand for Money Theory. Keynes opined that individual demand for money majorly for three reasons namely; transaction motive, precautionary motive and speculative motive (Laidler, 1977). According to Keynes transactionary and precautionary motives are determined by the income of an individual. The depreciation of alternative asset markets is crucial to the speculative drive, though. Since the goal of maximizing wealth is directly related to the interest rate, the rate of interest plays a pivotal role in driving the speculative drive to keep money (Laidler, 1977).

Thus, Keynes money demand function is given as:

$M^D = kY + L(r)$ ……. (1)

Where M^D is money demand, k represents money demanded for transactional and precautionary purposes which is determined by income (*Y*), L represents money demanded for speculative purpose which is determined by the interest rate (*r*). Keynes further stated that the money demand is negatively related to interest rates and positively related to real income.

3.2 Model Specification

Based on equation (1) in the theoretical framework and the reviewed empirical literature we specify our empirical model of the demand for money function in its compact form as;

$M2 = f(Ft, X)$ ……. (2)

$COB = f(Ft, X)$ ……. (3)

Where Ft = Financial innovation variables

X = Controlling variables; RGDP and INTR.

Their functional form is:

$M2 = f$ (VATM, VPOS, VMOB, VWEB, RGDP, INTR) ……. (4)

$COB = f$ (VATM, VPOS, VMOB, VWEB, RGDP, INTR) ……. (5)

The model is specified in an econometric form thus;

$M2 = \beta_0+\beta_1 RGDP+\beta_2 INTR+\beta_3 VATM+\beta_4 VPOS+\beta_5 VMOB+\beta_6 VWEB+\varepsilon_1$ (6)

$COB = \beta_0+\beta_1 RGDP+\beta_2 INTR+\beta_3 VATM+\beta_4 VPOS+\beta_5 VMOB+\beta_6 VWEB+\varepsilon_1$ (7)

The Error Correction Model (ECM) for cointegrated data is in the form:

$$\Delta M2_t = \alpha_0 + \sum_{i=1}^{q} \mathfrak{y}_l \Delta RGDP_{t-i} + \sum_{i=1}^{q} \theta_l \Delta INTR_{t-i} + \sum_{i=1}^{q} \varphi_l \Delta VATM + \sum_{i=1}^{q} \emptyset_l \Delta VPOS_{t-i} + \sum_{i=1}^{q} \beta_l \Delta VMOB_{t-i} + \sum_{i=1}^{q} \omega_l \Delta VMOB_{t-i} + {}_{\gamma} ECT_{t-1} + e_t \quad (8)$$

$$\Delta COB_t = \alpha_0 + \sum_{i=1}^{q} \mathfrak{y}_l \Delta RGDP_{t-i} + \sum_{i=1}^{q} \theta_l \Delta INTR_{t-i} + \sum_{i=1}^{q} \varphi_l \Delta VATM + \sum_{i=1}^{q} \emptyset_l \Delta VPOS_{t-i} + \sum_{i=1}^{q} \beta_l \Delta VMOB_{t-i} + \sum_{i=1}^{q} \omega_l \Delta VMOB_{t-i} + {}_{\gamma} ECT_{t-1} + e_t \quad (9)$$

Where;
M2 is Broad Money Demand, COB is currency outside bank, RGDP is Real Gross Domestic Products, VATM is value of ATM transactions, VMob is value of Mobile Money transactions, Vweb is value of Internet Banking (web), VPOS is value of POS transactions, INTR is Deposit Interest Rate, ε_t is the Random Error Term, Δ is a difference operator and ($_{\gamma}ECT_{t-1}$), is the error correction term that captures the speed of adjustment of money demand to its equilibrium level. $\eta, \theta, \varphi, \emptyset, \beta, \omega$ and γ are the parameters for measuring the impact of the respective variables.
Data used for analysis in the study came from the World Bank (2023) and the Central Bank of Nigeria Statistical Bulletin (2022) and covered the period from 2010Q1 to 2021Q4.

4. Discussion of Findings and Policy Implications

4.1 Descriptive Statistics

Table 1 shows the descriptive statistics of the variables used in the study. We have 48 observations considering we used quarterly data from 2010Q1 to 2021Q4. As observed from the descriptive statistics result, broad money demand (M2), real gross domestic product (RGDP) and deposit interest rate (INT) displayed a normal distribution. Based on the Jarque-Bera probability value we can infer that they are normally distributed since their probability value is clearly greater than the 5% level of significance. In addition, value of ATM transactions (VATM), value of Mobile Money transactions (VMOB), value of Internet Banking (VWEB) and value of POS transactions (VPOS) were leptokurtic, while broad money demand (M2), real gross domestic product (RGDP) and deposit interest rate (INT) had low kurtosis values, suggestive of platykurtic distributions, implying it has lower values than its mean values and Currency Outside Bank (COB) is mesokurtic based on its kurtosis value of 3.02. All variables except real gross domestic product (RGDP) and deposit interest rate (INT) displayed a positive skewness.

Table 1: Descriptive Statistics of the Data used

	M2	COB	RGDP	INT	VATM	VMOB	VPOS	VWEB
Mean	21808.98	1739.361	16488.89	7.629463	1350.912	1387.948	712.5606	6165.757
Median	19838.63	1650.674	16444.46	7.914453	1064.185	127.3600	139.9750	27.82500
Maximum	43817.57	2968.386	20329.06	9.908236	5469.487	13035.59	6423.603	84296.67
Minimum	10907.30	998.0876	12583.48	3.775811	62.59000	0.870000	1.870000	3.370000
Std. Dev.	8577.011	532.6700	1788.996	1.918754	1192.796	3330.349	1452.473	20614.33
Skewness	0.853832	0.928557	-0.094844	-0.643622	2.235605	2.830524	2.861280	3.076236
Kurtosis	2.954585	3.020139	2.545128	2.117217	8.110837	9.461781	10.09478	10.61156
Jarque-Bera	5.836351	6.898554	0.485781	4.872603	92.22474	147.6041	166.1671	191.5776
Probability	0.054032	0.031769	0.784357	0.087484	0.000000	0.000000	0.000000	0.000000
Obs.	48	48	48	48	48	48	48	48

Source: Author's computation with EVIEWS 12

4.2 Stationarity Test

Testing for stationarity in time series data is crucial because of its propensity for non-stationarity, which may result in false regression outcomes (Granger and Newbold, 1977). The Augmented Dickey-Fuller (ADF) test was utilised to test for stationary. The results are displayed in Table 2.

Table 2: The Augmented Dickey-Fuller Unit Root Test

Variables	ADF Test Statistics Levels	ADF Critical Values @5%	ADF Test Statistics 1st diff.	ADF Critical Values @5%	Remark	Prob. Value
M2	3.875381	-2.925169	-4.301780	-2.926622	I(1)	0.0013
COB	0.136204	-2.926622	-3.452577	-2.926622	I(1)	0.0140
RGDP	-1.722779	-2.928142	-21.80244	-2.929734	I(1)	0.0001
INT	-2.275335	-2.926622	-3.493841	-2.926622	I(1)	0.0126
VATM	1.564827	-2.925169	-4.757907	-2.926622	I(1)	0.0003
VMOB	0.397478	-2.936942	-6.253698	-2.926622	I(1)	0.0000
VPOS	-1.367798	-2.926622	-5.751611	-2.929734	I(1)	0.0000
VWEB	0.966017	-2.925169	-6.081149	-2.926622	I(1)	0.0000

Source: Author's computation with EVIEWS 12

The Augmented Dickey Fuller test is shown from table 2 above. All the variables are stationary at the first difference, meaning they are integrated at order one I(1). We subsequently examine the existence of a long-term link among the study variables using the Johansen cointegration technique.

4.3 Cointegration Test

As such, this study makes use of the method proposed by Johansen (1988) and Johansen and Juselius (1990) to ascertain exactly how many cointegrating equations there are with the help of the Max-Eigen and Trace tests.

Therefore, the study's variables have a long-term link among them. This long-term relationship is fundamental in the field of monetary policy development and how financial innovation is used in the money demand specification.

Table 3: Johansen Cointegration Test results

Null Hypothesis	Trace Statistics	Critical Value at 5%	Max-Eigen Statistics	Critical Value at 5%
P = 0	309.4029	159.5297	99.52348	52.36261
$\rho \leq 1$	209.8794	125.6154	86.75423	46.23142
$\rho \leq 2$	123.1252	95.75366	58.23287	40.07757
$\rho \leq 3$	64.89231	69.81889	25.00942	33.87687
$\rho \leq 4$	39.88289	47.85613	18.27395	27.58434
$\rho \leq 5$	21.60894	29.79707	12.88654	21.13162
$\rho \leq 6$	8.722401	15.49471	8.712737	14.26460
$\rho \leq 7$	0.009664	3.841465	0.009664	3.841465

Note: ρ represents number cointegrating vectors (*) denotes rejection of the hypothesis at the 0.05 level

Source: Author's computation with EVIEWS 12

4.4 Error Correction Model Estimates

Based on the findings of the cointegration test, the long run and error correction models would be estimated to represent the long run and short run dynamics, respectively. The estimates of the models are presented in Table 4 and 5 for model 1 and table 6 and 7 for model 2.

Table 4: Long Run Model Estimates for model 1

Dependent variable: M2				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-1808.792	1281.009	-1.412006	0.1659
M2(-1)	0.907348	0.054044	16.78904	0.0000
RGDP	0.326556	0.089254	3.658712	0.0007
INT	-279.9525	96.23361	-2.909093	0.0060
VATM	1.062274	0.504370	2.106141	0.0417
VMOB	0.795326	0.524520	1.516293	0.1375
VPOS	-1.157165	0.601787	-1.922882	0.0618
VWEB	-0.086368	0.054751	-1.577462	0.1228
R-squared	0.672			
Adjusted R-squared	0.601	Durbin-Watson stat		1.60
F-statistic	1296.609			
Prob(F-statistic)	0.000			

Source: Author's computation with EVIEWS 12

As highlighted above, the residual from the long run model above is used as the error correction term in order to estimate the error correction model which is presented in table 5 below.

Table 5: Error Correction Model Estimates for model 1

Dependent variable: M2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	17.250	139.025	0.1240	0.901
D(M2(-1))	0.901	0.164	5.498	0.000
D(RGDP)	0.280	0.072	3.887	0.000
D(INT)	-380.106	150.343	-2.528	0.016
D(VATM)	0.991	0.371	2.672	0.011
D(VMOB)	1.082	0.517	2.093	0.043
D(VPOS)	-1.738	0.494	-3.517	0.001
D(VWEB)	-0.098	0.055	-1.787	0.082
ECM(-1)	-0.906	0.208	-4.363	0.000
R-squared	0.672			
Adjusted R-squared	0.601	Durbin-Watson stat		1.832

F-statistic	9.456			
Prob(F-statistic)	0.000			

Source: Author's computation with EVIEWS 12

The empirical finding from the estimates in table 5 shows that RGDP have a positive influence on money demand which is in line with economic theory. It therefore has an influence in the money demand function. Value of ATM transactions as well as value of mobile banking transactions also showed a positive impact on money demand. This implies that an improvement in real gross domestic product, value of ATM transaction and value of mobile banking transactions will not only increase the demand for money in Nigeria but also ensure it stability. Deposit interest rate displayed a negative impact on demand for money which is in tandem with theory. Similarly, both value of POS transactions and value of web (internet) transactions impact demand for money negatively. This is quite expected as they are mostly used as a payment channel, which implies that less cash is demanded with them. In addition, real gross domestic product and value of POS transactions were found to be significant at 1 percent, deposit interest rate, value of ATM transactions as well as value of mobile banking transactions were all significant at 5 percent, while value of web (internet) transactions was is significant at 10 percent level.

Consistent with the results of Hamid and Hosein (2007), Bahmani-Oskooee and Sahar (2015), Orubu and Oriavwote (2010) as well as that of Kasekende and Dunne (2018), the study found that real gross domestic product (income) had a positive and substantial effect on demand for money, whereas interest rates had a negative effect on the same variable. This study also reveals that financial innovations have a positive (VATM and VMOB) as well as a negative (VPOS and VWEB) significant influence on the demand for money. These findings corroborate previous findings of Bilyk, (2006), Snellman et al. (2001), Yilmazkuday and Yazgan, (2009), Qamrazzauman and Jianguo (2017), Apere (2017), Qazi (2009), Safdar and Khan (2014) and Kasekende and Dunne (2018). In addition, the error correction term (ECM (-1)) is negatively signed which is in line with extant econometric literature. The implication is that, about 91 percent of changes in the previous quarter demand for money is reconciled every quarter which is also significant at the one percent level of significance. Therefore, there is high velocity in correction of distortions in the demand for money function which is critical for policy formulation and analysis.

Table 6: Long Run Model Estimates for model 2

Dependent variable: COB				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
RGDP(-1)	0.043416	0.013290	3.266830	0.0022
INT(-1)	-35.46904	15.33164	-2.313454	0.0259
VATM	0.386845	0.051674	7.486227	0.0000
VMOB	0.327968	0.053282	6.155300	0.0000
VPOS	-0.148983	0.088452	-1.684340	0.0999
VWEB	-0.046937	0.004148	-11.31524	0.0000
C	721.3755	178.6588	4.037726	0.0002
R-squared	0.966			
Adjusted R-squared	0.961	Durbin-Watson stat		1.20

F-statistic	188.9769			
Prob(F-statistic)	0.000			

Source: Author's computation with EVIEWS 12

As highlighted above, the residual from the long run model above is used as the error correction term in order to estimate the error correction model which is presented in table 7 below.

Table 7: Error Correction Model Estimates for model 2

Dependent variable: COB				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(RGDP(-1))	0.004057	0.005525	0.734308	0.4673
D(INT(-1))	-46.49441	11.15642	-4.167503	0.0002
D(VATM)	0.045559	0.035064	1.299304	0.2017
D(VMOB)	0.078983	0.040086	1.970341	0.0561
D(VPOS)	-0.020401	0.036223	-0.563215	0.5766
D(VWEB)	-0.007724	0.004499	-1.716887	0.0941
ECM(-1)	-0.150932	0.085152	-1.772493	0.0843
C	26.16951	7.685315	3.405132	0.0016
R-squared	0.534			
Adjusted R-squared	0.448	Durbin-Watson stat		1.84
F-statistic	6.224900			
Prob(F-statistic)	0.000			

Source: Author's computation with EVIEWS 12

The output from model 2 which represents the currency outside bank is presented in table 7 above. Froom the model estimates we can deduce that in the long run RGDP have a positive effect on currency outside bank and interest rate have a negative effect which are in line with expectations. However, financial innovation has a mixed effect on currency outside bank as two proxies (VATM and VMOB) showed a positive relationship and the other two (VPOS and VWEB) displayed a negative relationship. All the variables are statistically significant at the 1% level except VPOS which is at 10%. All the variables however, are jointly significant based on the F-statistic probability value and they have a strong predictive influence on currency outside bank. In the short run error correction model, the relationship with the dependent variable is the same as displayed in the long run. However, only interest rate, VMOB and VWEB are statistically significant, although there exists a joint significance based on the F-statistic probability value. The R-squared value of 0.53 showed that the variables included in the model predict about 53% of the variations that occurs in the dependent variable and the model is free from serial correlation based on the Durbin-Watson stat of 1.84. Furthermore, the error correction term is negative and statistically significant which is in line with econometric literature. This is at variance with the findings of Teriba (2006) in his study that attempted to model the demand for currency outside banks in Nigeria. According to Kalim and Hassan (2013) statistically significant error correction term indicates long run relationship among variables in a regression model. The next step is to

conduct some diagnostic test on the estimated model and also check for stability of the model.

4.5 Diagnostic Tests

Table 8: Test for Autocorrelation and Heteroskedasticity

MODEL 1		
Test	**Autocorrelation**	**Heteroskedasticity**
F-Statistics	3.182862	0.256308
P-value	0.0828	0.9759
MODEL 2		
Test	**Autocorrelation**	**Heteroskedasticity**
F-Statistics	0.462851	0.427929
P-value	0.5005	0.8786

Source: Author's computation with EVIEWS 12

From the table 8 above, it is evident that the models formulated and estimated for the study are robust and devoid of autocorrelation based on the probability values of 0.0828 for model 1 and 0.5005 for model 2 respectively which are clearly greater than the 5% level. The null hypothesis of the presence of autocorrelation is therefore rejected. Also, from the test for heteroskedasticity it is evident that the residuals of the models are robust and devoid of heteroskedasticity based on the probability values of 0.9759 for model 1 and 0.8786 for model 2 respectively which are clearly greater than the 5% level. The null hypothesis of the presence of heteroskedasticity is therefore rejected.

4.6 Stability Test

The plots of the CUSUM and the CUSUMQ for model 1 is reported in figures (3) and (4) while that of model 2 is reported in (5) and (6) respectively. They are closely examined in order to determine stability of the money demand function as well as the function of currency outside bank. From the result we can safely deduce that the parameter is stable for both models as the plot lies within the 5 percent level of significance. Based on the report concerted efforts must be taken by the monetary authority in robust policy formulation that harnesses the benefits from financial innovations and adequately address the issue of currency outside the banking sector.

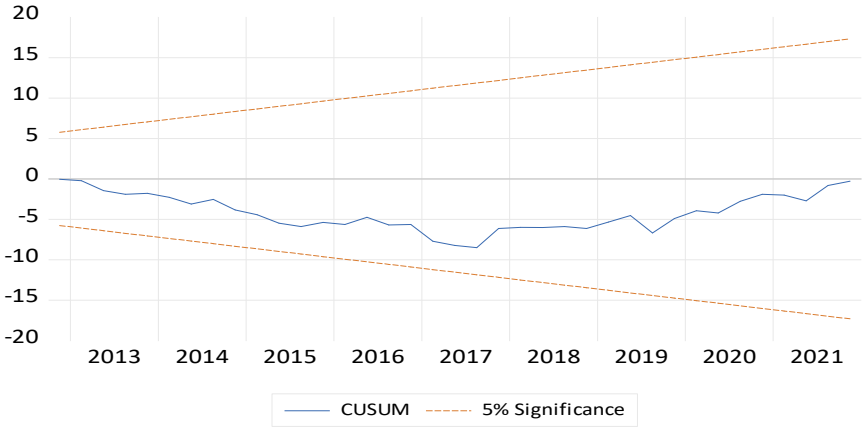

Figure3: CUSUM

Source: Author's computation with EVIEWS 12

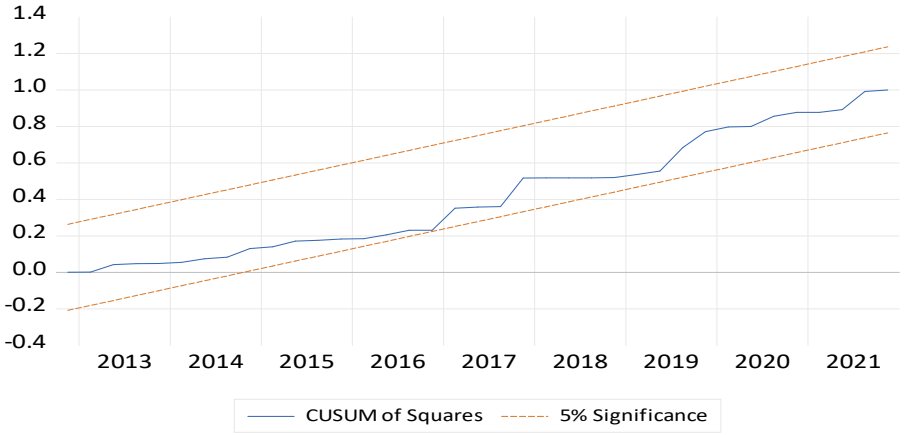

Figure 4: CUSUM of Squares

Source: Author's computation with EVIEWS 12

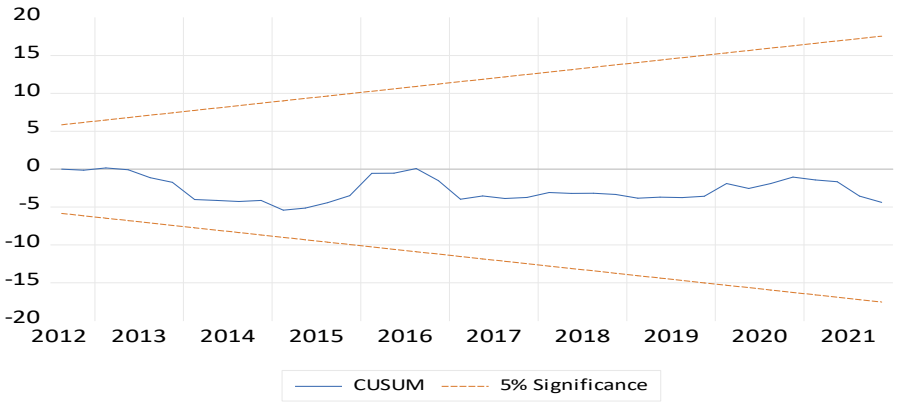

Figure 5: CUSUM

Source: Author's computation with EVIEWS 12

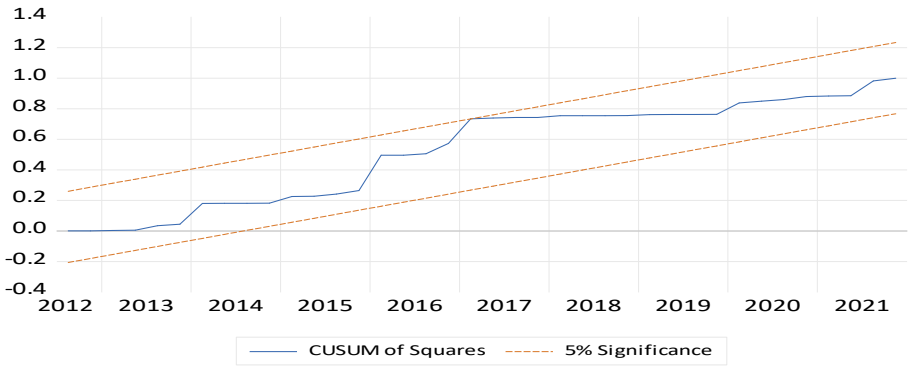

Figure 6: CUSUM of Squares
Source: Author's computation with EVIEWS 12

5. Conclusion

The impact of financial innovations on the demand for money and currency outside banking system in Nigeria was the focus in this study. Two models were estimated for the study with the measure of broad money M2 used as proxy for Money Demand and currency outside bank (COB) as the dependent variables for model 1 and model 2 respectively. Value of ATM transactions, value of Internet Banking (web), value of Mobile Money transactions and value of POS transactions were used as proxies for financial innovations and RGDP and interest rate as control variables. Data used in the study was from the period 2010Q1 to 2021Q4, which were estimated with the cointegration and ECM technique. The findings from model 1 indicated that real gross domestic product, value of ATM transactions as well as value of mobile banking transactions exert a positive impact on money demand. Deposit interest rate, value of POS transactions and value of web (internet) transactions displayed a negative impact on demand for money. For model 2, findings showed that RGDP increase currency outside the banking system, interest rate decreases it, while VATM and VMOB have a positive impact on COB, VPOS and VWEB impact negatively on COB.

The study provided empirical evidence that financial innovations significantly impacted the demand for money and currency in Nigeria beyond the banking system. Policy recommendations to increase the penetration of financial services in the nation are consequently based on the study's conclusions. Nigerians with the capacity to use the various financial innovations can help achieve these aims by accepting them as a means of payment and by offering a secure channel. Also, the monetary authorities should make policies that will encourage more participants in the sector through investments in critical infrastructures that ensures hitch-free service delivery of the financial innovation. Due to the mixed influence of financial innovation on the currency outside banking system, caution must be taken by the monetary authority when advocating for the use of financial innovation especially ATM and Mobile banking apps, also we can infer from the findings that transactional and precautionary motives drives the demand for currency outside the banking system.

References

Adil, M., H. Hatekar, N. and Sahoo, P. 2020. The impact of financial innovation on the money demand function: An empirical verification in India. *Margin*, 14(1), pp. 28-61, 10.1177/0973801019886479

Aiyedogbon, O., Ibeh E., Edafe, M., and Ohwofasa, O. 2013. Empirical Analysis of Money Demand Function in Nigeria: 1986-2010. *International Journal of Humanities and Social science*, 3(8), pp. 132-147.

Aliha, P., Sarmidi, T., Shaari, H., and Said, F. 2017. Investigating the effect of financial innovations on demand for money on a world scale: A systems GMM panel data

approach. *Journal of Global Business and Social Entrepreneurship*, 3(5), pp. 181-188.

Aliha, P., Sarmidi, T., Shaari, H., and Said, F. 2018. Investigating the relationship between financial innovation and the demand for money in Malaysia: An ARDL approach to cointegration. *International Journal of Accounting, Finance and Business,* 3(15), pp. 66-85.

Apere, O., T. 2017. The Implication of Financial Innovation on the Demand for Money in Nigeria. Proceedings of ISER 94th International Conference, Zurich, Switzerland, 16th-17th December 2017.

Arrau, P., De Gregorio, J., Reinhart, C. M., and Wickham, P. 1995. The demand for money in developing countries: assessing the role of financial innovation. *Journal of Development Economics, 46*(2), pp. 317-340.

Azimi, M., N. 2023. Re-examining money demand function for South Asian economies. *Social Sciences & Humanities Open,* 8:100546. https://doi.org/10.1016/j.ssaho.2023.100546

Babajide, A. A., Adegboye, F., B. and Omankhanlen, A., E. 2015. Financial Inclusion and Economic Growth in Nigeria. *International Journal of Economics and Financial Issues,* 5(2), pp. 629-637.

Bahmani-Oskooee M. and Sahar 2015. Nonlinear ARDL Approach and the demand for money in Iran. *Economics Bulletin,* 35(1), pp. 381-391.

Ben-Salha, O. and Jaidi, Z. 2014. Some new evidence on the determinants of money demand in developing countries – A case study of Tunisia. *The Journal of Economic Asymmetries,* 11(C), pp. 30-4.

Bilyk, V. 2006. Financial Innovations and the demand for money in Ukraine. National University Kyiv-Mohyla Academy Economics Education and Research Consortium.

Blach, J., 2011. Financial Innovations and Their Role in the Modern Financial System – Identification and Systematization of the Problem. *Finance Internet Q e-Finance* 7(3), pp. 13–26.

CBN, 2022. Central Bank of Nigeria Statistical Bulletin and Annual Report and Statement of Account (various issues).

Cho, W., and Miles, W. 2011. Financial innovation and the stability of money demand in Korea. *Southern Economic Review*, pp. 51-60.

Choi, D. & Oxley, L. 2004. Modelling the demand for money in New Zealand. Mathematics and Computers in Simulation, 64(1), pp. 185-191. https://doi.org/10.1016/S0378-4754(03)00131-9

Chukwunulu, J., I. 2019. Effect of Financial Innovation on the Nigerian Economy. *World Journal of Innovative Research (WJIR),* 6(5), pp. 15-21.

Cziraky, D., and Gillman, M. 2006. Money Demand in an EU Accession Country: A VECM Study of Croatia. *Bulletin of Economic* Research, 58(2), pp. 73-159.

Demetriades, P., and Hussein, K. A., 1996. Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries. *Development Economics* 33(3), pp. 337–363.

Fleissig, A., R. & Jones, B., E. 2023. U.K. household-sector money demand during Brexit and the pandemic. *Economic Modelling*, 123, 106234, https://doi.org/10.1016/j.econmod.2023.106234

Granger, C. W. J. and Newbold, P., 1977. The Time Series Approach to Econometric \Model Building, In C.A. Sims (ed.) *New Methods in Business Cycle Research*. Proceeding from a Conference at the Federal Reserve Bank of Minneapolis.

Hafer, R., W. and Kutan, A., M. 2003. Financial innovation and the demand for money: Evidence from the Philippines. *International Economic Journal,* 17(1), pp. 22-32.

Hamid, S. and Hosein, S. 2007. Demand for Money in Iran: An ARDL Approach. *MPRA Paper No. 11451*

Hwang, J-T and Wen, M. 2024. Electronic payments and money demand in China. *Economic Analysis and Policy,* 82, pp. 47-64.https://doi.org/10.1016/j.eap.2024.02.025

Johansen, S. 1988. Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, 12 (2–3), pp. 231-254.

Johansen, S. and Juselius, K. 1990. Maximum Likelihood Estimation and Inference on Co-integration - With Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics,* 52, pp. 169-210.

Kasekende, E. and Dunne, J., P. 2018. Financial Innovation and Money Demand: Evidence from Sub-Saharan Africa. *Economic Research Southern Africa (ERSA) working paper 583, pp. 1-24.*

Kumar, S., Webber, D. J., and Fargher, S., 2013. Money demand stability: A case study of Nigeria. *Journal of Policy Modeling*, *Elsevier*, 35(6), pp. 978-991.

Laeven, L., Levine, R., and Michalopoulos, S., 2015. Financial innovation and endogenous growth. *Journal of Financial Intermediation* 24(1), pp. 1–24.

Laidler, D. E., W. 1977. *The Demand for Money: Theories and Evidence*. New York: Harper and Row. (2nd edition).

Mannah-Blankson, T. and Belyne, F. 2004. The Impact of Financial Innovation on the Demand for Money in Ghana. Bank of Ghana Working Paper (2004).

Miller, S., M. 1986. Financial innovation, depository-institution deregulation, and the demand for money. *Journal of Macroeconomics*, 8(3), pp. 279-296. https://doi.org/10.1016/0164-0704(86)90061-3

Nakorji, M. and Asuzu, O., C. 2019. Money Demand in the Conduct of Monetary Policy in Nigeria. *Economic and Financial Review,* 57(1), pp. 1-28.

Nsikak, J. J., Idaka, S., E. and Eja, B., R. 2020. Financial Innovation and Demand for Money in Nigeria. *International Journal of Economics and Financial Research*, 6(12), pp. 257-268. DOI: https://doi.org/10.32861/ijefr.612.257.268

Department of Banking and Finance, University of Nigeria, Enugu Campus

Odularu, O., and Oladapo, A. 2009. Modelling the impact of financial innovation on the demand for money in Nigeria. *African Journal of Business Management*, 3(2), pp. 39-51.

Okpala, C., S. 2017. Impact of Financial Innovations and Demand for Money in Nigeria. *Journal of Experimental Sciences*, 2(1), pp. 180-228.

Orubu. C. and Oriavwote, V. 2010. Estimating the money demand function in Nigeria: A Cointegration Approach. *Journal of social and management science*, 5(2), pp. 103-133.

Osadume, C., R. and Aruwei, P. 2020. Financial Innovation and Maritime Sector Development: A Policy Imperative for the Nigerian Economy: 2010 – 2019. *International Journal of Maritime and Interdisciplinary Research (IJMIR)*, 1(1), pp. 79-100.

Ovat, O. O., Abang, S. O., Okoi, O., B. and Ndem, B., E. 2023. Financial Innovation and Demand for Money in Nigeria: Further Empirical Insights. *Universal Journal of Accounting and Finance*, 11(2), pp. 39-52. DOI:10.13189/ujaf.2023.110202

Ozurumba, C., O. and Charles, O. 2019. The Impact of Financial Innovation on Economic Growth in Nigeria. *International Journal of Economics, Commerce and Management,* 7(8), 1-14.

Qazi, M. A. 2009. Financial Innovation and Demand for Money in Pakistan. *Asian Economic Review*, 51(2), pp. 219-228.

Qamruzzaman, H. and Jianguo, W. 2017. Financial innovation and economic growth in Bangladesh. *Financial Innovation,* 3(19), pp. 1-24. DOI 10.1186/s40854-017-0070-0

Safdar, S. and Khan, A. 2014. Demand for money, financial innovation and money market disequilibrium. *Journal of Humanities and Social Science,* 19(2), pp. 36-41. DOI: 10.9790/0837-19213641

Snellman, J., S., Vesala, J., M. and Humphrey, D., B. 2001. Substitution of Noncash Payment Instruments for Cash in Europe. *Journal of Financial Services Research* 19(3), pp. 131–145. https://doi.org/10.1023/A:1011151219545

Teriba, A. 2006. Demand for Currency outside Banks in Nigeria. SSRN Electronic Journal. DOI:10.2139/ssrn.874624

Ujunwa, A., Onah, E., ujunwa, A. I., Okoyeuzu, C., R. and Kalu, E., U. 2022. Financial Innovation and the Stability of Money Demand in Nigeria. *African Development Review*, 34(2), pp. 215-231. https://doi.org/10.1111/1467-8268.12631

World Bank. 2023. World Development Indicators. 2023, From:http://data.worldbank.org/data-catalog/world-development-indicators

Yilmazkuday, H., and Yazgan, M. E. 2009. Effects of credit and debit cards on the currency demand. *Applied Economics,* 41(17), pp. 2115-2123.

Yu, H. 2007. Currency Substitution**,** Capital Mobility and Functional Forms of Money Demand in Pakistan. *The Lahore Journal of Economics* 12(1), pp. 35-48.

Bionotes

Dr. Mrs. Favoured Mogbolu is an Associate Professor of Economics at the University of Benin's Faculty of Social Sciences, Department of Economics. Microeconomics, financial economics and international finance are her primary areas of study. She has a number of scholarly works published in international peer-reviewed journals.

Porwekobowei Aruwei is a Lecturer in the Department of Maritime Economics and Finance, Faculty of Transport, Nigeria Maritime University, Okerenkoko, Nigeria. His primary research interests include international Economics, Macroeconomics and Monetary Economics, and Econometrics. He has published numerous academic articles in peer-reviewed international journals.

Evaluating the Effect of Monetary Policy on Current Account in Nigeria

Ephraim UGWU[1]* , Sunday KEJI[2], Oluwabusola OLAOSEBIKAN[3] , Christopher EHINOMEN[4]
[1-4]Department of Economics, Faculty of social sciences, Federal University, Oye-Ekiti, Ekiti State, Nigeria.
ephraim.ugwu@fuoye.edu.ng
sunday.keji@fuoye.edu.ng,
oluwabusola.fasoranti@fuoye.edu.ng
christopher.ehinomen@fuoye.edu.ng

Abstract: *Despite several empirical investigations on the interaction effect between monetary policy transmissions and the current account balances of countries, evidences have been inconclusive. This study examines the monetary policy transmission effect on current account in Nigeria from 1970 to 2021. Employing the vector error correction model (VECM) procedures, the results of the stationarity test indicate that all the variables are first differenced I(1) at 5% significance level in Augmented Dicky Fuller test procedure. The cointegration test results showed that there are three cointegrating equations at 5% significance level. The long-run results showed that coefficient of interest rate (INTR) indicated a negative sign to the current account of Nigeria and it is statistically significant. The short-run result shows that 2.2% of the disequilibrium in the effect monetary policy on current account of Nigeria is corrected annually. The impulse response function results showed that response of current account to the global monetary policy variable, (USINTR) increased immediately and continued significantly with positive sign in the long run the result showed that response to INTR and rate of exchange (EXCH) declined immediately and continued to decline along the horizon to a negative shock in both the short and long-runs. Therefore, importation of industrial materials should be encouraged to increase the country's export volume.*

Keywords: Monetary policy shocks, current account, Cointegration, VECM, Nigeria

JEL classification: B23, C13, E52, E63, F32, N17

1. Introduction

Understanding how monetary policy transmission shock affect external balances of countries is still a subject of debate and continues to dominate attention in international economics. This is more so following the recent global financial crises which exposed emerging economies to global macroeconomic shocks (Obstfeild and Rogoff, 2009). It is also important to note that recent changes in monetary policy decisions of advanced economies, especially introduction of quantitative easing approach geared towards normalization of monetary policy in the United States (US) has raised concern about macroeconomic stability of emerging economies and how they adjust to shocks (Makanza and Dunne, 2015). The

* Corresponding author: Ephraim UGWU
Cite as:
The journal editors will add this information after completion of the volume!

continuous recording of huge current account deficit by the developing economies due to volatility of exchange rate is equally of great concern (Claessens, Ghosh and Mihet, 2013). Also, the constant rise in the global rate of interest which possess the risk of altering the flow of capital to emerging economies, thus subjecting countries with large current account deficits at risk of reversal with severe consequences for economic growth (Makanza and Dunne, 2015).

On the interaction effect between monetary policy transmission shocks and the current account balances of countries, there has been inconclusive evidence. For instance, Ferrero, Gertler and Svensson (2008) were of the view that interaction between monetary policy transmission shock and current account balance is best viewed as indirect. According to the authors, monetary policy has no direct responsibility on the current account since it is a difference between saving and investment compares to the global economy. Ferrero et.al (2008) stated that adjustment of exchange rate in a bid to correct the current account imbalances is by far beyond the confine of monetary policy. Obstfeld and Rogoff (1995) argued that the recently recorded current account deficit of the US economy requires about thirty percent devaluation of the dollar for its correction. The authors explained that international relative prices movement causes a short run inflation dynamic. However, in the event where adjustment of current account balances effectively plays out, currency depreciation would induce pressure on inflationary level and that can only be offset by introducing a tightening monetary policy measure which may eventually affect the real activity (Rogoff, 2007).

1.1. Statement of the problem

The Nigerian economy, despite various monetary policy measures either contractionary or expansionary monetary policies, aimed at achieving full output growth, stable rate of exchange, full employment and stability of prices, and the economy is still regarded as one of the poorest countries in the world. Despite recorded growth in the economy between 2000 and 2014, with an average growth of 7%, as the oil price collapsed in 2015 to 2016, the growth rate of the GDP in 2016 contracted from 3.96% to -0.36% in the first quarter of 2016, and in the second quarter it contracted to -1.5%, then, -2.24% and -1.3% in the last two quarters. Since then, the growth has remained stagnant, with growth averaged 1.9% in 2019 and 2% in first half of 2019 (The World Bank, 2019). Equally, the rate of exchange took a nose dive from N197 to one US dollar to N347 to one US dollar in 2017 (Otolorin, 2017). As one the major economic power of the West African region, the Nigeria's current account balance have shown various variations. Between the periods from 1979 and the 1981, the country recorded current account surplus due to a rise in the price of crude oil. However, the country continued to record deficits in its current account balances despite various policy measures of the government (Oshota and Adeleke, 2015). Given the level of openness of the Nigerian economy, understanding the cross –border channels and how global monetary policies affect the external balance of the country becomes very important. Also, monetary policy measures are effective through different cross-border channels, and as such, a specific monetary policy design should be considered while tracing transmission mechanisms (Lane, 2019). The continued increase in the interest rate globally has equally posed as serious risk in the flow of capital to the developing economies especially Nigeria, which has resulted in high current account deficit, with an adverse effect on the growth of the economy. This study therefore asked the following questions: How is the Nigerian current account deficits affected by global monetary policy transmission shocks? To what extent can the domestic

monetary policy measures be utilized to insulate the effects of exogenous monetary policy shocks for a stable current account balance in Nigeria?

2. Literature review

A theoretical basis on the monetary policy implications on macro economy and on measures to reduce a country's current account was provided by a study conducted by Marshal (1923) and Lerner (1944) employing a J-curve approach. The approach states that if a country's trade balance tends to zero, and there exists an infinite supply elasticity, then the elasticity of demand for both import and export have to be large in order to bring about balance of payment surplus. Damilola and Olateju (2013) highlighted on the J-curve hypothesis, stating that it shows how a country's net export reacts to the currency devaluation. A currency depreciation in an economy in the short run leads to current account deficit, thus leading to an increase in import. Since there is an access to international trade by the economy, and also able to compete favorably with foreign competitors, the implication is that there will be a reduction in the cost of production after a time period. This would also boost export volume for the local economy, thus leading to an increase in the import price which translate to a positive shock; and the economies would record currency appreciation (Damilola and Olateju, 2013).

Studies on monetary policy transmission to macroeconomic environment had theoretically focused on some macroeconomic variables which include, consumption, investment and net export (international trade). Boivin, Kiley and Mishkin (2010) were of the view that these traditional monetary policy transmission channels involve interest rates effect on investment spending of the households, and on the cost of capital. Jorgenson (1963) stated that the major demand for investment in capital goods, consumer durables or residential buildings is always influenced by the cost of capital. Thus, household consumption expenditure is a function of life time assets and wealth either from stocks, real estate or others holdings. Thus, a lower interest rate reduces demand for local assets and the cost of local assets falls in comparison to foreign assets; and this results to local currency depreciation, lowering the prices of locally produced goods and services and an increase in the cost of imported items (Jorgenson, 1963).

2.1. Empirical literature

Akinlo and Apanisile (2019) examine the effectiveness monetary policy transmission, evaluating anticipated and unanticipated effects using quarterly data from 1986 to 2013.The study employed a sticky price DSGE technique for evaluation. The study results indicate a short run effect of unanticipated monetary policy shocks on channels of monetary policy transmission, while anticipated effect showed a long run effect on monetary policy in Nigeria. Adekunle, Baba, Stephen, Ogbuehi, Idris, and Zivoshiya (2018) evaluate monetary policy transmission shocks on asset prices in Nigeria from 1985 to 2017. Utilizing a multi models which include Autoregressive Distributed Lag (ARDL) and Johansen cointegration test procedures, the result show that exchange rate channel of monetary policy dominates asset prices in Nigeria.Also, Cristiano-Botia, Gonzalez-Molano and Huertas-Campos (2018) examine the monetary policy transmission of interest rate to market interest. They show that when interest rate is fixed, financial entities take into consideration their policy rate expectation. The study also finds that there are changes in deposit rates in anticipation of announcement by the monetary authorities and no significance changes on the day and a day after announcement. Adler and Buitron (2017) examine monetary policy effect on trade

balance in the US. The study utilizes a sign restriction structural VAR model procedures for estimation. The study results show that monetary policy has a significant impact on trade balance. The result also indicate that monetary policy comes with spillover through trade. Adofu and Salami (2017) evaluate monetary policy shocks on macroeconomic variables in Nigeria from 1983 to 2015. The study employs the Structural VAR Modeling technique for evaluation. The results show s negative interest rate shock on real GDP and money supply. The study also note that inflation respond positively to rate of interest and supply of money in Nigeria.

3. Research Methodology

3.1. The VAR model approach

In line with the study by Sim (1980), one of the most important procedures for evaluating dynamic interaction between monetary policy and other macroeconomic variables is the Vector auto regression (VAR) procedure. We therefore specify an order k model of VAR as follows:

$$Y_t = C_0 + \sum_{i=1}^{k} \phi_i Y_{t-1} + \varepsilon_t$$

……...…(3)

$where \;\; Y_i : (Y_{1t}, Y_{2t}, Y_{3t} ..... Y_{nt})$; Yt: is an order I, the lag term ; C is intercept vector, while $\varepsilon_t : (\varepsilon_{1t}, \varepsilon_{2t}, \varepsilon_{3t} ..... \varepsilon_{nt})$. The model is therefore specified as:

$$Y_t = m + A_1 Y_{t-1} + A_2 Y_{t-2} + A_3 Y_{t-3} ..... A_k Y_{t-k} + \varepsilon_t$$

..……..……..……..……...(4)

From equation (4), the (P) process are specified where Y is (n+1) vectors, m is an intercept vector, Ai is autoregressive coefficients of i[th] matrix ,while ε_t is a zero-mean white noise process or the error term. Assuming k=6 and p=1, this gives:

$$\begin{bmatrix} Y_{1t} \\ Y_{2t} \\ Y_{3t} \\ Y_{4t} \\ Y_{5t} \\ Y_{6t} \end{bmatrix} = \begin{bmatrix} m_1 \\ m_2 \\ m_3 \\ m_4 \\ m_5 \\ m_6 \end{bmatrix} + \begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} & a_{15} & a_{16} \\ a_{21} & a_{22} & a_{23} & a_{24} & a_{25} & a_{26} \\ a_{31} & a_{32} & a_{33} & a_{34} & a_{35} & a_{36} \\ a_{41} & a_{42} & a_{43} & a_{44} & a_{45} & a_{46} \\ a_{51} & a_{52} & a_{53} & a_{54} & a_{55} & a_{56} \\ a_{61} & a_{62} & a_{63} & a_{64} & a_{65} & a_{66} \end{bmatrix} \begin{bmatrix} Y_{1,t-1} \\ Y_{2,t-1} \\ Y_{3,t-1} \\ Y_{4,t-1} \\ Y_{5,t-1} \\ Y_{6,t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \end{bmatrix}$$

……..(5)

3.2. The Vector Error Correction (VECM) Model

Since all the variables in the model are not stationary at level, we incorporate the Vector Error Correction (VECM) Model and the equation is stated as follows:

$$\Delta Y_t = \Gamma_1 \Delta Y_{t-1} + \Gamma_2 Y_{t-1} + ... + \Gamma_{p-1} \Delta Y_{t-p+1} + \Phi Y_{t-1} + \varepsilon_t; \qquad t = 1.....T$$

……...(6)

$where \;\; \Gamma_i = -(1 - \Pi_1 - ... - \Pi_i) \quad (i = 1..., p-1), \;\; \Phi_i = -(1 - \Pi_1 - ... - \Pi p) . \Phi_i = \alpha\beta'.$

α represent disequilibrium adjustment and the β is the coefficient matrix in the long-run.

$\beta' Y_{t-1}$ is the single equation model of the error term, the $\beta' Y_{t-1}$ contains (n — 1) multivariate approach vectors. The advantage of the VECM model is that it determines both long run and short causality if α is significant statistically and different from zero, thus implying an evidence of long run causality. This study therefore specifies a tri-variate model of the VECM as follows:

$$\Delta y_{1t} = c_1 + \sum_{i=1}^{p} \pi^{j}_{11} \Delta y_{1t-1} + \sum_{j=1}^{p} \pi^{j}_{12} \Delta y_{2t-j} + \sum_{j=1}^{p} \pi^{k}_{13} \Delta y_{3t-k} + \phi_1 ECM_{1t-1} + \varepsilon_{1t}$$

……...(7)

$$\Delta y_{2t} = c_1 + \sum_{i=1}^{p} \pi^{j}_{21} \Delta y_{1t-1} + \sum_{j=1}^{p} \pi^{j}_{22} \Delta y_{2t-j} + \sum_{j=1}^{p} \pi^{k}_{23} \Delta y_{3t-k} + \phi_2 ECM_{2t-1} + \varepsilon_{2t}$$

…….…(8)

$$\Delta y_{3t} = c_1 + \sum_{i=1}^{p} \pi^{j}_{31} \Delta y_{1t-1} + \sum_{j=1}^{p} \pi^{j}_{32} \Delta y_{2t-j} + \sum_{j=1}^{p} \pi^{k}_{33} \Delta y_{3t-k} + \phi_2 ECM_{3t-1} + \varepsilon_{3t}$$

…….....(9)

3.3. Model Specification

In this study, Vector Y comprises of six variables. The vector of endogenous variables is specified as follows: $Y_t = f(USINTR, GDP, CAB, INTR, EXCH, OPEN)$

……..(10)

Where USINTR is the US interest rate which is a proxy for foreign monetary policy, GDP represent the Gross Domestic Product, CAB is the current account balance , INTR is the Interest rate which is a proxy for the domestic monetary policy; EXCH denotes the exchange rate, while OPEN is the degree of trade openness. The linear model is stated as follows:

$$Y_t = \alpha_0 + \alpha_1 USINTR + \alpha_2 GDP + \alpha_3 CAB + \alpha_4 INTR + \alpha_5 EXCH + \alpha_6 OPEN + \nu_t$$

……...……..(11)

Where ν_t denotes the error term, α_0 is the constant term, while α's are the parameters to be estimated. The logarithms form is specified as follows:

$$Y_t = \beta_0 + \beta_1 (USINTR_t + \beta_2 LOG(GDP)_t + \beta_3 CAB_t + \beta_4 INTR_t + \beta_5 LOG(EXCH)_t + \beta_6 LOG(OPEN)_t + \varepsilon_t$$

……..……..…(12)

Where ε_t is the error term , β_0 the constant term and β'_S the parameters to be estimated. The vector error correction model is specified if there is a rejection of the hypothesis of no cointegration. Thus, VECM equation is stated as follows:

$$\Delta USINTR_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} USINTR_{t-1} + \sum_{i=0}^{n} \alpha_{2i} \Delta LOG(GDP)_{1t-1} + \sum_{i=0}^{n} \alpha_{3i} \Delta CAB_{2t-1} + \sum_{i=0}^{n} \alpha_{4i} \Delta INTR_{3t-1} + \sum_{i=0}^{n} \alpha_{5i} \Delta LOG(EXCH)_{4t-1} + \sum_{i=0}^{n} \alpha_{6i} \Delta LOG(OPEN)_{5t-1} + \lambda ECM(-1) + \mu_t$$

…….…(13)

where ECM(-1) = error correction term and λ =error coefficient

3.4. Estimation Procedures

Since time series data are prone to unit root problems, a unit root test is conducted using the ADF test procedures. It is specified as follows:

$\Delta\mu_t = \beta\mu_{t-1} + \sum_{i=1}^{k} \Delta\mu_{t-1} + \varepsilon_t$ ……(14)

The stationarity test will be followed by a cointegration test to check if a long-run relation exists between the variables.

3.2. Sources of data

The data for this study was generated from the Central Bank of Nigeria statistical bulletin 2022

4. Data results and analysis

4.1. Data description

In order to focus on the main objective of evaluating the relationship between monetary policy variables and the current account in Nigeria, and effect of foreign monetary policy transmission on current account in Nigeria, the variables under consideration are therefore described in table 1 as follows.

Table 1: The descriptive statistics

	CAB	USINTR	GDP	INTR	EXCH	OPEN
Mean	4073.793	3.778536	780467.4	11.00976	78.17225	46.24118
Median	2013.459	3.063741	76110.38	12.00000	21.89065	43.59662
Maximum	44731.20	8.594585	6232244.	26.90000	306.0837	81.81285
Minimum	-19488.70	-1.281427	5205.100	2.500000	0.546781	19.62060
Std. Dev.	11134.89	2.420693	1612764.	5.599665	93.88689	15.88476
Skewness	1.444665	0.225772	2.314879	0.308552	1.134626	0.289019
Kurtosis	7.347094	1.930370	7.209656	2.629259	3.310338	2.137011
Jarque-Bera	59.03181	2.920667	84.83770	1.122910	11.36594	2.337569
Probability	0.000000	0.232159	0.000000	0.570379	0.003403	0.310744
Sum	211837.2	196.4839	40584302	572.5075	4064.957	2404.541
Sum Sq. Dev.	6.32E+09	298.8476	1.33E+14	1599.168	449552.2	12868.61
Observations	52	52	52	52	52	52

Source: Authors' results computation from the E-views 9

From the table above, the descriptive statistics of the monetary policy transmission shock variables indicate that six of the variables, CAB, USINTR, GDP, INTR, EXCH and OPEN showed mean values that are positive with 52 observations. From the results, a minimum current account value of -19488.70 and a maximum value of 44731.20 are recorded. The GDP recorded highest standard deviation while the foreign monetary policy variable, USINTR indicated a least standard deviation.

4.2. Correlation

The correlation matrix results are presented below:

Table2 : the correlation results

	CAB	USINTR	GDP	INTR	EXCH	OPEN
CAB	1.000000	0.363882	-0.132517	0.005095	-0.377993	0.061086
USINTR	0.363882	1.000000	0.222106	0.068683	-0.447261	0.275186
GDP	-0.132517	0.222106	1.000000	0.314745	-0.021963	0.630132
INTR	0.005095	0.068683	0.314745	1.000000	0.364764	0.272430
EXCH	-0.377993	-0.447261	-0.021963	0.364764	1.000000	-0.078318
OPEN	0.061086	0.275186	0.630132	0.272430	-0.078318	1.000000

Source: Authors' results computation from the E-views 9

The correlation result shows that there is positive relationship correlation between the global interest rate (USINTR) and the current account balance. The results showed a positive relation between domestic real interest rate and the CAB, this indicated negative balance in the country current account. Equally, a negative correlation exists between GDP and the CAB. The exchange rate and the CAB are negatively correlated, while there is positive correlation between trade openness and the CAB.

4.3. Stationarity test

The results of the ADF are presented in table 3 below:

Table 3: The ADF Unit root test procedures

Variable	Order zero I(0)	Probability	Order one I(1)	Probability	Order of integration
CAB	-2.296771	0.1770	-15.20150	0.0000	I(1)**
USINTR	-1.856347	0.3498	-6.381777	0.0000	I(1)**
GDP	-2.054720	0.2634	-6.298540	0.0000	I(1)**
INTR	-2.659940	0.0881	-7.429611	0.0000	I(1)**
EXCH	1.729124	0.9996	-4.854356	0.0002	I(1)**
OPEN	-2.695939	0.0817	-9.733834	0.0000	I(1)**
Note: ** shows stationarity at 5% respectively					

Source: Authors' results computation from the E-views 9

The stationarity test results indicated that the variables are all integrated at order one I(1) at 0.05 level of significance. A Johansen cointegration procedure is conducted

4.4. Cointegration

The Johansen test results is presented in the table 4 below:

Table 4: Cointegration results

TRACE TEST

Null Hypothesis	Alternative Hypothesis	Eigenvalue	Stat.	95% Critical Value	Prob.**
None *	r≤1	0.680891	159.8581	117.7082	0.0000
At most 1 *	r≤2	0.568709	105.0315	88.80380	0.0021
At most 2*	r≤3	0.455919	64.66481	63.87610	0.0429
At most 3	r≤4	0.307621	35.44925	42.91525	0.2270
At most 4	r≤5	0.229752	17.80343	25.87211	0.3573
At most 5 *	r≤6	0.104042	5.273372	12.51798	0.5576
* indicates rejection of the hypothesis at 5% level					

Source: Authors' results computation from the E-views 9

The results showed at least, three cointegration equations at 0.05 level of significance.

4.5. Lag Length selection

A lag length selection criterion was conducted in table 5 below:

Table 5: lag length results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-934.4875	NA	4.21e+09	39.18698	39.42088	39.27537
1	-777.8951	267.5120*	27996754*	34.16229*	35.79960*	34.78103*
2	-755.7141	32.34726	53435172	34.73809	37.77879	35.88717
3	-728.5164	32.86392	93359380	35.10485	39.54895	36.78428
4	-690.1974	36.72238	1.27e+08	35.00822	40.85573	37.21800
* Shows lag order selected based on the criterion						

Source: Authors' results computation from the E-views 9

The results indicated a lag order one following the AIC and LR test statistics procedure. Therefore, a VAR lag order one is conducted.

4.6. The long-run VECM estimation procedures

Table 6: The VECM estimated results

VARIABLE	CointEq1	STD ERROR	T-STATISTIC
CAB(-1)	1.000000		
USINTR(-1)	-402.8999	421.198	-0.95656
LOG(GDP(-1))	4935.410	600.014	8.22550
INTR(-1)	-1842.005	177.072	-10.4026
LOG(EXCH(-1))	3794.528	494.483	7.67372
LOG(OPEN(-1))	-18035.62	2522.74	-7.14921
C	-1491.701		

Source: Authors' results computation from the E-views 9

The long-run VECM results showed that LOG(GDP(-1)) indicate a positive sign and significant statistically. This implies that there exists positive feedback between the GDP and the CAB of the Nigerian economy during the period under study. This result indicate that the country tries to achieve growth through internally driven mechanisms for a favorable balance of payment. The result goes in line with the hypothesis which states that export cushions the effect of foreign exchange restrictions, and thus enhances importation of technology and methods of production (Feder, 1982; Sachs and Warner, 1995). The coefficient of the domestic monetary policy variables, INTR showed a negative sign and statistically significant. The results suggest that increase in the rate of interest leads to current account deficit of Nigeria during the period under consideration. The variable LOG(EXCH(-1)) show a positive and statistically significant. This implies that rate of exchange increment leads to an increase in the current account balance. The result also indicate that the trade openness contributed negatively to the current account balance of the country.

4.7. The VECM short-run estimation

Table 7:The short-run results

Error Correction:	D(CAB)	D(USINTR)	D(LOG(GDP))	D(INTR)	D(LOG(EXCH))	D(LOG(OPEN))
CointEq1	-2.208760	-3.250005	-4.420005	0.000368	-1.580005	1.060005
Std error	0.44737	5.60005	4.10005	0.00015	2.80005	9.10006
t-statistic	-4.93725	-0.58427	-1.08563	2.49574	-0.56702	1.15805
R-squared	0.879102	0.243622	0.196750	0.465078	0.189056	0.324241
Adj. R-squared	0.832876	-0.045582	-0.110374	0.260550	-0.121010	0.065863

Source: Authors' results computation from the E-views 9

The short-run estimated result showed that the error correction coefficient of -2.208760 showed a negative sign and statistically significant for the variable D(CAB). Thus, as the current account balance shifts from sits equilibrium state, an adjustment through monetary policy implementation results to about 2.2 percent annually. It can then be concluded that 2.2 percent of current account disequilibrium is corrected annually in the Nigerian economy during the period under study.

4.8 Impulse response functions

The figure 2 below shows impulse response function results of the effect of monetary policy transmission shocks on the current account, as well as the response of other macroeconomic variables to current account shocks.

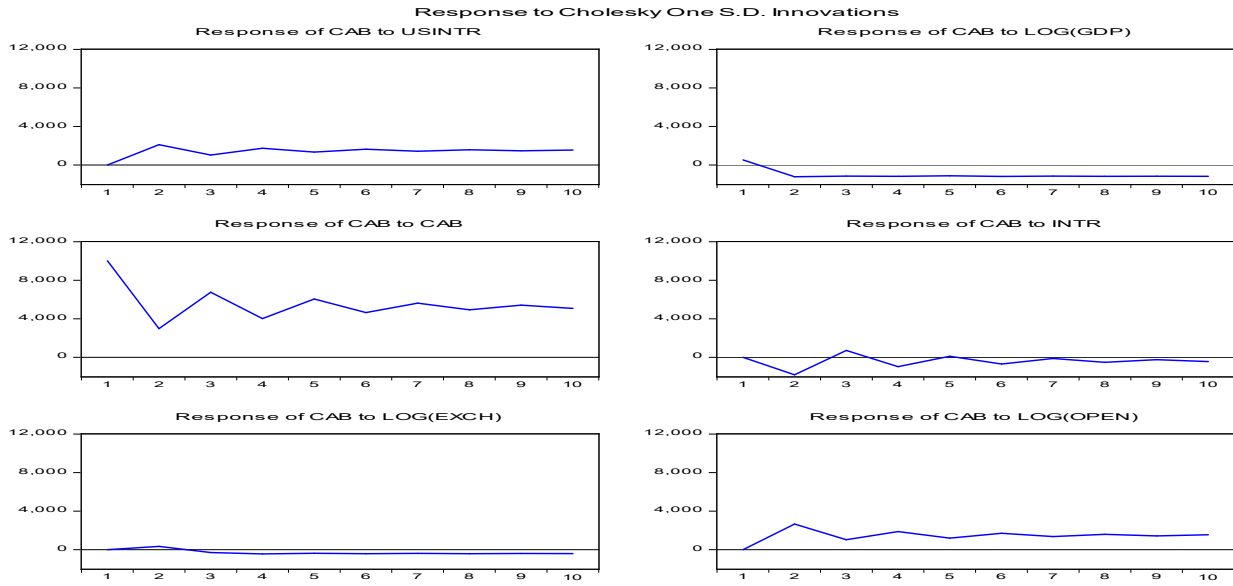

Figure 1 : the results of the impulse response functions

Source: Authors' results computation from the E-views 9

The figure 1 above showed that the impulse response of current account, CAB to the foreign monetary policy variable, USINTR, increases immediately and continues significantly with a positive sign along the horizons in the long-run. The result conforms to the findings of Makanza and Dunne (2015) that positive response of the foreign monetary policy shocks worsens the current account deficit. The response to GDP shock decreases and continues to fluctuate along the line to a negative shock in both short-run and long-run horizons. This result contradicts the theoretical expectations which states that that current account improves domestic output positively. The response of CAB to its own shock increases instantly and significantly and continues with the positive sign along the horizons in the long-run.

The response to the domestic monetary policy INTR and the exchange rate EXCH indicated that it decreased instantly and continues to decline along the horizon in both short and long run to a negative shock. This is line with the findings of Kim and Roubini (2008) who asserted that exchange rate depreciation improves the current account position of countries while appreciation seem to worsen the current account. The negative shock of the CAB to EXCH in the short run conform to the findings of Akonji and Olateju (2013) that there exists a negative interaction between money supply and exchange rate in Nigeria. The response of the CAB to the trade openness showed that it increased instantly and continued on the increase to a positive shock in both short and long run.

4.9. Variance decompositions

The variance decomposition results are therefore presented in the table 8 below:

Table 8: Variance Decomposition of CAB

Period	S.E.	USINTR	LOG(GDP)	CAB	INTR	LOG(EXCH)	LOG(OPEN)

1	10031.16	3.50E-06	0.281966	99.71803	0.000000	0.000000	0.000000
2	11218.81	3.527003	1.401818	86.75854	2.595211	0.093311	5.624113
3	13252.50	3.143536	1.759883	88.19536	2.148922	0.115828	4.636472
4	14173.31	4.262669	2.221074	85.17206	2.334622	0.194855	5.814723
5	15563.30	4.279207	2.354474	85.78656	1.941571	0.218773	5.419416
6	16475.32	4.812949	2.613581	84.50708	1.906492	0.258576	5.901322
7	17564.13	4.903644	2.728564	84.61790	1.681746	0.274799	5.793344
8	18431.77	5.188083	2.881616	84.01499	1.605113	0.298958	6.011244
9	19362.70	5.285398	2.967658	83.97279	1.469219	0.311631	5.993303
10	20180.56	5.456118	3.066352	83.64692	1.398323	0.326957	6.105334

Source: Authors' results computation from the E-views 9

The generated results showed that shock to the current account balance (CAB) on its own continued to increase from the beginning and maintained the increase in the long run period. It can also be seen from the results that shocks to Log(OPEN), USINTR, LOG(GDP) and INTR accounted for most of the variability in the overall periods.

4.10 Diagnostic test

To evaluate robustness of the estimated VECM results, diagnostic tests were conducted and the results presented in table 9 below:

Table 9: Diagnostic Tests

VEC Residual Serial Correlation LM Tests		
Null Hypothesis: no serial correlation at lag order h		
Lags	LM-Stat	Prob
1	38.36627	0.3627
Probs from chi-square with 36 df.		
VEC Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares)		
Joint test:		
Chi-sq	df	Prob.
318.1286	294	0.1595

Source: Authors' results computation from the E-views 9

The diagnostic test results showed absence of serial correlation in the estimated model, and that the variables residuals are homoscedastic. This can be seen as the null hypothesis of both tests were accepted as the probability values are greater than 0.05.

5. Conclusion

Recent changes in monetary policy decisions of advanced economies, especially introduction of quantitative easing approach geared towards normalization of monetary policy in the United States (US) has raised concern about macroeconomic stability of emerging economies and how they adjust to shocks. Also there has been inconclusive evidence on the interaction effect between monetary policy transmission shocks and the current account balances of countries. This study examines the monetary policy effect on current account balance in Nigeria covering a period from 1970 to 2021. The monetary policy states that a currency depreciation in an economy in the short run leads to current account deficit, thus leading to an increase in import; and since there is an access to international trade by the economy and competes with foreign competitors, there will be a reduction in the cost of production after a time period. The effectiveness of monetary policy instrument depends on the degree or pass-through ratio of interest rate and level of price rigidities as it affects the aggregate demand in the economy.

The long-run VECM results showed that LOG(GDP(-1)) indicate a positive sign and significant statistically. This implies that there exists positive feedback between the GDP and the CAB of the Nigerian economy during the period under study. The coefficient of the domestic monetary policy variables, INTR showed a negative sign and significant statistically. The results suggest that increase in the rate of interest leads to current account deficit of Nigeria during the period under consideration. The variable LOG(EXCH(-1)) indicates a positive sign and is statistically significant. The short-run estimated result showed that 2.2 percent of current account disequilibrium is corrected annually in the Nigerian economy during the period under study. The impulse response of current account, CAB to the foreign monetary policy variable, USINTR, increases immediately and continued immediately and significantly along the horizons in the long-run to a positive shock. The GDP shock results indicated that it decreased and continued to fluctuate along the line to a negative shock in both short-run and long-run horizons. The results showed responses to the domestic monetary policy INTR and the rate of exchange EXCH decreased immediately and continued declining along the horizon to a negative shock. The Variance decomposition test results showed that CAB on its own increased from the beginning and continued and maintained the increase. It can be seen equally from the results table that shocks to LOG(OPEN), USINTR, LOG(GDP) and INTR in the overall periods, accounted for most of the variabilities. The diagnostic test results showed absence of serial correlation in the estimated model, and that the variables residuals are homoscedastic, as the null hypothesis of both tests were accepted as the probability values are greater than 0.05.

Based on study outcome, the following recommendations are therefore made: The foreign monetary policy shocks possess a risk in the current account balance of the country. Therefore, to reduce such risks requires an appropriate monetary policy measure that ensure adjustment of the current account with little effect on the economy. The monetary authority should provide incentives that would encourage importation of industrial materials and manufacturing equipment for an expansion of the country's export volume, thus attracting a current account surplus.

6. Acknowledgements

We appreciate the efforts made and wishes to thank the faculty members from Economic Sciences, Oradea University for the opportunity given us to present our paper for publication in their journal.

References

Adekunle, P. A., Baba, N. Y., Stephen, S. A., Ogbuehi, F., Idris, A., and Zivoshiya, P. B., 2018.MonetaryPolicy Transmission in Nigeria:How Important is Asset Prices Channel?" *Microeconomics and Macroeconomics*, 6(3): 55-66

Adler, G. and Buitron,C.O.2017.Tipping the Scale? The Workings of Monetary Policy through Trade. The IMF Working Papers WP/17/142

Adofu, I. and Salami, A.,2017.Effects of Monetary Policy Shocks in Nigeria: Evidence from Structural VAR Modeling. *Lafia Journal of Economics and Management Sciences* Vol.2 No.1,

Agbonlahor,O.,2014.The impact of monetary policy on the economy of the United Kingdom: a vector error correction model (VECM). *European Scientific Journal*,vol.10, No.16

Akinlo, A. E. and Apanisile, O. T.,2019. Monetary Policy Shocks and Effectiveness of Channels of Transmission in Nigeria: A Dynamic Stochastic General Equilibrium Approach *Global Business Review*. https://journals.sagepub.com/doi/abs/10.1177/0972150918825194

Boivin, J, Kiley, M. T and Mishkin, F. S.,2010. How has Monetary Transmission Mechanism Evolve over Time? Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board, Washington, D.C.

Claessens,S Ghosh, S. R. and Mihet, R.,2013. Macro-prudential policies to mitigate financial system vulnerabilities. *Journal of International Money and Finance*, 39, (C), 153-185

Cristiano-Botia, D., Gonzalez-Molano, E. and Huertas-Campos,C.,2018.Evaluation of the transmission of the monetary policy interest rate to the market interest rates considering agents expectations. A paper presented *at the Ninth IFC Conference on "Are post-crisis statistical initiatives completed?"* in Basel, 30-31 August

Dmilola, R.A. and Olateju, A. O.,*2013.*The Impact of Monetary Policy on Current Account Balance In Nigeria. *IOSR Journal of Humanities and Social Science. Volume 7, Issue 3, PP 67-72* *www.Iosrjournals.Org.*

Ferrero,A, Gertler,M. and Svenson, E.O.,2008.Current Account Dynamics and Monetary Policy. The NBER Working Paper No. 13906

Jorgenson, D.W.,1963. Capital Theory and Investment Behavior. *The American Economic Review*, 53, 247-259

Kim, S. and Roubini, N.,2008.Twin deficit or twin divergence? Fiscal policy, current account,

and real exchange rate in the US. *Journal of International Economics* 74(2): 362-383.

Lane, P.R.,2019.The international transmission of monetary policy. *A Keynote speech at the annual meeting* of the CEPR's International Macroeconomics and Finance (IMF) Programme, Frankfurt am Main, 14 November

Lerner, A. P.,1944.*The Economics of control: Principles of welfare economics*. London: Macmillan Company, N.Y. 4

Marshall, A.,1923. *Money, Credit and commerce"*. London: Macmillan & CO

NBS, 2017 Consumer Price index, February 2017. http://www.nigerianstat.gov.ng/report/527 Available at:https://www.ecb.europa.eu/press/key/date/2016/html/sp160701.en.html

Makanza, C. S. and Dunne, J. P.,2015.Current Account Dynamics and Monetary Policy Transmission in South Africa" .Available online at: h*ttps://2017.essa.org.za/fullpaper/essa_3598.pdf* · PDF file

Obstfeld, M. and Rogoff, K.,1995.The Intertemporal Approach to the Current Account. *Handbook of International Economics* 3: 1731.99.

Obstfeld, M. and Rogoff, K.,2009.Global imbalances and the financial crisis: products of common causes. Centre for Economic Policy Research, Discussion Paper No. 7606

Oshota, S.O. and Adeleke, I.A.,2015.Determinants of the Current Account Balance in Nigeria. *Acta Universitatis Danubius. Œconomica*, Vol 11, No 3.
http://journals.univ-danubius.ro/index.php/oeconomica/article/view/2774/2528

Otolorin, G. E.,2017.Effectiveness of monetary policy transmission channels in a recessed economy. *Uyo Journal of Sustainable Development* Vol.2 No.2. https://www.researchgate.net/publication/324043829

Sims, C. A.,1980.Macroeconomics and Reality. *Econometrica, 48*, 1-48.

Rogoff, K.,2007.Impact of Globalization on Monetary Policy, in Federal Reserve
Bank of Kansas City. The New Economic Geography: Effects and Policy Implications

The World Bank, 2019.The World Bank in Nigeria. Available online at: https://www.worldbank.org/en/country/nigeria/overview

CEO Overconfidence and Tax Aggressiveness: The Role of CEO Age and Firm Size

Nur LISTIANI[1] , Supramono SUPRAMONO[2], Theresia Woro DAMAYANTI[3], Yeterina Widi NUGRAHANTI[4]
[1] Alumni of Doctoral Program in Management, Faculty of Economics and Business, Satya Wacana Christian University, Indonesia
[2-4] Faculty of Economics and Business, Satya Wacana Christian University, Indonesia
nlistiani99@gmail.com
supramono@uksw.edu
theresia.damayanti@uksw.edu
yeterina.nugrahanti@uksw.edu*

Abstract: *This study aims to investigate the effects of CEO overconfidence on tax aggressiveness and analyses the role of CEO age and firm size as moderators. The study conducted 590 observations of manufacturing firms listed on the Indonesia Stock Exchange from 2010 to 2019. The data was analyzed using the FGLS method. The results show that CEO overconfidence leads to the practice of tax aggressiveness. Other results confirmed that the CEO age strengthens the CEO overconfidence effect to practice tax aggressiveness. Furthermore, this study found that the firm size enhances the effect of CEO overconfidence to engage in tax aggressiveness. These findings suggest that manufacturing firms should not allow managers to exhibit overconfidence, considering that it can raise the likelihood of tax aggressiveness practices, which can be detrimental to the firm's long-term performance.*

Keywords: CEO overconfidence, tax aggressiveness, CEO age, firm size

JEL Classification: G41, H26, M41

Introduction

Tax aggressiveness is a crucial issue because it is prone to occur in emerging countries, including Indonesia, where most of their income sources depend on taxes (Syukur & Jongsureyapart, 2023). Referring to the state of tax justice report 2023, tax revenue loss in Indonesia reached 2,806.3 USD. This value is the highest tax loss compared to several other emerging countries in the ASEAN region. It turns out that 97.5% of the total tax revenue loss in Indonesia above is due to corporate tax abuse (Tax Justice Network, 2023), which is

* Corresponding author: Yeterina Widi Nugrahanti
Cite as:
The journal editors will add this information after completion of the volume!

closely related to tax aggressiveness. Therefore, it is interesting to investigate further the factors that contribute to tax aggressiveness.

Based on the perspective of upper echelon theory (Hambrick & Mason, 1984), top management or CEO has the authority to determine the strategic direction of the company. Therefore, tax aggressiveness is also inseparable from the role of the CEO. Through his authority, the CEO can influence tax policy by allocating resources, regulating compensation for tax directors, raising costs, and recording low real income (Sucahyo et al., 2020). The upper echelon theory also emphasizes that the psychological characteristics of CEOs, such as overconfidence, have the potential to have a significant impact on strategic optimization. CEO overconfidence is predicted to be related to tax aggressiveness because they will tend to overestimate their ability to generate profits for the company, including by practicing tax aggressiveness (Carrer & Slavov, 2021).

Overconfidence has received a lot of attention in the behavioral finance literature over the last two decades to explain investor behavior that causes mispricing in the equity market (Abideen et al., 2023). Overconfidence is a sort of behavioral bias that receives more attention than other types of biases because it has a more genuine and dominant influence on managerial decision-making (Shah et al., 2018). Overconfidence can be experienced not just by investors but also by firm managers, which is known as CEO overconfidence and is frequently referred to as one of the causes of CEOs making biased financial decisions (Kim et al., 2022). CEO overconfidence tends to overlook existing dangers (Hayward et al., 2004) and is overly optimistic in forecasting future profitability (Young & Florence, 2019). They even take on projects with a negative net present value (Zhang & Yang, 2018). As a result, CEO overconfidence is associated with overinvestment (Zia et al., 2017).

Overinvestment, defined as an investment expenditure that exceeds a firm's financial capability and ability (Hoshmand & Khanagha, 2014), can cause huge and even negative cash flow. Firms might boost their cash flow by being more aggressive with their taxation (Bimo et al., 2019). Tax charges are frequently regarded as a substantial cost for firms, and aggressive tax policies are thought to be capable of increasing the cash flow. Furthermore, CEO overconfidence frequently overestimates predicted earnings. One strategy to decrease the gap between the predicted and actual earnings is to utilize tax aggressiveness as an earnings management instrument (Duhoon & Singh, 2022). However, previous studies show inconsistent results. Studies conducted by Sutrisno and Pirzada (2020) and Ilaboya and Ohiokha (2016) reveal that CEO overconfidence causes tax aggressiveness; another study shows the opposite result (Carrer & Slavov, 2021). The firm's choice of tax aggressiveness may not only be based on CEO overconfidence but there are other interacting factors.

Previous studies have found that tax aggressiveness increases with the managers' ages (Jiang & Kim, 2022). Meanwhile, other studies have provided evidence that firm size is a determinant of tax aggressiveness (Riguen et al., 2021, Flamini et al., 2021; Putica, 2023). However, this study positions CEO age and firm size as a moderating variable that can boost or diminish the effect of CEO overconfidence on tax aggressiveness. To the best of our knowledge, no study has been conducted to explain the moderating role of the CEO age and firm size in allowing for a heterogeneous effect of CEO overconfidence on tax aggressiveness.

This study aims to investigate (a) the effects of CEO overconfidence on tax aggressiveness and (2) the role of CEO age and firm size in moderating the effects of CEO overconfidence on tax aggressiveness. We expect that this study will fill the gap in the existing literature by providing an empirical framework demonstrating the relationship between CEO

overconfidence and tax aggressiveness based on individual and firm-specific characteristics applicable in developing countries. The results of this study also provide policy implications in an effort to increase the tax ratio.

2. Literature Review

2.1. Managerial Overconfidence

Someone who involves emotional and psychological factors in making financial decisions may result in bias (Kim et al., 2021). There are two types of bias, including cognitive bias and emotional bias (Pompian, 2012). Mistakes in information processing or reasoning cause cognitive biases, while emotional biases are more concerned with spontaneous thinking or relying on feelings than with the outcomes of mature thoughts. One of the most common emotional biases is overconfidence (Adebambo & Yan, 2018). Several academicians have explored the impact of overconfidence, not only in capital markets but also in corporate finance (Malmendier & Tate, 2015). Baker and Nofsinger (2010) stated that the behavioral finance approach is more significant for corporate finance than capital market investments. Overconfident people tend to overestimate their abilities (Young & Florence, 2019), ignore relevant information (Gigerenzer & Gaissmaier, 2011), and often make flawed decisions (Banerjee et al., 2020). Empirical evidence shows than managerial overconfidence negatively affects firm performance and value (Shah et al., 2018; Kunjal et al., 2021).

2.2. Overconfidence and Tax Aggressiveness

Accounting, taxation, finance, management, and legal literature have all published significant studies on corporate tax aggressiveness. Tax aggressiveness refers to actions to lower taxes that are either illegal, legal, or both (Rachmawati et al.,2020). Intentional tax aggressiveness reduces the firm profit. Consequently, many firms strive to find strategies to decrease taxes (Carrer & Slavov, 2021). Firms can legally reduce tax obligations by applying specific accounting methods, adjusting inventory values, and utilizing debt interest deductions (Duff, 2009).

One of the goals of reducing the tax burden through tax aggressiveness is to obtain higher after-tax income. Tax aggressiveness, on the other hand, has more negative consequences than benefits (Akbari et al., 2019), such as lowering the firm's reputation. There are specifically three reasons why CEOs with overconfidence tend to practice tax aggressiveness. First, they are disposed to underestimate risks while exaggerating the likelihood of profitable outcomes (Jilani & Chouaibi, 2021). However, in fact, the firm must continue to demonstrate good performance from the perspective of shareholders by providing targeted profit. Besides that, CEO overconfidence may overestimate their abilities to do tax planning and believe that tax authorities will not audit them. Therefore, tax aggressiveness will be a viable option. According to Carrer and Slavov (2021), CEOs with overconfidence are inclined to expect more income through various cost-cutting strategies, including paying taxes.

Second, tax aggressiveness lowers the tax burden to support cash flow needs from overinvestments, a trait of overconfidence (Bimo et al., 2019; Sutrisno et al., 2022). Overconfident CEOs often overinvest beyond capacity, relying on tax savings. Third, overconfidence also involves over precision, causing gaps between projected and actual profits and encouraging earnings management. Tax aggressiveness, as part of earnings management, generates profits while minimizing taxes (Desai & Dharmapala, 2009).

Empirical evidence confirms that overconfident CSOs more likely to engage in tax aggressiveness (Chyz et al., 2019).
H1: CEO overconfidence leads to the practice of tax aggressiveness.

2.3. CEO Overconfidence, Tax Aggressiveness, and CEO Age

Shore et al. (2003) mentioned that age can influence a person's psychology and way of thinking. As CEOs age, they are more likely to shift their perspectives towards tax aggressiveness. Several previous studies have also verified that CEO age positively influences tax aggressiveness (Jiang & Kim, 2022). This is also in line with the Upper Echelon Theory (Hambrick & Mason, 1984) that top managers' individual qualities reflect organizational outcomes through their business strategy choices where the risks are expected to undergo a shift.
Moreover, the CEO age also allows for CEO overconfidence. Several prior studies examined how overconfidence varies with aging (Piehlmaier, 2020). More senior CEOs are associated with extensive expertise (Peni, 2014). Experienced CEOs understand their firms better and are better able to handle internal and external problems (Law & Ningnan, 2022). Individual confidence grows as a result of experience (Ateşa et al., 2016). Thus, older CEOs are likely to contribute to the effect of CEO overconfidence on tax aggressiveness.
However, senior CEOs tend to be less overconfident than juniors (Malmendier & Nagel 2011). Overconfidence also declines with age as older individuals become more cautious (Tekçe et al. 2015; Samanez-Larkin et al., 2020). Age reduces risk tolerance (Serfling, 2015), causing CEO views on tax aggressiveness to differ by age. Thus, the interaction between CEO age and overconfidence on tax aggressiveness may be non-linear, with younger CEOs amplifying the effect more than the older ones.
H2: The CEO age strengthens CEO overconfidence to practice tax aggressiveness, although the effects are stronger for the young age group than for the old age group.

2.4. CEO Overconfidence, Tax Aggressiveness, and Firm Size

Additionally, firm size describes the size of a firm (Karlsson, 2021) as defined by the total assets (Natsir & Yusbardini, 2020). It is a significant corporate attribute (Dang & Li, 2018) because firms with high total assets are thought to have better prospects and can generate profits compared to firms with smaller total assets (Chen et al., 2005). Likewise, large firms can boost productivity by making use of economies of scale compared to small firms (Liu et al., 2019). Larger-scale firms are also more competitive than smaller firms since they have a market and thus have more potentials to achieve huge profits (Karlsson, 2021). The large firms also tend to practice tax aggressiveness because they have higher resources and political superiority than the small firms (Hoi et al., 2013). Prior studies have also shown that firm size positively influences tax aggressiveness (Flamini et al., 2021). For these reasons, the firm size can be a qualifying factor that promotes the CEO's overconfidence in implementing a higher level of tax aggressiveness.
Three factors explain the non-linear interaction between firms' size and CEO overconfidence on tax aggressiveness, with the effect weakening in larger firms. First, large firms have better financial access and lower capital costs (Ponikvar et al., 2018; Embong et al., 2012), reducing reliance on tax aggressiveness. Second, larger firms avoid tax aggressiveness to protect their reputation (Kaur & Singh, 2020). Third, larger firms have

greater disclosures (Karim et al., 2013). As a result, the small firms will strengthen the effect of overconfidence on the tax aggressiveness more than the large firms do.
H3: Firm size strengthens CEO overconfidence to practice tax aggressiveness, although the effects are stronger for small firms than large firms

3. Methodology

Data were collected from firm and IDX websites for 2010-2019 to avoid bias, as firms had recovered from the 2008 crisis, while 2020 data were excluded due to COVID-19 impacts and tax policy distortions. The sample includes 59 manufacturing firms listed on IDX, with 590 firm-year observations meeting criteria of active trading, complete financial reports, and reporting in Indonesian currency.
The dependent variable in this study was tax aggressiveness, measured by the effective tax rate (ETR) (tax expense/pre-tax income). If the result was small, it implied that the firm practiced tax aggressiveness. Meanwhile, the independent variable was CEO overconfidence (CO), measured by four proxy variables borrowed from Gao and Han (2020), namely capital expenditure (CAPEX), sales growth (SG), debt ratio (DER), and dividends (DEV). The firm's CAPEX was compared to the industry median; if it was higher than the industry median, the CEO was considered overconfident, and the variable was assigned a value of 1; otherwise, it was assigned a value of 0. Furthermore, if the DER ratio was larger than the industry median, it was assigned a value of 1; otherwise, it was given a value of 0. Meanwhile, the DEV was equivalent to 1 if the corporation did not distribute dividends and 0 if the firm did. The CEO was considered overconfident (CO) if the total r score of the four variables was equal to or more than 2.
In this study, there were two moderating variables, including the manager age (AGE), which referred to the CEO's age as of 2019, and the firm size (FSIZE), which was determined by the total assets (Chen et al., 2024). Meanwhile, the control variables consisted of firm-specific factors such as firm age (FAGE) – which was the age until 2019; the firm profit (ROE) – which was the net income divided by the equity; the firm's operating cash flow (FOCF) – which was the operating cash flow divided by the total assets; the loss (LOSS) – which was a dummy variable with a value of 1 if the firm reported a loss and 0 if otherwise; and the asset turnover (TATO) – which was the sales divided by the total assets.

4. Results/findings

4.1. Descriptive Statistics

Table 1 presents descriptive statistics of the research variables from 590 firms.

Table 1: Descriptive Statistics

Variable	Average	Std. Deviation	Minimum	Maximum	%

ETR (%)	20.12	15.37	0	96.10	-
CO: CO Non-CO					 35% 65%
AGE (year)	55.39	9.16	33	81	-
AGEyoung			33	49	13%
AGEmiddle			50	65	63%
AGEold			66	81	24%
FSIZE (size)	10,872,032	34,821,353	78,200	35,958,000	-
FSIZEsmall			78,200	697,657	29%
FSIZEmedium			702,509	2,999,767	41%
FSIZElarge			3,000,999	35,958,000	30 %
OCF (%)	18.42	25.25	-37.25	167.96	-
FAGE(year)	21.43	5.95	1	37	-
ROE (%)	15.59	22.75	-28.58	143.58	-
LOSS:					
Loss					6%
Profit					94%
TATO	1.26	0.77	0.21	8.43	-

Where ETR is tax aggressiveness, CO is CEO overconfidence, and AGE is the age of the CEO, which is classified into three groups: AGEyoung (under 50 years old), AGEmiddle (50 to 65 years old), and AGEold (over 65 years old). FSIZE is firm size which consists of three categories: FSIZEsmall if the total IDR assets are less than 700,000,000,000, FSIZEmedium if the total assets are between 700,000,000,000 and 3,000,000,000,000, and FSIZElarge if the total assets are greater than 3,000,000,000,000. OCF is the operating cash flow; ROE is return on equity; LOSS is a dummy variable that is assigned a value of 1 if the firm experiences a loss before taxation and a value of 0 otherwise; and TATO is the asset turnover ratio.

The average ETR of manufacturing firms is 20.12%, below the 25% statutory rate (Law No 36/2008)., indicating prevalent tax aggressiveness. Table 1 shows that 35% of managers are overconfident, with an average age of 55, and 63% aged 50-65, reflecting managerial maturity. On average, firms hold IDR 10.88 trillion in assets, dominated by medium-size firms (41%) with assets between IDR 700 billion and 3 trillion.

4.2. Classical Assumption Test

Table 2 shows the results of the classical assumption test for the full model.

Table 2: Results of the Classical Assumption Test

Assumption	Test	Characteristic	Criteria	Conclusion
Normality	Shapiro-Wilk	Sig = 0.07	Sig. > 0.05	Fit

No Heteroscedasticity	Breusch Pagan/ Cook-eisberg	Sig = 0.21		Sig. > 0.05	Fit
No Multicollinearity	Variant Inflation Factor	VIF CO VIF AGE VIF FSIZE VIF OCF VIF FAGE VIF ROE VIF LOSS VIF TATO	=1.64 =1.04 = 1.54 = 3.60 = 4.80 = 3.68 = 1.16 = 3.60	VIF < 5	Fit

4.3. Hypothesis Testing

Prior to hypothesis testing, Chow and Hausman tests confirmes the fixed effect model as the best fit, estimating using OLS (Gujarati & Porter, 2009). To improve robustness, we applied cross-sectional weight using FGLS (Brooks, 2014). Table 3 depicts the regression results of the effects of CEO overconfidence on tax aggressiveness. The lower the ETR, the more aggressive the firm is becoming. The results demonstrate that the CO coefficient is both negative and significant. In other words, the higher the level of CEO overconfidence, the lower the ETR or tax aggressiveness. Thus, the first hypothesis can be supported empirically.

Table 3: Estimated Results of the Effects of CO on TA

Dependent Variable: ETR	Model 1		
	β	Z	Sig.
CO	-0.04	-4.58	0.00
Control variables:			
OCF	-0.03	-1.75	0.08
FAGE	-0.003	-4.79	0.00
ROE	0.08	3.43	0.00
LOSS	-0.22	-9.44	0.00
TATO	-0.01	-1.73	0.08
R2	0.16		
Adjusted-R2	0.15		
F-test	18.24		
Sig.	0.00		

Table 4 shows that the CO*AGE interaction coefficient is negative and significant, demonstrating that CEO age enhances the effects of CEO overconfidence on tax aggressiveness. Furthermore, the age variable is divided into three groups (young, medium, and old), aiming to investigate whether there is a shift in the moderating effect at different

age groups. The results reveal that the interaction coefficient of CO*AGEyoung and CO*AGEmiddle is negative and significant. However, CO*AGEold is not. This suggests that there is a moderating effect in the young age group and middle age group but not in the old age group. Therefore, the second hypothesis can be supported empirically. The CEO age strengthens CEO overconfidence to practice tax aggressiveness, although the effects are stronger for the young age group than for the old age group.

Table 4: Estimated Results of the Effects of CO on TA Moderated by CEO Age

Dependent Variable: ETR	**Model 2**			**Model 3**		
	β	Z	Sig.	β	Z	Sig.
CO	-0.18	-7.96	0.00	-0.20	-8.71	0.00
CO*AGE	-0.001	-6.05	0.00			
CO*AGEyoung				-0.05	-3.41	0.00
CO*AGEmiddle				-0.07	-4.21	0.00
CO*AGEold				-0.01	-0.13	0.89
Control Variables:						
OCF	-0.02	-1.86	0.06	-0.05	-2.31	0.02
FAGE	-0.003	-3.90	0.00	-0.00	-3.78	0.00
ROE	0.05	2.78	0.01	0.08	3.24	0.00
LOSS	-0.00	-0.71	0.48	-0.01	-1.14	0.26
TATO	0.02	3.68	0.00	0.01	2.32	0.02
R2	0.15			0.13		
Adjusted-R2	0.14			0.12		
F-test	14.21			8.84		
Sig.	0.00			0.00		

Table 5 presents the estimated results of the effects of CEO confidence on tax aggressiveness moderated by firm size. The findings demonstrate that the CO*FSIZE coefficient is significantly negative, which means that the firm size strengthens the effects of CEO overconfidence on tax aggressiveness. In the next test, the firm size is divided into three groups, including small, medium, and large firms, to understand whether there is a shift in the moderating effects between the firm size groups. The coefficient of CO*FSIZEsmall and CO*FSIZEmiddle is negative and significant, but the coefficient of CO*FSIZEmiddle is not. This demonstrates that the small and medium-sized firms have a moderating effect, whereas the large firms do not. Therefore, we confirmed that the third hypothesis can be supported empirically. It is proven that firm size strengthens CEO overconfidence to practice tax aggressiveness, although the effects are stronger for small firms than large firms.

Table 5: Estimated Results of the Effects of CO on TA Moderated by Firm Size

Dependent Variable: ETR	**Model 4**			**Model 5**		
	β	Z	Sig.	β	Z	Sig.
CO	-0.20	-8.61	0.00	0.20	-8.84	0.00
CO*FSIZE	-2.86	-2.27	0.02			

CO*FSIZEsmall				-0.09	-5.37	0.00
CO*FSIZEmiddle				-0.07	-4.45	0.00
CO*FSIZElarge				-0.01	-0.53	0.59
Control Variables:						
OCF	-0.03	-1.67	0.09	-0.05	-2.40	0.02
FAGE	-0.00	-4.71	0.00	-0.03	-3.45	0.00
ROE	0.06	2.90	0.00	0.09	3.57	0.00
LOSS	-0.002	-0.45	0.65	-0.01	-1.79	0.07
TATO	-.003	-1.02	0.31	0.02	-2.90	0.00
R2	0.12			0.16		
Adjusted-R2	0.10			0.14		
F-test	10.81			10.85		
Sig.	0.00			0.00		

5. Discussions

This study aimed to investigate the effect of managerial overconfidence on tax aggressiveness and analyses the role of CEO age and firm size as moderators. The result showed that the first hypothesis was accepted. It is proven that CEOs with overconfidence are more likely to practice tax aggressiveness. CEO overconfidence in manufacturing companies in Indonesia tends to carry out tax aggressiveness as a means of earnings management. As stated by Bimo et al. (2019), the tax aggressiveness was carried out by CEO overconfidence as a strategy due to overinvestment. They were motivated to implement earnings management, one of which was through tax aggressiveness.

The second hypothesis in this study is also supported by data. Our findings underline that CEO age boosts the effects of CEO overconfidence, which leads to the practice of tax aggressiveness. However, the moderating effect of the young age group is stronger than that of the old age group. This supports the relationship between CEO overconfidence and the CEO's age, which is only sometimes linearly related to tax aggressiveness. The older the CEOs, the more cautious and mindful they became about many things, including tax aggressiveness. Older managers tend to be more experienced and confident, including in practicing tax aggressiveness (Chen et al., 2024; Piehlmaier, 2020). However, approaching retirement, their overconfidence bias declines as they become more cautious (Tekçe et al., 2015; Samanez-Larkin et al., 2020), making the moderating effect of older age on the CEO overconfidence-tax aggressiveness relationship weaker than that of younger managers.

The result of this study also show that the third hypothesis was accepted. This finding validates that the firm size strengthens the CEO overconfidence effect on the practice of tax aggressiveness. However, the effect is stronger for small firms than large firms. The firm size variable, like the age variable, has a non-linear relationship with tax aggressiveness. It is because the large firms have more resources to invest, are better at maintaining their reputations, and make more disclosures, thus allowing them to be more cautious with tax issues. Large firms have greater profit potential (Chen et al., 2005), productivity (Liu et al., 2019), and political power (Hoi et al., 2013), encouraging CEO overconfidence in tax

aggressiveness. However, the effect weakens as larger firms prioritize reputation (Ullah et al., 2021), and face greater disclosures demands than the small firms (Karim et al., 2013).

6. Conclusions

This study confirmed that CEOs with overconfidence are more likely to practice tax aggressiveness. Furthermore, the CEO's age and firm size have also been shown to strengthen the effects of CEO overconfidence to practice tax aggressiveness. However, the relationships that occur are not always linear. Moreover, compared to the old CEOs, the young CEOs have demonstrated a greater potential for tax aggressiveness. Meanwhile, small firms tend to practice tax aggressiveness more than large firms.

Theoretically, this study expands tax aggressiveness literature by introducing CEO age and firm size as moderators in the CEO overconfidence-tax aggressiveness relationship. Practically, it urges managers to limit tax aggressiveness by avoiding overconfidence, encourages investors to be cautious with overconfident CEOs, and advises tax authorities to monitor such firms, especially considering CEO age and firm size. This study has two limitations. First, it only considers CEOs, while decision making may involve other executives like CFOs. Second, it assumes dividend omissions result from CEO overconfidence, ignoring possible cash flow constraints. Future studies should address both aspects.

Acknowledgements

We gratefully acknowledge funding from the Ministry of Research and Technology/BRIN, Grant No. 033/E5/PG.02.00/2022, and Satya Wacana Christian University, Indonesia.

References

Abadie, A., Imbens, G. W., & Athey, S. (2017). When should you adjust standard errors for clustering? Working Paper National Bureau Economics Research. http://www.nber.org/papers/w24003

Abideen, Z. U., Ahmed, Z., Qiu, H., & Zhao, Y. (2023). Do Behavioral Biases Affect Investors' Investment Decision Making? Evidence from the Pakistani Equity Market. Risks, 11(6), 109. https://doi.org/10.3390/risks11060109

Adebambo, B. N., & Yan, X. (2018). Investor overconfidence, firm valuation, and corporate decisions. Management Science, 64(11), 5349–5369. https://doi.org/10.1287/mnsc.2017.2806

Akbari, F., Salehi, M., Ali, M., & Vlashani, B. (2019). The relationship between tax avoidance and fi rm value with income smoothing. 27(1), 125–148. https://doi.org/10.1108/IJOA-09-2017-1235

Ateşa, S., Coşkun, A., Şahin, M. A., & Demircan, M. L. (2016). Impact of Financial Literacy on the Behavioral Biases of Individual Stock Investors : Evidence from Borsa Istanbul. Business and Economics Research Journal, 7(3), 1–19. https://doi.org/10.20409/berj.2016321805

Baker, H. K., & Nofsinger, J. R. (2010). Derivative Markets. In Behavioral Finance: Investors, Corporations, and Markets. https://doi.org/10.1002/9781118258415.ch33

Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. Quarterly Journal of Economics, 116(1), 261–292. https://doi.org/10.1162/003355301556400

Bimo, I. D., Prasetyo, C. Y., & Susilandari, C. A. (2019). The effect of internal control on tax avoidance: the case of Indonesia. Journal of Economics and Development, 21(2), 131–143. https://doi.org/10.1108/jed-10-2019-0042

Brooks, C. (2008). Introductory Econometrics for Finance (2nd ed.). Cambridge University Press. https://doi.org/10.1017/9781108524872.

Carrer, G., & Slavov, T. (2021). Tax aggressiveness and CEO overconfidence in the stock market: Evidence from Brazil. Investment Management and Financial Innovations, 18(1), 165–176. https://doi.org/10.21511/imfi.18(1).2021.14

Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. Journal of Intellectual Capital, 6(2), 159–176. https://doi.org/10.1108/14691930510592771

Chen,S., Tzavara, D., Argyropoulou,M., Koufopoulos, D., Argyropoulou, R. 2024. CEO characteristics and earnings management: a study of manager tenure, age, gender, and overconfidence. Studies in Business and Economics,19(3),335-347. DOI 10.2478/sbe-2024-0059

Chyz, J. A., Gaertner, F. B., Kausar, A., & Watson, L. (2019). Overconfidence and Corporate Tax Policy. Review of Accounting Studies, 24(3), 1114–1145. https://doi.org/10.1007/s11142-019-09494-z

Dang, C. D., & Li, F. (2018). Measuring Firm Size in Empirical Corporate Finance. Journal of Banking & Finance, 86 (1), 159-176. https://doi.org/10.1016/j.jbankfin.2017.09.006.

Daniel, K., & Hirshleifer, D. (2015). Overconfident investors, predictable returns, and excessive trading. Journal of Economic Perspectives, 29(4), 61–88. https://doi.org/10.1257/jep.29.4.61

Desai, M. A., & Dharmapala, D. (2009). Corporate Tax Avoidance and Firm Value. The Review of Economics and Statistics, 3(3), 537–546. https://www.jstor.org/stable/25651357

Duff, D. G. (2009). Australian Business Tax Reform Restrospect and Prospect in Chris Evans & Rick Krever, Tax Avoidance in the 21st Century (pp 477-501). Thompson.

Duhoon, A., & Singh, M. (2022). Corporate tax avoidance : a systematic literature review and future research directions. https://doi.org/10.1108/LBSJMR-12-2022-0082

Embong, Z., Mohd-saleh, N., & Hassan, M. S. (2012). Firm size , disclosure and cost of equity capital. 20(2), 119–139. https://doi.org/10.1108/13217341211242178

Flamini, G., Vola, P., Songini, L., & Gnan, L. (2021). The determinants of tax aggressiveness in family firms: An investigation of Italian private family firms. Sustainability (Switzerland), 13(14), 1–21. https://doi.org/10.3390/su13147654

Gao, Y., & Han, K. S. (2020). Managerial overconfidence, CSR and firm value. Asia-Pacific Journal of Accounting and Economics, 29(6), 1600–1618. https://doi.org/10.1080/16081625.2020.1830558

Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic Decision Making. Annual Review of Psychology, 62, 451–481. https://doi.org/10.1146/annurev-psych-120709-145346

Gujarati, D. N., & Porter, D. C. (2009). The McGraw-Hill Series (5th ed.). The McGraw-Hill Series.

Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons : The organization as a reflection of its top managers. Academy of Management Review, 9(2), 193–206. https://doi.org/10.2307/258434

Hayward, M. L. A., Rindova, V. P., & Pollock, T. G. (2004). Believing one's own press: The causes and consequences of CEO celebrity. Strategic Management Journal, 25(7), 637–653. https://doi.org/10.1002/smj.405

Hoi, C. H., Wu, Q., & Zhang, H. (2013). Is Corporate Social Responsibility (CSR) Associated with Tax Avoidance? Evidence from Irresponsible CSR Activity. Accounting Review, 88, 2025-2059. https://doi.org/https://doi.org/10.2308/accr-50544

Hoshmand, A. L., & Khanagha, J. B. (2014). The Impact of Corporate Governance on The Over Finance of The Firms with Initial Public Offering. Interdisciplinary Journal of Contemporary Research in Business., 5(10), 210–222.

Jiang, H., & Kim, E. (2022). Characteristics of top management team and Chinese tax planning nexus: Findings from a fuzzy-set qualitative comparative analysis. Frontiers in Psychology, 13(July), 1–12. https://doi.org/10.3389/fpsyg.2022.964278

Jilani, W., & Chouaibi, J. (2021). To What Extent does CEO Behavior Enhance Risk-Taking? A Banking Sector Related Evidence. Scientific Annals of Economics and Business, 68(3), 309–332. https://doi.org/10.47743/saeb-2021-0012

Karim, K. E., Pinsker, R., & Robin, A. (2013). Firm size and the voluntary disclosure of nonfinancial information by private versus public firm managers. Managerial Auditing Journal, 28(9), 866–892. https://doi.org/Vol. 28 https://doi.org/10.1108/MAJ-01-2013-0800

Karlsson, J. (2021). Firm size and growth barriers: a data-driven approach. Small Business Economics, 57(3), 1319–1338. https://doi.org/10.1007/s11187-020-00350-y

Kaur, A., & Singh, B. (2020). Disentangling the reputation – performance paradox: Indian evidence. Journal of Indian Business Research, 12(2), 153–167. https://doi.org/10.1108/JIBR-02-2018-0081

Kim, H. A., Choi, S. U., & Choi, W. (2022). Managerial overconfidence and firm profitability. Asia-Pacific Journal of Accounting and Economics, 29(1), 129–153. https://doi.org/10.1080/16081625.2019.1673190

Kim, K., Ryu, D., & Yu, J. (2021). Do sentiment trades explain investor overconfidence around analyst recommendation revisions? Research in International Business and Finance, 56(April 2020), 101376. https://doi.org/10.1016/j.ribaf.2020.101376

Kunjal, D., Nyasha, J., Ghisyan, A., & Govender, P. (2021). The Effect of Managerial Overconfidence on Firm Value: Evidence from the Johannesburg Stock Exchange. Management and Economics Review, 6(1), 1–14. https://doi.org/10.24818/mer/2021.06-01

Law, P., & Ningnan, W. (2022). Journal of Accounting and Taxation Effect of individual CEOs' characteristics on firms' performance: Evidence from China. Journal of Accounting and Taxation, 14(3), 215–228. https://doi.org/10.5897/JAT2022.0538

Liu, X., Vredenburg, H., & Daellenbach, U. (2019). The moderating effect of corporate reputation on inter- fi rm alliance impact on company performance. European Business Review, 31(4), 524–543. https://doi.org/10.1108/EBR-12-2017-0232

Malmendier, U., & Nagel, S. (2011). Depression Babies : Do Macroeconomic Experiences Affect Risk-Taking ? The Quarterly Journal of Economics, 126(1),373–416, https://doi.org/10.1093/qje/qjq004

Malmendier, U., & Tate, G. (2015). Behavioral CEOs: The role of managerial overconfidence. Journal of Economic Perspectives, 29(4), 37–60. https://doi.org/10.1257/jep.29.4.37

Moore, D. A., & Schatz, D. (2017). Running head : Overconfidence the Three Faces of Overconfidence the Three Faces of Overconfidence. Personality Psychology Compass, 11(2017), 1–14.

Natsir, K., & Yusbardini, Y. (2020). The Effect of Capital Structure and Firm Size on Firm Value Through Profitability as Intervening Variable. Advances in Economics, Business and Management Research, 145(Icebm 2019), 218–224.

Park, J., & Chung, C. Y. (2017). CEO overconfidence, leadership ethics, and institutional investors. Sustainability (Switzerland), 9(1), 1–28. https://doi.org/10.3390/su9010014

Peni, E. (2014). CEO and Chairperson characteristics and firm performance. Journal of Management & Governance, 18(1), 185–205. https://doi.org/10.1007/s10997-012-9224-7

Piehlmaier, D. M. (2020). Overconfidence Among Young Decision-Makers: Assessing the Effectiveness of a Video Intervention and the Role of Gender, Age, Feedback, and Repetition. Scientific Reports, 10(1), 1–10. https://doi.org/10.1038/s41598-020-61078-z

Pompian, M. M. (2012). Behavioral Finance and Investor Type: Managing Behavior to Make Better Investment Decision. New Jersey: John Wiley & Sons. https://doi.org/10.1002/9781119202417

Ponikvar, N., Kejžar, K. Z., & Peljhan, D. (2018). The role of financial constraints for alternative firm exits modese. Small Business Economics, 51(6), 85–103. https://www.jstor.org/stable/44697327

Rachmawati, N.A, , Utama, S., Martani, D., &, and Ratna Wardhani2 (2020). Do Country Characteristics Affect the Complementary Level of Financial and Tax Aggressiveness? Asian Academy of Management Journal of Accounting and Finance, 16(1), 45–62. https://doi.org/10.21315/aamjaf2020.16.1.3

Riguen, R., Salhi, B., & Jarboui, A. (2021). The Impact of Audit Characteristics on Corporate Tax Avoidance: The Moderating Role of Gender Diversity. Scientific Annals of Economics and Business, 68(1), 97–114. https://doi.org/10.47743/saeb-2021-0002

Samanez-Larkin, Russell, G., Mottola, G., Heflin, D., Yu, L., & Boyle, P. (2020). Overconfidence in financial knowledge associated with financial risk tolerance in older adults. Financial and Accounting, 3(5), 1–25. https://doi.org/ 10.31234/osf.io/p5gec

Serfling, M. (2015). CEO age and the riskiness of corporate policies. Journal of Corporate Finance, 5(C), 251–273. https://doi.org/10.1016/j.jcorpfin.2013.12.013

Shah, S. S. H., Xinping, X., Khan, M. A., & Harjan, S. A. (2018). Investor and Manager Overconfidence Bias and Firm Value: Micro-level Evidence from the Pakistan Equity Market. International Journal of Economics and Financial Issues, 8(5), 190–199. https://www.econjournals.com/index.php/ijefi/article/view/7028

Shore, L. M., Cleveland, J. N., & Goldberg, C. B. (2003). Work attitudes and decisions as a function of manager age and employee age. Journal of Applied Psychology, 88(3), 529–537. https://doi.org/10.1037/0021-9010.88.3.529

Sucahyo US, Damayanti TW, Prabowo R, Supramono S. Tax aggressiveness of family firms in emerging countries: How does resource-based view explain it? Entrepreneurial Business and Economics Review. 2020;8(3). https://doi.org/10.14414/jebav.v27i1.4432

Sutrisno, P., Utama, S., Anitawati Hermawan, A., & Fatima, E. (2022). Founder and Descendant vs. Professional CEO: Does CEO Overconfidence Affect Tax Avoidance in the Indonesia Case? Economies, 10(12), 1–20. https://doi.org/10.3390/economies10120327

Syukur M, Jongsureyapart C. The influence of foreign ownership on tax avoidance in Thailand: A study from an emerging economy. Journal of Tax Reform. 2023;9(1):98–100. https://doi.org/10.15826/jtr.2023.9.1.131.

Tax Justice Network (2023). State of Tax Justice 2023. Buckinghamshire, United Kingdom.

Tekçe, B., Yılmaz, N., & Bildik, R. (2015). What Factors Affect Behavioral Biases? Evidence From Turkish Individual Stock Investors. Research in International Business and Finance. https://doi.org/10.1016/j.ribaf.2015.11.017

Ullah, H., Shah, H. A., & Khan, S. A. (2021). Tax Aggressiveness, Tunneling and Firm Value: Interactive Effect of Corporate Governance in Business Groups. Journal of Applied Economics and Business Studies, 5(1), 109–130. https://doi.org/10.34260/jaebs.516

Young, B., Florence, N., 2019. Gender and overconfidence in the kauffman firm survey. Studies in Business and Economics, 14(3), 5-17. DOI 10.2478/sbe-2019-0039

Zeng, T. (2016). Corporate Social Responsibility, Tax Aggressiveness, and Firm Market Value. Accounting Perspectives, 15(1), 7–30. https://doi.org/10.1111/1911-3838.12090

Zhang, Y., & Yang, Z. (2018). Research on the Relationship between CEO's Overconfidence and Corporate Investment Financing Behavior. Journal of Modeling and Optimization, 10(1), 8. https://doi.org/10.32732/jmo.2018.10.1.8

Zia, L., Sindhu, M. I., & Hashmi, S. H. (2017). Testing overconfidence bias in Pakistani stock market. Cogent Economics and Finance, 5(1). https://doi.org/10.1080/23322039.2017.1289656.

Bio-note:

Nur Listiani. Alumni of Doctoral Program of Management Science at Faculty of Economics and Business, Satya Wacana Christian University. Completed her Bachelor of Management at STIE AMA Salatiga Indonesia (2018) and obtained her Master of Management (MM) degree from Satya Wacana Christian University, Indonesia (2020). Currently has several publications of articles published in reputable international journals

Supramono. Lecturer at the Faculty of Economics and Business, Satya Wacana Christian University Salatiga (1988). Obtained his Bachelor of Economics degree from Faculty of Economics, Satya Wacana Christian University (1987), Master of Business Administration (M.B.A.) degree from Maastrich School of Management Netherlands (1993), and Doctor of Business Administration (DBA) degree from De La Salle University Manila, Philippines (1999). Currently, he is the Chairman of BeFinances, a study center on behavioral finance . In addition, he is actively involved in managing several scientific journals and research activities that are funded by government and non-government institutions. With regard to scientific publications, many articles have been written and published in several reputable international journals.

Theresia Woro Damayanti. Teaching staff at the Faculty of Economics and Business, Universitas Kristen Satya Wacana Salatiga (2001). Graduated from Faculty of Economics, Satya Wacana Christian University with a Bachelor of Economics (SE) degree in 2002, attended the Accountant (Akt.) professional program at Gadjah Mada University Yogyakarta (2006), obtained a Master of Science (M.Si.) degree from Gadjah Mada University Yogyakarta (2007) and a Doctoral degree from the Accounting Doctoral Program, Brawijaya University, Indonesia (2015). In addition to being active as a consultant in the field of accounting and taxation, he is also involved actively in several research activities that are funded by government and non-government institutions as well as in writing research articles and literature books.

Yeterina Widi Nugrahanti. Lecturer at Faculty of Economics and Business, Universitas Kristen Satya Wacana Salatiga since 2005. Graduated from the Faculty of Economics, Satya Wacana Christian University with a Bachelor of Economics (SE) degree in 2004, attended the accountant (Ak.) professional program at Gadjah Mada University Yogyakarta (2009), obtained a Master of Accounting (M.Acc) degree from Gadjah Mada University Yogyakarta (2010) and a Doctoral degree from the Accounting Science Doctoral Program, Brawijaya

University, Indonesia (2020). His research interests are closely related to financial accounting, corporate social responsibility, and corporate governance. The resulting research articles are published in international and national journals.

Assessing the Impact of Human Capital on Economic Growth: A Dual Approach Using Quantity and Quality Proxies

Anca Maria UNGUREANU[1] , Monica Ioana POP SILAGHI[2]
Department of Economics, Faculty of Economics and Business Administration, Babeș-Bolyai University, Cluj-Napoca, Romania

Abstract: *This study explores the long- and short-run effects of human capital on economic growth across 27 European Union countries between 1980 and 2024, using a panel ARDL–PMG framework. It distinguishes between the quantity and quality dimensions of education, evaluating their respective contributions to GDP growth.*
The findings indicate a statistically significant and robust long-run relationship among the selected variables, as confirmed by the negative and highly significant error correction term (–0.3176, $p < 0.01$). Cognitive skills, proxied by PISA mathematics scores, exhibit a positive and significant effect on long-run economic growth, reinforcing the idea that education quality is a stronger growth driver than traditional quantity-based indicators.
In contrast, variables such as tertiary education expenditure and enrollment show no significant impact in the long run, suggesting that increasing access or funding alone may not yield sustained economic benefits without improving learning outcomes. However, these same indicators are positively associated with short-run growth, highlighting their role in generating immediate positive effects through enhanced human capital utilization.
Gross fixed capital formation (GFCF) remains a key short-run driver of growth, while other labor force variables show no significant effects in either time horizon. These findings emphasize the importance of focusing policy efforts on improving the effectiveness and outcomes of educational systems, rather than expanding inputs alone.
Overall, the study provides empirical support for shifting from a quantity-based to a quality-focused human capital development strategy, offering valuable insights for policymakers aiming to enhance long-term economic performance in the EU context.

Keyword: human capital, economic growth, education expenditure, labor force, PISA scores, panel data, ARDL-PMG

JEL classification: I25, J24, O47, O15, C23

* Corresponding author: Anca Maria UNGUREANU
Cite as:
The journal editors will add this information after completion of the volume!

1. Introduction

The relationship between human capital and economic growth has long been a central topic in both economic theory and empirical research. Traditionally, the focus has been placed on aggregate education indicators—such as years of schooling or enrollment rates—as proxies for human capital. However, in the context of today's global knowledge economy, questions arise regarding what specific aspects of human capital drive sustained economic performance. In particular, as societies invest heavily in education systems, it becomes essential to distinguish between the quantity of education delivered and the quality of skills and competencies acquired.

The main objective of this study is to examine the extent to which the quality of education contributes to long-run economic growth, as opposed to the mere quantity of educational input. Using panel ARDL (PMG) estimations over the period 1980–2024 for EU countries, the paper evaluates how different human capital indicators—such as tertiary enrollment, public education spending, and PISA mathematics scores—are associated with GDP growth. By contrasting traditional input-based indicators with skill-based measures, we aim to shed light on the relative importance of educational quality in fostering long-term economic performance.

The paper is structured as follows: Section 2 reviews the theoretical and empirical literature on the relationship between human capital and economic growth. Section 3 describes the dataset, outlines the variables used, and provides descriptive statistics, including details on the treatment of missing values and correlation analysis. Section 4 presents the methodology, with a focus on the ARDL–PMG modeling approach. Section 5 reports and interprets the empirical findings, addressing both short-run and long-run dynamics, and includes robustness checks and policy implications. Finally, Section 6 offers the main conclusions and suggestions for future research.

2. Literature Review

Human capital has long been recognized as a driver of economic performance, primarily through its contribution to labor productivity, innovation, and the absorption of new technologies. Traditional economic models—particularly endogenous growth theory—emphasize the importance of human capital accumulation in sustaining long-term economic growth. However, the evolving complexity of modern economies calls for a more specified understanding of what constitutes "valuable" human capital. In this paper we grouped them in traditional and modern ones

2.1. Traditional (quantity-based) proxies

Among the traditional ones, the most popular one refers to education. Therefore, we start by presenting the education-related proxies used in earlier research because they provide a solid basis for comprehending the connection between economic growth and human capital. Education-related proxies such as average years of schooling, literacy rates, and enrollment ratios, are vital for empirical analysis because they provide concrete indices of human

capital. These indicators typically include enrollment rates in primary (Maitra & Chakraborty, 2021), secondary (Garza-Rodriguez, et al., 2020), and tertiary education (Sghaier, 2022), government spending on education, particularly in the tertiary sector, (Raheem, et al., 2018) and the number of years of schooling (Affandi, et al., 2019).

Primary enrollment is the least used because it isn't thought to be very conclusive. However, in a Johansen approach to cointegration, Maitra and Chakraborty (Maitra & Chakraborty, 2021) employed primary enrollment as a proxy for human capital, followed by ECM. The authors analyzed Sri Lanka's income dynamics from 1981 to 2017 using annual time series data on GDP, exports, imports, trade openness, and human capital. Real GDP measured income, while trade indicators included real exports and imports (2002 prices). Human capital was proxied by primary school gross enrollment, life expectancy at birth, and real public spending on health and education. Data came from the Central Bank of Sri Lanka's 2018 report. Using the ECM method and Johansen cointegration, they found that at the 5% level, income was positively linked to the gross enrollment ratio. Also, Temitope et al (2022) used primary enrollment as a proxy for human capital. He examined the impact of primary school enrollment, urban population, natural resource rent, domestic credit, FDI inflows, and trade openness on Nigeria's ecological footprint from 1970 to 2017, also considering economic growth. Using Granger causality, the study found that human capital (via primary enrollment) had a diminishing effect on the ecological footprint.

Secondary enrollment rate is more used I the studies and we included it in our robustness check. Garza-Rodriguez et al. (2020) used OLS with population growth and secondary enrollment as proxies for human capital. A 1% increase in secondary enrollment raised GDP per worker by 1.08%. Human capital had nearly three times the impact of physical capital, and Granger causality revealed a bidirectional link between human capital and growth. Nouira and Saafi (2020) used secondary enrollment as a proxy for human capital to examine its role, along with institutional quality and income, in the link between export upgrading and economic growth. Using a dynamic panel threshold model for 56 countries (1995–2015), they found that a minimum level of human capital, institutions, and income is needed for exports to positively impact growth. Human capital emerged as a key driver in the export-growth relationship.

Then there is also the tertiary enrollment which we also included in our study. Sghaier (2022) used university enrollment as a proxy for human capital to study its role in the impact of FDI and remittances on economic growth in four North African countries. The study found that both FDI and remittances positively influence growth, with stronger effects as human capital increases. Also, Abdoul & Omri (2021) used tertiary enrollment to explore links between human capital, environmental quality, FDI, and growth in the Mediterranean (1990–2013). Their OLS models found a bidirectional relationship between human development and economic progress. Also, Rahman et al (2023) included the government expenditure on tertiary education as proxy for human capital together with patent applications, FDI inflows and outflows and trade. They used the ARDL methodology and time-series data for the period 1990-2020 from the World Bank and their paper indicated a significant correlation between economic growth and all variables in the short run. In our study we also included tertiary enrollment. The same proxy, but together with the primary and secondary enrollment rate was used by Phouphet Kyophilavong et al (2018) to research the impact of education on economic growth in Laos, for the period 1984-2013. The study employed Granger causality tests and reached the conclusion that there is a two-way causality between

the two variables at all levels of education. The same method of using the share of the employees with primary, secondary and higher education was used by Karatheodoros et al (2019). For the period 1995-2012, for 13 regions (NUTS II level) of Greece, they estimated a model for which they applied Granger causality tests. The conclusion was that there are two opposites relations, primary education had a negative impact on economic growth, while the other types of education had a positive impact. We could assume that the negative effect of the primary education was emphasized because here human capital was included also through secondary and higher education. According to this study, the results are different in low-income countries than in high-income ones. In the first category, secondary education has the greatest impact on economic growth, while in the second category, higher education is the most influential variable.

Another proxy for human capital which is encountered in the research is the years of schooling. We excluded it from our study due to the data constraint which would have affected the validity of the panel analysis, but for example, Affandi et al. (2019), for instance, investigated the impact of human capital on the Indonesian economy from 1985 to 2014. After analyzing the effects of capital stock, labor, and human capital on the regional GDP, their study concluded that human capital was the main element influencing economic growth. As a result, the most profitable investments were made in human capital. Frank (2009) also discovered a similar positive relationship between human capital and economic growth using the number of years of education as a stand-in for human capital. The individual employed Granger causality tests to examine the relationship between income inequality, income growth, and human capital using annual data for the United States from 1929 to 2000. He concluded that years of education have an impact on income levels, but there is no proof that more years of education lead to the top decile of income share. One explanation for this could be the possibility that particular abilities, both soft and technical, are also required in some well-paying industries (like ICT infrastructure) to significantly influence the revenues. Another study by Teixeira and Fortuna (2004) also utilized the average number of years of schooling as a stand-in for human capital. To measure the relationship between productivity, innovation capacity, and human capital for Portugal from 1960 to 2001, the authors have also employed total factor productivity as a stand-in for internal knowledge and technical advancement. Their findings supported a continuous relationship between productivity, human capital, and innovative potential. They concluded that since human capital boosts productivity and facilitates the assimilation of new information, it has an impact on economic growth. Ljungberg & Nilsson also (2009) used the number of school years of the population between 15 and 65 to study the direction of influence between human capital and economic growth by employing Granger causality tests, for Sweden for the period 1850-2016. The findings showed that, up to the structural crises of the 1970s, changes in the human capital consistently anticipated changes in aggregate productivity. Simõe et al (2019) included the number of years of secondary education together with total factor productivity to look into the possibility of a causal relationship between the growth of the services sector, human capital, and aggregate productivity in the Portuguese economy between 1970 and 2006. His study was based on impulse response analysis and VAR model estimate using yearly data from 1970 to 2006. The development of service subsectors was not significantly impacted by human capital in the causality analysis, but the impulse response analysis suggests that there is a favorable influence on overall productivity, which may ultimately have an effect on economic performance.

2.2. Modern (quality-based) proxies

However, there is a growing interest in the literature that human capital is measured not just by the amount of education received, but by its quality—what individuals actually learn. Human capital encompasses the knowledge, skills, and attributes that drive productivity and value and studies like the ones of Affandi (2019) and Kell (2018) emphasize the significance of psychological, occupational, and personality qualities. Abraham & Mallatt (2022) argue that qualifications may better reflect human capital than years of schooling, as capabilities gained matter more. Diaz-Fernandez et al. apud Mubarik (2022) expand this view to include traits like creativity, intelligence, and attitude. Hanushek & Woessmann (2008) emphasize that prioritizing cognitive skills over school duration has major policy implications, as improving abilities often requires different strategies than simply increasing education length.

Refeque & Azad (2022) introduced skills besides education in their study-based data from the India Human Development Survey (IHDS) 2011–2012 which evaluated the benefits of education and skill in India according to caste, geography, industry, gender, and religion. For education they used as a proxy the mean years of schooling and for skills he used computer and linguistic skills and years of experience. By using an Ordinary least Square (OLS) estimation, they demonstrated that the influence of talents outweighs that of education in general. As the importance of skills rises, there are researchers such as (Brasse, et al., 2024) who are trying to identify the most important ones. It has been determined through the analysis of skills data from over a million job postings between 2018 and 2020 that while fundamental IT abilities are becoming more and more common, general skills like communication, adaptability, and leadership are still vital. Other skills which are worthy of investments, according to the literature (Myers, et al., 2004) are the so called ‘’high-order skills’’. These are abilities like *problem-solving, critical thinking, tolerance, self-control, diligence, teamwork*. Despite their importance, being labeled as "soft" or "non-cognitive" reflects the limited understanding of how to assess or develop them. Bloom created a classification (1956) of educational objectives and he ranked knowledge at the base and advanced skills—like applying concepts, evaluating data, and creating new ideas—at the top. Exams often focus on lower levels (recall and understanding), though progressing requires mastering higher-level thinking for problem-solving and decision-making reflecting some gaps in the educational process.

Deming (2017) proved the importance of *social skills*, saying that they are two times more economically efficient in the United States in the 2000s compared to 1980s. Deming starts from assuming that employees naturally differ in their capacity to carry out the wide range of duties required in the workplace and that social skills give some a comparative advantage. Then, he developed a model that allows workers to utilize their abilities by allowing them to "trade tasks" at a reduced cost. According to the approach, social skills lower the cost of coordination, enabling employees to specialize and collaborate more effectively. He examined the model's predictions about the relative returns to skill across jobs using data from the NLSY79 and NLSY97. His analysis suggested that the labor market return on social skills was significantly higher in the 2000s than it was in the mid-1980s and early 1990s. Additionally, he discovers that mental and social abilities are complementary in determining

pay and that the relationship between them has increased over time. Lastly, he discovers that employees with stronger social skills are more likely to work in less predictable, interpersonal skill-intensive jobs and to receive a comparatively higher income return in these positions. In conclusion, Deming has shown how social skills are increasingly required for high-paying, difficult-to-automate jobs. He also demonstrated that an emphasis on hard abilities had a smaller impact on the wage increases than learning skills like self-efficacy, persuasion, and bargaining. Ashraf et.al. (2020) showed the importance of negotiation skills. He did this by using them in a randomized controlled study in Zambia where adolescent girls significantly improved their academic performance over three years, with lasting effects after attending a course in negotiation. This program led to higher enrollment in better schools and had a stronger educational impact. An additional study by Weidman and Deming (2021) supports the economic benefit of social skills. They found strong evidence for the economic value of social skills using data from Harvard Decision Science Lab participants. Individuals were randomly assigned to teams for problem-solving tasks. Some consistently improved team outcomes so they were called "team players". They also scored higher on the Reading the Mind in the Eyes Test (RMET), a measure of social intelligence. As their presence boosted team performance, persistence, and use of available time, the study confirms that non-cognitive skills like teamwork significantly enhance productivity. The importance of non-cognitive skills is also emphasized by Balarta et al (2015) who suggest after analyzing a sample of 55 countries for the period 1970-2009 that they are also important for explaining the relationship between test scores and economic growth. Social skills are also brought to light by Kiener et al (2023) who 105,315 observations from 65,349 individuals from Switzerland to connect the amount of self-competence, age, gender, and cognitive requirement profiles with salaries. In terms of digital transformation, the OLS regression in which the authors define three levels of self-competence (high, medium, and low) and examine pay returns to these levels of self-competence using individual labor market data shows that a combination of high social skills and high specialization is particularly helpful.

Intelligence is another proxy for human capital. Jones and Schneider (2006) have showed that intelligence and economic progress are causally related in 99.8% of the regressions they have conducted. The main focus was to determine if there was a strong statistical correlation between IQ and average GDP growth rates for 51 world-wide countries included in the database constructed by Lynn and Vanhanan about IQ (2002) from 1960 to 1992. In their study, intelligence outperformed school enrollment and increased the economic growth rate by an average of 0.11% yearly for every 1 point gained in the average national IQ. As a result, the results of IQ tests could prove to be useful instruments for quantifying the stock of human capital.

In line with this view, we adopt the perspective that the Programme for International Student Assessment (PISA), particularly the mathematics scores, serves as a reliable proxy for cognitive skills. In our view, PISA test scores offer a more refined and internationally comparable measure of human capital quality than enrollment rates or years of schooling. In this study, we build on this body of work by hypothesizing that PISA scores reflect the functional capabilities that directly enhance labor productivity and economic growth, especially within high-skill labor markets like the European Union. Therefore, this paper adopts the position that PISA performance captures the quality dimension of human capital more accurately than traditional indicators like enrollment or years of schooling. What

follows is a review of studies that have used PISA and other cognitive metrics to investigate the relationship between skills and economic growth.

Valente et al (2015) provide one of the most relevant studies for this paper as he used PISA scores to show that higher requirements concerning cognitive skills are supporting the economic performance. Using data from Eurofound's European Work Conditions Survey (2000 and 2010) and PISA scores, they showed that countries with higher cognitive job requirements (e.g., problem-solving, computer use, learning new skills) had higher growth. Importantly, PISA scores correlated positively with GDP growth, while average years of education did not. They performed an analysis on the relationship between work-related skills and the GDP per capita growth in the period 2000-2010, on a sample of 28 countries[9] using multivariate regressions and found different correlations. Their central hypothesis is very similar to ours and says that the quality of human capital has a bigger impact than its quantity. Initially, they used data from European Work Conditions Survey (Eurofound) related to work cognitive requirements. He extracted 6 variables from that study which account for the following dimensions: the capacity to assess one's own work for quality; learning new skills; resolving unforeseen issues; constantly using a computer; completing tedious activities; and adhering to exact quality standards. Their principal component analysis revealed that the richest countries in Europe meaning: Sweden, Netherlands, Finland, France, UK, Switzerland, Austria, Belgium, Denmark, Norway, and Estonia also possess the most demanding work conditions when it comes to using information technology, solving problems, and ongoing learning. The second richest group mainly included Southern and Eastern countries: Spain, Italy, Malta, Cyprus, Czech Republic, Slovakia, Slovenia, Ireland and Germany and the last group, with the lowest values had mainly the same composition: Greece , Portugal, Poland, Bulgaria , Romania, Hungary, Latvia and Lithuania. Valente et al (2015) also compared the data from the Eurofund survey with the data from The Programme for the International Assessment of Adult Competencies (PIAAC) and found interesting correlations. For example, the cognitive abilities needed in the job are strongly and positively connected with PISA scores in math and science, but not with higher educational achievement. Furthermore, there is a strong link between the number of graduates in mathematics, physics, and computer science and the cognitive skill demands of their professions. In addition, the writers incorporated quantitative measures of education, such as the percentage of the working age population with a higher level of education as opposed to the average number of years spent in school. This indicator had a positive (0.24) association with GDP per capita in 2000 and a negative (-0.14) correlation with economic growth in 2000–2010, although neither was statistically significant. To find out if any certain degrees had a greater influence on the economy, the authors also evaluated the yearly number of graduates by educational field. A basic correlation analysis reveals that the GDP per capita and the percentage of recent graduates in the fields of math, science, and computer science have a positive and statistically significant correlation (0.46, p=0.01), whereas the percentage of new graduates in the fields of social sciences, business, and law has a statistically significant negative correlation (-0.59, p=0.001).

Boman (2024) also indicates that, even after adjusting for a substantial number of covariates, PISA scores or other cognitive skill measures can, to some extent, predict economic

[9] Norway, Switzerland and the EU27 except Luxembourg

development between 2010 and 2019 for a sample of 31 and 80 nations worldwide, respectively, based on an OLS regression.

2.3. Gaps in the Literature

Despite the increasing recognition of human capital as a key driver of economic growth, several important gaps remain in the existing literature. First, many studies rely on national-level time series data, which limits the ability to generalize findings across countries with different institutional settings. Second, while the role of cognitive skills has gained attention, empirical applications using PISA scores in long-run growth models like ARDL-PMG remain scarce, especially in multi-country panel settings. This study addresses these gaps by combining both types of indicators within a unified model and applying it to a balanced EU panel from 1980 to 2024.

3. Data and Descriptive Statistics

3.1. Description of Variables

To meet the objective of our study, we use a balanced panel dataset of the 27 members of the European Union, for the period 1980-2024. The focus on European Union (EU) countries is motivated by their shared economic, educational, and policy frameworks, which enhance comparability. The names of the variables used in this study and their data sources are presented in the following table. The data was obtained from the World development indicators database published by the World Bank.

Table 1: Variables used

Variable	*Description*	*Source*	*Expected Sign*
GDP	GDP growth (annual %)	World Bank [NY.GDP.MKTP.KD.ZG]	+
GFCF	Gross fixed capital formation (% of GDP)	World Bank [NE.GDI.FTOT.ZS]	+
LBR	Labor force, Total	World Bank, [SL.TLF.TOTL.IN], interpolated	+
UA	Unemployment with advanced education (% of total labor force with advanced education)	World Bank, [SL.UEM.ADVN.ZS], interpolated	-
EXS	Expenditure on secondary education (% of government expenditure on education)	World Bank, [SE.XPD.SECO.ZS], interpolated	+
ENS	School enrollment, tertiary (% gross)	World Bank, [SE.TER.ENRR], interpolated	+
EXT	Expenditure on tertiary education (% of government expenditure on education)	World Bank, [SE.XPD.TERT.ZS], interpolated	+
ENT	School enrollment, tertiary (% gross)	World Bank, [SE.TER.ENRR], interpolated	+
PISAM	PISA score at the mathematics test	World Bank, [LO.PISA.MAT]	+

		interpolated	

Source: author's compilation based on data retrieved from the World Bank (World Development Indicators). All variables were processed and interpolated by the author as needed

Descriptive statistics were computed for all variables included in the model, including the dependent variable GDP growth. This allows for a better understanding of the variability in economic performance across countries and over time.

Table 2 - Summary statistics

Variables	*Mean*	*Min*	*Max*	*Std. Dev.*
GDP	*2.33*	*-32.11*	*24.61*	*4.19*
GFCF	*22.61*	*4.45*	*53.22*	*4.05*
LBR	*7614382*	*135236*	*4.40*	*1.00*
UA	*4.88*	*0.79*	*20.85*	*2.94*
EXS	*40.90*	*11.47*	*71.51*	*7.72*
EXT	*20.64*	*0.11*	*36.09*	*6.07*
ENS	*102.74*	*53.52*	*164.07*	*16.83*
ENT	*49.46*	*1.42*	*11.66*	*25.69*
PISAM	*489.23*	*413.44*	*548.35*	*26.11*

Panel: European Union (N=27)

Source: authors computation using Stata 18.00

Given the long-time span of the dataset, several variables presented missing values for specific countries and years. To address this issue and maintain the integrity of the panel structure, linear interpolation was applied within countries using the ipolate command combined with bysort in Stata.

Table 3: Correlation Matrix

Correlation	*GDP*	*GFCF*	*LBR*	*UA*	*EXS*	*ENS*	*EXT*	*ENT*	*PISAM*
GDP	*1*								
GFCF	*0.21*	*1*							
LBR	*-0.12*	*-0.13*	*1*						
UA	*0.01*	*-0.07*	*0.002*	*1*					
EXS	*0.10*	*-0.02*	*0.17*	*0.19*	*1*				
ENS	*-0.05*	*-0.10*	*-0.01*	*0.13*	*-0.01*	*1*			
EXT	*-0.04*	*-0.10*	*0.03*	*0.08*	*-0.01*	*0.30*	*1*		
ENT	*-0.07*	*-0.17*	*0.08*	*0.16*	*-0.06*	*0.55*	*0.47*	*1*	
PISAM	*-0.10*	*-0.01*	*0.10*	*-0.12*	*-0.12*	*0.51*	*0.31*	*0.43*	*1*

Panel: European Union (N=27)

Source: authors computation using Stata 18.00

Table 3 presents the correlation matrix among the variables included in the Panel ARDL model, offering a preliminary assessment of the linear relationships between them. The results show that GDP, the dependent variable, exhibits relatively weak correlations with the explanatory variables, supporting the use of a dynamic model such as Panel ARDL, which captures both short-run adjustments and long-run relationships rather than relying solely on

contemporaneous correlations. The strongest positive correlations are observed among education- and innovation-related variables—for instance, between tertiary education (ENT) and education expenditure (ENS) (r = 0.55), as well as between ENT and PISA scores (PISAM) (r = 0.43). These moderate correlations suggest some degree of collinearity that may warrant further investigation (e.g., through Variance Inflation Factor analysis) to ensure the robustness of the model. Overall, all correlation coefficients fall well below the conventional multicollinearity threshold of 0.8, indicating no serious multicollinearity concerns. This supports the simultaneous inclusion of the selected variables in the ARDL framework and sets the stage for exploring their dynamic and long-term effects on economic growth. To ensure the absence of multicollinearity among the independent variables included in the ARDL model, a Variance Inflation Factor (VIF) diagnostic was conducted. The VIF values were calculated after estimating a pooled OLS regression using the same set of regressors. All VIF scores were below the commonly accepted threshold of 5, with a mean VIF of 1.34, indicating no serious multicollinearity issues. Therefore, all variables were retained in the final model specification.

4. Methodology

4.1. Justification for using ARDL PMG Model

The ARDL-PMG (Pooled Mean Group) model was selected due to its ability to handle a mix of I(0) and I(1) variables, which characterizes the current panel dataset. Moreover, the PMG estimator captures both short-run dynamics and long-run equilibrium relationships, allowing for heterogeneous short-run coefficients across countries while constraining the long-run coefficients to be homogeneous. This is particularly suitable for the European Union panel, where countries may respond differently to shocks in the short run but exhibit common long-term structural behaviors.

Table 4 - Unit root test

Variables	*Im-Pesaran-Shin*	*Status*
GDP	*-32.11****	*I(0)*
GFCF	*-5.3619****	*I(0)*
LBR	*-10.9416****	*I(1)*
UA	*-10.6924****	*I(1)*
EXS	*-13.2941****	*I(1)*
EXT	*-13.3280****	*I(1)*
ENS	*-12.2525****	*I(1)*
ENT	*-4.4351****	*I(1)*
PISAM	*-3.4521****	*I(1)*

Panel: European Union (N=27)
Note: IPS test performed with lags (1), with trend
Source: authors computation using Stata 18.00

Given that the explanatory variables are a mix of I(0) and I(1, the ARDL-PMG estimator was employed. This model is suitable for mixed integration orders and avoids the restrictive assumptions required by cointegration tests such as Kao. The significance of the error correction term confirms the existence of a long-run relationship among the variables

4.2. ARDL Model Specification

To investigate the impact of human capital on economic growth, we employ a panel ARDL model using the PMG estimator. This approach allows for heterogeneous short-run dynamics across countries while constraining long-run coefficients to be homogeneous. The following ARDL-PMG model was specified:

$$\Delta GDP_{it} = \theta EC_{i,t-1} - \sum \alpha_j \Delta X_{i,t-j} + \varepsilon_{it} \quad (1)$$

where $EC_{i,t-1}$ is the error correction term:

$$EC = X_{i,t-1} - (\beta_i GFCF_{i,t-1} + \beta_2 LBR_{i,t-1} + \beta_3 EXT_{i,t-1} + \beta_4 ENT_{i,t-1} + \beta_5 PISA_{i,t-1}) \quad (2)$$

derived from the long-run equilibrium equation:

$$\Delta GDP_{it} = \beta_i GFCF_{i,t-1} + \beta_2 LBR_{i,t-1} + \beta_3 EXT_{i,t-1} + \beta_4 ENT_{i,t-1} + \beta_5 PISA_{i,t-1} + \varepsilon_{it}$$

The short run follows:

$$\Delta GDP_{it} = \theta EC_{i,t-1} + \alpha_1 \Delta GFCF_{i,t} + \alpha_2 \Delta LBR_{i,t} + \alpha_3 \Delta UA_{i,t} + \alpha_4 \Delta EXT_{i,t} + \alpha_5 \Delta ENT_{i,t} + \varepsilon_{it}$$

The dependent variable is GDP growth, while the explanatory variables include gross fixed capital formation (GFCF), labor participation, education expenditure and enrollment (at secondary or tertiary level), and the performance in PISA mathematics. The model accounts for both short-term fluctuations and long-term relationships among the variables. The selection of variables is guided by economic theory and prior empirical research.

5. Results and Discussion

5.1. Estimation Results

Table 5 presents the results of the ARDL–PMG estimation, where the dependent variable is the GDP growth. The estimated model captures both the short-run dynamics and the long-run equilibrium relationships between economic growth and selected explanatory variables related to labor force and education. The coefficient of the error correction term (ECT) is negative and statistically significant (–0.3176, $p < 0.01$), confirming the existence of a long-run cointegrating relationship among the variables. This implies that approximately 31.76%

of the deviation from the long-run equilibrium is corrected each year, indicating a moderate but meaningful speed of adjustment.

Table 5 –PMG-ARDL
Estimation Results for the determinants of GDP growth, 1980-2024

Long-run Equation			*Short-run Equation*		
Variable	*Coefficient*	*P-Value*	*Variable*	*Coefficient*	*P-Value*
GFCF	-	-	*D(GFCF)*	*0.6423****	*0.000*
LBR	*1.55e-07*	*0.527*	*D(LBR)*	*3.94e-06*	*0.787*
UA	-	-	*D(UA)*	*-0.3639*	*0.189*
EXT	*0.0147*	*0.769*	*D(EXT)*	*0.2277****	*0.008*
ENT	*0.0034*	*0.874*	*D(ENT)*	*0.3461****	*0.001*
PISAM	*-0.0804****	*0.000*	-		
ECT	-	-	*ECT*	*-0.3176****	*0.000*

Panel: European Union (N=27)
Source: authors computation using Stata 18.00

Based on the estimated ARDL-PMG model, the long-run cointegrating equation derived from the PMG-ARDL estimates is:

$$\Delta GDP_{it} = 1.55x10^{-7}\, LBR_{i,t-1} + 0.0147\, EXT_{i,t-1} + 0.0034\, ENT_{i,t-1} - 0.0804\, PISA^{***}_{i,t-1} + \varepsilon_{it}$$

The full ARDL error-correction model can be expressed as:

$$\Delta GDP_{it} = -0.3176 EC_{i,t-1} + 0.6423 \Delta GFCF_{i,t} + 3.94x10^{-6} \Delta LBR_{i,t} - 0.3639 \Delta UA_{i,t} + 0.2277 \Delta EXT_{i,t} + 0.3461 \Delta ENT_{i,t} + 18.38492 + \varepsilon_{it}$$

Although the coefficient for PISA performance in the long-run block is negative (–0.0804), the error correction mechanism is negative (–0.3176), which implies that in the long term, an increase in PISA mathematics scores is associated with a positive effect on GDP growth. This reflects a meaningful and significant contribution of cognitive skills to long-run economic performance.

5.2. Long-run and short-run interpretation
In the long run, given the negative ECT coefficient, the signs of the long-run coefficients should be interpreted in reverse. Therefore, PISA mathematics mean shows a statistically significant positive long-run effect on economic growth ($p < 0.01$). This suggests that better student performance in mathematics is associated with higher long-term GDP growth, reinforcing the role of cognitive skills in fostering productivity and development. The significance of the PISA mathematics score in the long-run model underscores the idea that quality of education—as reflected in measurable cognitive skills—is more relevant to economic growth than the quantity of education alone. Simply increasing funding or access to tertiary education does not guarantee improved productivity unless it translates into actual

learning outcomes. Therefore, policies aiming to foster growth through human capital accumulation should prioritize educational effectiveness and target skill acquisition, not just institutional expansion. EXP (Expenditure on tertiary education) and ENT (Enrolment in tertiary education) exhibit negative long-run effects on GDP growth; however, their coefficients are not statistically significant ($p = 0.769$ and 0.874, respectively). These findings suggest that, in the long run, government expenditure on tertiary education and enrollment rates may not contribute directly to growth in this dataset. Labor (total labor force) has a long-run coefficient close to zero and is not statistically significant, indicating a negligible direct long-term effect in the presence of education-related factors.

In the short-run, GFCF (Gross Fixed Capital Formation) has a positive and highly significant short-run effect ($p < 0.01$), confirming the crucial role of physical investment in stimulating economic activity. EXP (Expenditure on tertiary education) and ENT (Enrolment in tertiary education) also have positive and statistically significant short-run effects ($p = 0.008$ and $p = 0.001$, respectively). These results suggest that education investment and access at the tertiary level can generate immediate economic benefits, possibly through increased human capital utilization. UA (unemployment with advanced education) and LBR (Labor) do not exhibit statistically significant effects in the short run, indicating that broader labor indicators may have a more structural or indirect influence.

5.3. Robustness Tests

To assess the robustness of the long-run relationship between human capital and economic growth, we introduced two alternative proxies for education: secondary education public expenditure (EXS) and secondary school enrolment (ENS). These variables were added alongside the previously used cognitive skills proxy (PISA). Despite the inclusion of these additional education indicators, the PISA mathematics scores remain statistically significant and negatively associated with GDP per capita growth in the long run ($p = 0.005$). This reinforces the central claim of the analysis: education quality, rather than mere spending or enrolment levels, plays a more critical role in long-term growth. Meanwhile, neither EXS nor ENS exhibited significant effects in the long-run specification, suggesting that traditional quantity-based measures of education alone may be insufficient to explain long-run economic performance.

The error correction term (ECT) is negative and highly significant (-0.2693, $p < 0.01$), indicating a stable long-run equilibrium exists among the variables. About 27% of the deviations from this equilibrium are corrected annually, supporting the validity of the ARDL framework. The results from the PMG-ARDL estimation confirm that PISA mathematics scores (PISAM) remain a significant long-run determinant of economic growth, consistent with previous model specifications. The coefficient is negative and statistically significant (-0.0595, $p < 0.01$), reinforcing the idea that higher cognitive skills, as captured by international assessment results, are crucial for sustaining long-term economic performance., this result holds even after including additional education-related controls such as secondary education expenditure (EXS) and enrollment rates (ENS), which are found to be insignificant in the long run. In the short run, gross fixed capital formation (GFCF) continues to exert a strong positive and statistically significant impact on growth (0.6416, $p < 0.01$), while secondary school enrollment (ENT) also shows a meaningful and positive association (0.0130, $p < 0.05$). These results point to the importance of physical investment and short-term improvements in educational access for boosting output.

Table 6 –PMG-ARDL Estimation Results for the determinants of GDP growth, 1980-2024

Long-run Equation			Short-run Equation		
Variable	Coefficient	P-Value	Variable	Coefficient	P-Value
GFCF	-	-	D(GFCF)	0.6416***	0.000
LF	-3.38e-08	0.908	D(LBR)	0.0001	0.110
UA	-	-	D(UA)	-0.3278	0.304
EXS	0.0171	0.613	D(EXT)	-0.0057	0.953
ENS	-0.0202	0.541	D(ENT)	0.0130**	0.016
PISAM	-0.0595***	0.005	-		
ECT	-	-	ECT	-0.2693***	0.000

Panel: European Union (N=27)
Source: authors computation using Stata 18.00

6. Conclusion

This study investigates the relationship between human capital, investment, and economic growth in EU countries using an ARDL–PMG framework applied to panel data from 1980 to 2024. The results confirm the existence of a long-run cointegrating relationship. In particular, student performance measured by PISA scores exhibits a positive and statistically significant effect on GDP growth in the long term. By contrast, variables such as tertiary education spending and enrollment are found to be insignificant in the long run but show positive effects in the short run. Gross fixed capital formation remains a key short-run driver of growth, while some labor market indicators (e.g., unemployment with advanced education) have limited explanatory power.

Based on the findings, several policy directions emerge. First, enhancing educational quality—particularly in core competencies like mathematics—is crucial for fostering sustainable long-term growth. Governments should go beyond increasing funding or access and instead prioritize outcome-based reforms that boost learning effectiveness. Second, while short-run benefits can be derived from investment in tertiary education, such efforts must be aligned with labor market needs and monitored for efficiency. Finally, broader economic growth strategies should integrate human capital development policies that combine skill-building with educational equity and quality assurance.

However, this study is subject to several limitations. First, the availability of annual data for certain educational quality indicators (e.g., PISA, Barro-Lee) is limited, which required the use of interpolation or country-level means—potentially reducing the precision of estimated effects. Second, the model assumes long-run homogeneity across EU countries, which may not fully capture cross-country institutional differences. Third, the analysis focuses on linear relationships and does not explore potential threshold or nonlinear effects of education on growth. Future work will include further robustness checks such as estimations for sub-samples, sub-periods and including dummies for financial crisis such as the one from 2009-2010 and the pandemic year 2020. Also, we intend to employ alternative estimators in order to better capture the characteristics of our data.

References

Abdouli, M. & Omri, A., 2021. Exploring the Nexus Among FDI Inflows, Environmental Quality, Human Capital, and Economic Growth in the Mediterranean Region. Journal of the Knowledge Economy, Volume 12, p. 788–810.

Abraham, K. G. & Mallatt, J., 2022. Measuring Human Capital. The Journal of Economic Perspectives, 36(3), pp. 103-130.

Affandi, Y., Anugrah, D. F. & Bary, P., 2019. Human capital and economic growth across regions: a case study in Indonesia. Eurasian Economic Review, pp. 331-347.

Anastasios, K., Constantinos, T. & Panagiotis, P., 2019. The effects of formal educations' levels on regional economic growth in Greece over the period 1995-2012. Review of Regional Research, pp. 91-111.

Ashraf, N., Bau, N., Low, C. & McGinn, K., 2020. Negotiating a Better Future: How Interpersonal Skills Facilitate Intergenerational Investment. Quarterly Journal of Economics, 135(2), pp. 1095-151.

Balarta, P., Oosterveen, M. & Webbink, D., 2015. Test scores, noncognitive skills and economic growth, s.l.: s.n.

Bloom, B. S., 1956. Taxonomy of educational objectives: The classification of educational goals. London: Longmans.

Boman, B., 2024. Cognitive skills and economic growth in the twenty-first century: Evidence from PISA and cognitive ability studies. International Journal of Educational Research Open.

Brasse, J. et al., 2024. Preparing for the future of work: a novel data-driven approach for the identification of future skills. Journal of Business Economics, pp. 467-500.

Deming, D. J., 2017. The Growing Importance of Social Skills in the Labor Market. Quarterly Journal of Economics, 132(4), pp. 1593-640.

Frank, M. W., 2009. Income Inequality, Human Capital, and Income Growth: Evidence from a State-Level VAR Analysis. Atlantic Economic Journal, pp. 173-185.

Garza-Rodriguez, J., Almeida-Velasco, N., Gonzalez-Morales, S. & Leal-Ornelas, A. P., 2020. The Impact of Human Capital on Economic Growth: The Case of Mexico. Journal of the Knowledge Economy, pp. 660-675.

Hanushek, E. A. & Woessmann, L., 2008. The Role of Cognitive Skills in Economic Development. Journal of Economic Literature, 46(3), pp. 607-668.

Jones, G. & Schneider, W., 2006. Intelligence, human capital, and economic growth: a Bayesian averaging of classical estmates (BACE) approach. Journal of Economic Growth, 11(1), pp. 71-93.

Kell, H. J., Robbins, S. B., Su, R. & Brenneman, M., 2018. A Psychological Approach to Human Capital, Iowa: ETS Research Report Series.

Kiener, F., Eggenberger, C. & Backes-Gellner, U., 2023. The role of occupational skill sets in the digital transformation: how IT progress shapes return to specialization and social skills. Journal of Business Economics, Volume 94, p. 75–111.

Kyophilavong, P., Ogawa, K., Kim, B. & Nouansavanh, K., 2018. Does education promote economic growth in Lao PDR? Evidence from cointegration and granger causality approaches. The Journal of Developing Areas, pp. 1-11.

Ljungberg, J. & Nilsson, A., 2009. Human capital and economic growth: Journal of Historical Economics and Econometric History, January, 3(1), pp. 71-95.

Lynn, R. & Vanhanen, T., 2002. IQ and the wealth of nations. s.l.: Praeger Publishers/Greenwood Publishing Group.

Maitra, B. & Chakraborty, M., 2021. International trade, human capital and economic growth in Sri Lanka. International Journal of Economic Policy Studies, Volume 15, pp. 405-426.

Mubarik, M. S., Bontis, N., Mubarik, M. & Mahmood, T., 2022. Intellectual capital and supply chain resilience. Journal of Intellectual Capital, 23(3), pp. 713-738.

Myers, M. B., Griffith, D. A., Daugherty, P. J. & Lusch, R. F., 2004. Maximizing the human capital equation in logistics: education, experience and skills. Journal of Business Logistics, 25(1).

Nouira, R. & Saafi, S., 2020. What Drives the Relationship Between Export Upgrading and Growth? The role of human capital, Institutional Quality and Economic Development. Journal of the Knowledge Economy, pp. 1944-1961.

Raheem, I. D., Isah, K. O. & Adedeji, A. A., 2018. Inclusive growth, human capital development. Economic Change and Restructuring, Issue 51, pp. 29-48.

Rahman, P., Zhang, Z. & Musa, M., 2023. Do technological innovation, foreign investment, trade and human capital have a symmetric effect on economic growth? Novel dynamic ARDL simulation study on Bangladesh. Economic Change and Restructuring, Volume 56, p. 1327–1366.

Refeque, M. & Azad, P., 2022. How do linguistic and technical skills affect earnings in India? Indian Economic Review, Volume 57, pp. 23-57.

Sghaier, I. M., 2022. Foreign Capital Inflows and Economic Growth in North African Countries: the role of Human Capital. Journal of the Knowledge Economy, pp. 2804-2821.

Simões, M. C. N., Duarte, A. & Andrade, J. S., 2019. Human capital and productivity growth in a services economy: Some insights from the Portuguese case. International Economics and Economic Policy, Volume 16, pp. 511-534.

Teixeira, A. A. C. & Fortuna, N., 2004. Human capital, innovation capability and economic growth in Portugal, 1960–2001. Portuguese Economic Journal, pp. 205-225.

Temitope Dada, J., Adeiza, A., Noor, A. I. & Marina, A., 2022. Investigating the link between economic growth, financial development, urbanization, natural resources, human capital, trade openness and ecological footprint: evidence from Nigeria. Volume 24, p. 153–179.

Valente, A. C., Salavisa, I. & Lagoa, S., 2015. Work-based cognitive skills and economic performance in Europe. Economic performance in Europe, 19(3), pp. 383-405.

Weidman, B. & Deming, D. J., 2021. Team Players: How Social Skills Improve Team Performance. Econometrica, 89(6), pp. 2637-57.

NONVERBAL COMMUNICATION IN BUSINESS

Adina SĂCARA-ONIŢA Andra-Teodora PORUMB
Department of International Business, Faculty of Economic Sciences, Oradea, Romania
ooadina@yahoo.com
acatarig@yahoo.fr

Abstract: *Nonverbal communication plays a crucial role in communication, complementing what we express verbally and providing clues to our real emotions and intentions. Gestures, facial expressions and posture contribute to building or diminishing confidence in interactions. Congruence between verbal and non-verbal messages is essential for clear and effective communication, while discrepancies can cause confusion. In addition, the meaning of nonverbal language varies according to context and culture, requiring adaptability and sensitivity. Mastering this type of communication can improve personal and professional relationships.*

Keywords: nonverbal communication, gestures, posture, culture, context.

JEL Classification: *Z19*.

1. Introduction

Verbal or nonverbal communication is a characteristic of living beings, both living beings and animal entities cannot survive without interacting, i.e., communicating. If we look at communication from a scientific point of view, it can be defined as a process of transmitting information from one individual to another individual, or from one group to another group of individuals. Besides information, feelings, opinions, views or attitudes are also transmitted.

Communication has been a much-researched topic over the centuries, many researchers have tried to delve into its depths. The word communication has acquired over the centuries different connotations, it is present in the framework of several fields of science such as biology, sociology or cybernetics.

Synergology – from the Greek *syn*: together, *ergo*: body movement and *logos*: speech – is a recent discipline (emerged in the 1990s at the initiative of Philippe Turchet), which allows the analysis and decoding of body language. Story (2022) states that there is a coherence between body language and the message that a person transmits. Deciphering the numerous clues of non-verbal communication is useful, sometimes even essential, not only in the personal sphere, but also in professional contexts, for example in medicine (pediatrics), psychology, education, business, politics, international relations and negotiations. During a private or business meeting, after just a few seconds we are able to decide whether a person

* Corresponding author: Adina SĂCARA-ONIŢA
Cite as:
The journal editors will add this information after completion of the volume!

we are interacting with seems likeable or if we do not trust them. Numerous studies show that during an interview, the decision of recruiters comes very early, in the first part of the meeting and that initial impressions are decisive for the fate of candidates. (Barrier, 2019: 14).

We will start by presenting different definitions of communication as seen through several fields of science. A biologist defines communication as "an action of an organism or a cell that alters the likely patterns of behavior of another organism or another cell, in a manner adaptive for one or both participants" from the perspective of Dinu (2014) in the paper "Comunicarea". Carl I. Hovland, Irving I. Janis and Harold H. Kelley (2014) are of the opinion that communication is a process by which an individual (the communicator) transmits stimuli (usually verbal) with the goal of changing the behavior of other individuals (the listener).

Other researchers who have given new meaning to the concept of communication are Charles E. Osgood, Shannon Claude and Weaver Warren. In his paper "A Vocabulary for Talking about Communication", Charles E. Osgood (1987) states that: in the most general sense, communication is said to occur whenever one system, i.e., one source, influences another system, i.e., a receiver, by means of alternative signals that can be transmitted through the channel that connects them.

Researchers Shannon, C. and Weaver, W. (1963) agree in their paper "The Mathematical Theory of Communication": the term communication has a very broad meaning, it encompasses all the processes by which one mind can affect another. Obviously, communication includes not only written or spoken language, but also music, the visual arts, theater, ballet, and, in fact, all human behavior. The two authors extend the definition of communication to include all processes by which one mechanism (e.g., an airplane's automatic equipment for spotting and calculating its trajectory) affects another mechanism (e.g., a guided missile in pursuit of that airplane). The two researchers add another definition communication has a very broad meaning; it encompasses all the processes by which one spirit can affect another spirit. Obviously, it includes not only written or spoken language, but also music, visual arts, theater, ballet, and, in fact, all human behavior. In conclusion they are of the opinion that communication can be reduced to the conclusion that communication is all the processes by which one mechanism affects another mechanism.

The Palo Alto school comes with another approach present in the famous axioms of communication, supporting the view that non-communication does not exist. Proponents of this school believe that our social status, temperament and habits are revealed to us through our facial expressions, dress, gait, gestures and even our silence.

According to Professor Ray Birdwhistell (1971) of the University of Louisville, nonverbal communication is the communication that conveys the most messages to the interlocutor through facial expressions, posture, gestures and body language. Only 7% of the messages we transmit are verbal, 35% are vocal and 55% are non-verbal. The same professor is also of the opinion, when analyzing the behavior of an average person, that an average person does not talk for more than 10 minutes, and that the verbal part of communication represents 35%, compared to 65% non-verbal communication. Verbal communication is mainly used to convey information to interlocutors, as opposed to non-verbal communication, which is used to convey feelings, opinions, attitudes. Speakers are not always aware of the non-verbal message they are transmitting; in many cases the verbal message contradicts the non-verbal one. The non-verbal language is largely influenced by the cultural function, the body

position, mimicry, gestures of the speaker differ depending on the environment where the speaker comes from or the environment where he/she was formed as an individual.

2. Body language

Nonverbal communication refers to several aspects, we are dealing with body language, which involves gestures, facial expression and body position.
Another element of nonverbal language is the environment in which you work, the intimate, public space.
Another aspect is time management, i.e., our subject is always on time for appointments or always late, who to devote personal time to and who not.
Another clue is related to how they dress, how much emphasis they put on clothing accessories and personal hygiene. If our subject prefers warm colors, this will stimulate communication, while cold colors will inhibit it.
Another element of nonverbal language is the relationship with the objects that surround him, i.e., the decoration of his home, the car he drives, the books he reads, the objects he likes.
The nonverbal language is defined by paraverbal communication, the voice plays an important role here through its intensity, rhythm, speed and vocal characteristics laughter, crying, whispering.
Nonverbal communication can also be mediated by certain objects such as handkerchiefs, scarves, hats used as a sign of greeting or parting or for signaling the presence of our subject.
Various movements of the limbs such as mass flapping or trooping are often interpreted by professional speakers as signs of boredom but in fact, they are signs of the speaker's impatience.
According to the canons of psychoanalysis, gestures that involve bringing objects close to the lips or placing them in the mouth is the subject's attempt to revive the feeling of security that an infant experience in the mother's arms, and therefore placing the arm of a pair of glasses in the mouth is a gesture of reassurance, a gesture that is also found in smokers.

3. Communication through personal space and personal objects

Another clue to nonverbal communication is the personal space set by a manager, the distance he or she keeps from the subordinate, the place where he or she has positioned his or her desk, all of which give us clues about his or her personality and leadership style.
Several communication distances can be identified in nonverbal communication:

- *intimate distance* which is divided into two categories close zone. In this category we deal with intimate encounters with close friends and children. The second category is the distant zone, more than 0.5m, sufficient for a hand holding, but inaccessible to those with whom we are not intimate. There are also some exceptions encounters in elevators or crowded means of transport, people tend to look away to avoid proximity.
- *Personal distance* which is again divided into the near zone, which is reserved for the new close ones (it amounts to 0.5-0.8m) and the far zone at 0.7-1.3m. This distance provides a degree of privacy for personal discussions.

- *the social distance* represented by the near zone at 1.2-2m used for business discussions. This distance can be used to indicate superiority, power and dominance without uttering any words. The far zone, at a distance of 2-3.5m is used in business and social relationships. If the manager reduces this distance, it means that he wants a closer relationship with the subordinate. This distance allows work to be done without disturbing coworkers and without arguments.
- *The public distance* which is divided into the close zone at 3.5-8 m used in a corporate meeting or in a course taught by a teacher. The far zone, more than 8m, is usually reserved for politicians or public persons, for security reasons and to emphasize personal power and dominance.
- Another element that plays an important role in nonverbal communication mediated by objects is the personal telephone, ostentatiously displayed it can be interpreted as evidence of material wealth. It is advisable to turn it off or put it on silent mode during a meeting. If we are expecting an important call, the phone will be put on vibrate mode, if we are contacted, we will excuse ourselves and retire to another room.

Another cue present in nonverbal communication is the scent our subject is wearing. We are unaware of the decisions we make when we purchase a perfume, but it betrays the subject's personality.
Floral fragrances are most common, the floral notes of the perfume bring out femininity and the desire to live life to the fullest, seizing every moment.
Perfumes with fruity notes emphasize the freshness and color in our subject's life.
Spicy fragrances betray the dark nature of the subject, but femininity cannot be excluded either.
Sweet scents betray a person with a strong sense of nostalgia, the subject old shows and vintage clothing, however the subject will betray a fresh and new look, a charming person.

4. Tactile communication

Another area of non-verbal communication is tactile communication, meant to convey a message, a signal, a communication also presents in the animal world. This communication is also found in the societies evaluated, betraying an instinctual character, censored at some point by the conscious.
Researchers have identified four categories of touch. The first is touch that conveys positive emotions, has a positive effect on the interlocutor. This category includes caressing, comforting touching, encouraging touch, i.e., a silent squeeze of the hand, a pat on the shoulder, soothing, affectionate touch.
The second category is playful touch, which can be autonomous or linked to a verbal communication. This touch simulates a caress or a blow in a playful context. This kind of touching has an abusive character, but also a close connection.
The third category is that of control, here are included the tactile signs that are intended to convey behavior or attitude, such a touch can suggest discretion, an indemnity or restraint, but can also be linked to a verbal communication.
The fourth category is ritual touch, which carries magical meanings in the religious space such as the transmission of grace between a priest and a priest, between a priest and a believer, the touching of a sacred object such as an icon, but also the shaking of a hand in

greeting, the slapping of the palms of two people in a sign of good wishes, congratulations. These greetings convey involvement, but sometimes become meaningless and purely formal. The skin is a living organ, capable of receiving and transmitting signals. The skin is part of our body, not just covering it, with it we identify which race or culture we belong to. It is through the skin that we generate information about our self-esteem, health, age, the cosmetics industry and dermatology show how important a role the skin plays in modern society.

The highly socialized and long debated skin touching is the shaking hands in greeting or parting gesture implies certain rules, which are taken into account are the following: ladies extend their hand first to greet, the older one initiates the greeting in relation to the younger one, the one with a leading poise initiates the greeting in relation to subordinates, regardless of gender and age. As for the greeting when entering a room, the rules are completely different: the young person will initiate the greeting, the ladies will be greeted first, and the subordinate will greet the boss, regardless of age.

Communication professional Allan Pease (1993) talks in his book "Body Language" about the three main ways of shaking hands: glove, dead fish, vise. Each of the three ways has different meanings.

The glove way of shaking hands is specific to the political area, the person who initiates this type of greeting wants to be considered an honest, trustworthy person, a true friend.

The dead fish handshake reflects an unpleasant feeling and a lack of energy on the part of the initiator.

The vise-like greeting suggests aggressiveness and shows a lack of knowledge of social norms on the part of the greeter.

In addition to these three main types of handshaking, there are other ways of shaking hands that emphasize the way we relate to other people, our feelings, desires, and the psychological state of our interlocutor.

A greeting that only involves grasping the fingertips is a forced gesture that denotes lack of self-confidence.

If a greeting is accompanied by the squeezing of the upper arm by the interlocutor, there is a penetration into the intimate area, which betrays a physical closeness between the two interlocutors, even a strong emotional bond, if the reaction is not one of rejection. If the reaction is not reciprocal, the interlocutors will be regarded with distrust.

Another form of greeting is hand kissing, which in our culture is an outdated form of greeting, which can be considered a form of offense for both women and men, being considered a form of domination, as well as considering women as "love objects". Men kiss ladies' hands more out of excessive politeness, out of a desire to show that they are very polite and well-mannered, but end up being funny. The new greeting is the sketching of a hug by lightly touching shoulders and bringing lips close together, a gesture that nowadays betrays the joy of reunion. Kissing both cheeks has become a custom in our culture, although it is not part of the code of good manners.

5. Another body language

Body language in general plays an important role in nonverbal communication. In a business meeting a person can perceive the interlocutor's attitude only from certain movements, facial expressions. A positive attitude is betrayed by a smile, a relaxed face and lips, relaxed hands

and feet, eye contact. People with an open attitude orient their body towards the interlocutor and lean their body towards the interlocutor. In dialog the positive person approves and encourages the interlocutor with nodding, approving head movements. A positive person will never use a high volume and the tone of voice will vary.
In contrast to a positive attitude, we have a completely different dark or negative body language. People with a negative attitude avoid eye contact with the interlocutor, avoid smiling, have a frowning face, the corners of the mouth turned down, arms are folded in front of the chest and shoulders stooped. People with a negative attitude turn their body partially or completely in the opposite direction of the interlocutor, sometimes they position their arms on their hips, their tone of voice will be in most cases monotonous, betraying indifference. This person's tone of voice will be either too high or too soft. People with a closed attitude will nervously move their feet, tap their finger repetitively on the table and constantly check the time in a gesture of frustration and impatience.
Another aspect that needs a deeper dive is eye contact as part of nonverbal communication. Eye contact is strongly important in interpersonal relations because it gives us important feedback about the interlocutor's reactions. The exchange of glances between interlocutors introduces reciprocity in interpersonal relations. In terms of eye contact, several aspects can be analyzed; intensity of eye contact, direction of gaze and duration of eye contact, The intensity of gaze can be analyzed starting from the value of 0 when the interlocutor does not even look at his conversation partner and the value of 10 when the two conversation partners look into each other's eyes, so the direction of gaze will meet. The duration of gaze varies depending on the intention of the interlocutor. The intensity of the gaze is higher when the interlocutor is listening to the speech than when the interlocutor is speaking. Gaze intensity will be at its highest when the two speakers are attracted to each other.
If the interlocutor looks down at the speaker with his head bent down, then we are dealing with an obedient person, fearful of criticism and judgment, a person who seeks the approval of the interlocutor, in the situation where the interlocutor looks down, this behavior suggests recognition of power, of the domination of the other, even submission and guilt.
An incensed look, half-closed eyes indicate a state of tension and discomfort. A person who looks away during a conversation indicates a desire to escape from the conversation or to look for something else that is out of one's field of interest. Narrowing of the eyes may also indicate evaluation, the content being exposed not being perceived as true. We narrow our eyes when we want to restrict the penetration of images that do not, please us, when we are upset, when we hear voices, upsetting sounds.
Giving a short glance to the interlocutor is a sign of irritation or depreciation of a remark of the interlocutor, while looking from side to side is a sign of lying, conspiracy, with such a glance the interlocutor is looking if he is being listened to, if he has succeeded in arousing interest.

6. Hand and finger gestures

When our interlocutor, during a presentation, touches his nose, this gesture indicates that the interlocutor does not consider you a trustworthy person, he analyzes you thoroughly, to see who you really are, beyond the social mask you wear. A critical assessment is given by the gesture of the hands resting on the cheek, with the index finger raised, the lips covered by another finger and the thumb supporting the chin.

Raising the shoulders indicates that our interlocutor does not know or does not understand what is being discussed. This gesture is also accompanied by open palms, raised shoulders, raised eyebrows.

Hands clasping is a frustrating gesture, indicating that the interlocutor is repressing a negative attitude. The hands can be positioned at 3 levels: hands clasped at face level, clasped hands placed on the table or in the middle position and the last position: clasped hands placed on the lap, placed down when standing. It seems that in the framework of a negotiation, the most difficult is to communicate with a person with the hands inclined in the upper part of the body, in the face area. There seems to be a connection between the level at which the hands are raised and the degree of indisposition of the interlocutor. In a negotiation it is necessary that the fingers are spread, the front part of the body and the palms are visible, otherwise the negative attitude will be maintained.

The helmet-tower hands posture as Birdwhistell called it, is in fact the exception to the rule, because it is used by confident, superior people who gesticulate little or not at all, people who in this way convey confidence in their own strengths.

People who position themselves behind the back of the head are usually people with managerial positions executives, managers, people who have professions such as accountant, lawyer, people who feel confident, dominant, people who consider themselves superior to others.

Children, when they are small, tend to cover their mouth visibly when they tell lies, so it happens with adults, except that adult involuntarily have the tendency to cover their mouth, a sign that they have said things that should not have been said. The left pointer fixed in the mouth area betrays the interlocutor's desire to manipulate, he prepares his arguments out of a desire to be as convincing as possible.

The position of the coif, with the head tilted downwards, is used by the listener rather than the speaker, a gesture often used by women, associated with the tilting of the head backwards, betrays an air of arrogance.

Another gesture used in particular by famous men in royal houses is the clasping of hands behind the body, emphasizing the chest in an act of courage. This gesture betrays superiority, confidence and courage.

The scratching of the neck around the neck below the ear, a gesture that is repeated about five times betrays disbelief, doubt and ineptitude, especially in the business area. If the interlocutor scratches his ear is a gesture of blocking negative information, this gesture has its roots in the gesture of a child who covers his ears out of a desire not to hear evil. The pulling of the collar is a gesture associated with lying and fear of being caught by the speaker who has just told a lie, which produces a tingling in the area of the face and neck.

The stroking of the beard is another gesture present in some presentations of new ideas to groups of people, we need to observe their reaction carefully. Most listeners will raise their hand to their face and use various evaluative gestures. This gesture of stroking the chin shows that the listener is making a decision about the idea. When we ask the listeners to decide, the evaluation gestures will change into decision gestures, and their next movements will show whether the listeners have made a negative or positive decision.

Similar to males in the animal kingdom, the human male also resorts to gestures of impatience around women. The male will arrange his tie, collar, remove the dust from his jacket, arrange his cufflinks, shirt, jacket, belt, turn his body towards the woman and his paw towards her.

7. The position of the legs

The position of the legs betrays the mood of the interlocutor, if the interlocutor positions his right leg in front, it betrays a rational state, and the left leg an emotional state. Positioning the feet in the shape of a stellar emphasizes restraint, mental defense, the creation of a more comfortable personal territory than the environment that the interlocutor perceives as hostile. The position of crossed legs, usually the right one crossed over the left one, is a common position, present especially in the European area. In the British culture, it is used to express a nervous, reserved, defensive attitude. This is not an isolated gesture; it is accompanied by other negative gestures such as crossing the arms.
The folding of the chair is a gesture that betrays a defensive attitude. Centuries ago, our ancestors used shields to protect themselves from enemy spears, modern man uses objects within reach whenever he is exposed to physical or verbal attack. He retreats behind a gate, a fence, or an automobile door, or he presses an office chair. The back of the chair defends his body like a shield and the interlocutor becomes an aggressive and dominant fighter. The knee-on-knee position, also known as the American position, betrays an attitude of contention or competition, and is common in the American area.
Postures that intimidate: People who flaunt their new purchases, a new car, motorboat, or other personal item, put their feet on or hug these items, showing everyone that the item belongs to them, intimidating those around them.
Body language: If two people are having a conversation and their bodies are facing each other, it is not appropriate to disturb them. If we want to interact with a person, if that person is not interested in having a conversation with us, they will only turn their torso, but if a person is interested in interacting with us, then the tops of their legs will be turned towards us.

8. Dress language

Dress is one of the most influential means of nonverbal communication that reflects the personality of the individual, especially in the business area. There are 4 variants of dress code for professional activities.
Business attire is formal and conservative, specific to corporations, lawyers, insurance, sales and consulting. In these areas only suits of quality materials are acceptable, for both men and women.
Business-casual attire is specific to the areas of marketing, education, medical, human resources, real estate. Practical, relaxed, semi-traditional suits and dresses, soft fabrics and relaxing prints are accepted. This outfit is ideal for when you are meeting with a client or business partner and you want to look business dressed, but not formal.
Artistic innovative business outfit is specific to the advertising, public relations, fashion industry, showbiz, luxury store owners. This variant is similar to business attire in terms of materials, but allows for innovations in terms of color and cut.
Casual attire is specific to organizations with a flexible management and workplaces where employees do not have contact with customers or are rarely seen by them. This attire expresses comfort and personal touch. This outfit involves wearing a variety of clothing in

addition to T-shirts and jeans, including jewelry for men and shorts for women. It is the easiest way to express sexual interest and availability nonverbally.
The basic principles of correct dressing are as follows: a sober, formal, conservative outfit; in the workplace, for both men and women, the classic, conventional style is always the most appropriate, and is also recommended in business, especially in financial and banking activities.
Matching outfits are a must. This may seem difficult and a waste of time when you have to combine separate items of clothing (not part of the suit), but it is an essential step to project competence and credibility. Jewelry worn in business will always be simple, muted and make-up will be entirely discreet. A businessman without a tie can be compared to a "doctor who doesn't wear a white coat", says Alexandru Caucus, a Romanian creative studio owner. Very important is wearing a tie correctly. The tip of the tie should cover the belt buckle of the pants. The tie pin is worn only at special events. Buttons are worn double cuffed and complement outfits of all kinds including business or gala, a business outfit request simple black, white, gray or ivory wedding cufflinks. The shoe must match the belt, as it is a fashion element that should be chosen with great care, as it can completely spoil the image a person wants to convey.

9. Color language

The color of the clothes we wear influences how we are perceived as individuals and can influence success or failure in business. Each color has the power to convey information, which can generate certain emotions. You might not wear red in a business environment, but you can stand out in an organization if you wear a strong color that increases your powers of concentration. More unusual colors like purple and burgundy express elegance as well as material/intellectual wealth. Brown betrays assertiveness and a strong character, while green induces a state of calm and tranquility. Yellow evokes enthusiasm and should be worn in moderation in the business area. Blue is the business color that expresses sincerity, while navy blue betrays loyalty. These two colors are recommended for interviews. The color white sends to order, politeness. Black is associated with elegance and power, but the favorite business color is gray, which expresses intelligence and self-control.

10. The language of time

Punctuality is one of the most important elements of the informal time system. Interpersonal relationships depend to a large extent on the punctuality of partners. Keeping yourself waiting can be a trick to make yourself more desirable, it can indicate the lack of importance you attach to the meeting, but it can also be a sign of the person's inability to organize activities. “Being on time” depends on the concrete situational context. In some situations, being five minutes late requires apologizing, explaining what has happened or inventing a plausible reason as credible as possible. In other situations, being 15-30 minutes late for an appointment - a visit to a colleague's home, for example - is almost obligatory. “I arrived exactly on time!” never pleases the host, at least in our culture. At a business meeting, it is customary in England to exchange a few brief pleasantries and then begin the business talk. In Saudi Arabia, no business is discussed until coffee or tea is served and a few personal

matters are discussed. Starting business immediately is a sign of bad manners and lack of business experience. Sometimes keeping subordinates at the door delights the bosses. This is how they express their importance, forgetting that we are transient in life and in office. Taking other people's time is no more and no less than theft; just 'time is money' and a gross lack of courtesy.

11. The language of silence

Knowing when to be silent is a human quality prized since ancient times. Even through silence, people communicate something: approval, disapproval, discretion, reason, keeping a secret, admiration. A manager resorts to silence as a means of nonverbal communication because: he disapproves of certain opinions and does not want to discuss them in adversarial, he believes that there are certain facts, situations, on which it is better to fall silent, he does not want to divulge a work secret, a secret, he does not want to harm someone, he appreciates that time can solve a delicate situation, he believes that if he speaks, he makes enemies.
On the other hand, by carefully using silence at key moments, in other words by preparing to listen, we can encourage the speaker to continue or to express feelings and attitudes that he would undoubtedly not otherwise have done. Silence, then, is a powerful communication tool, but it must be used skillfully.

12. Conclusions

Nonverbal communication plays a crucial role in communication, complementing what we express verbally and providing clues to our real emotions and intentions. Gestures, facial expressions and posture contribute to building or diminishing confidence in interactions. Congruence between verbal and non-verbal messages is essential for clear and effective communication, while discrepancies can cause confusion. In addition, the meaning of nonverbal language varies according to context and culture, requiring adaptability and sensitivity. Mastering this type of communication can improve personal and professional relationships.

References

Barrier, G. (2019) La communication non verbale. Comprendre les gestes : perception et signification, Issy-les-Moulineaux : ESF Sciences humaines, Collection Formation Permanente.

Birdwhistell, R.L. (1971) Kinesics and Context: Essays on Body-Motion Communication. London: Allen Lane The Penguin Press.

Charvet, S.R. (2006) Cuvinte care schimbă minți. Stăpânește limbajul de convingere, București: Editura Amaltea.

Chelcea, S., Ivan, L. și Chelcea, A. (2008) Comunicarea nonverbală: gesturile și postura, Ediția. a 2-a, revăzută și adăugită, București: Editura Comunicarea.ro.

Cialdini, R. (2008) Psihologia Persuasiunii. Totul despre influențare, București: Editura Businesstech.

Collet, P. (2007) Cartea gesturilor. Cum putem citi gândurile oamenilor din acțiunile lor, București: Editura Trei.

Danciu, V. (2010) Negocierile internaționale de afaceri sub impactul culturii: o analiză bazată pe comparații contextuale, Volumul XVII (2010), No. 8(549), pp. 86-104, București: Academia de Studii Economice, Economie teoretică şi aplicată.

Dinu, M. (2014) Comunicarea, București: Editura Algos.

Grenny, J. (2002) Crucial Conversations: Tools for Taking When Stakes are High, London: Editura McGraw-Hill.

Hovland, C.I., Janis, I.L. and Kelley, H.H. (2014) Communication and Persuasion: Psychological Studies of Opinion Change, Cambridge: Cambridge University Presse.

Love, R. and Frazier, D. (2003) Set Your Voice Free: How to Get the Singing or Speaking Voice You Want, Boston: Little, Brown and Company Publishinghouse.

McKeown, G. (2016) Esenţialismul. Disciplina de a urmări mai puţin, București: Editura Art și Pliton.

Messinger, J. and Messinger, C. (2014) Cartea gesturilor, București: Editura ALL.

Osgood, C.E. (1987) A vocabulary for talking about communication, Penguin Books.

Pease, A. (1993) Limbajul trupului, București: Editura Polimark.

Pease, A. (2017) Manualul limbajului trupului. Sensurile ascunse ale gesturilor, București: Editura Orion Publishing Co.

Popescu, D. (1998) Arta de a comunica, București: Editura Economică.

Shannon, E.C. and Weaver, W. (1963) A Mathematical Theory of Communication, University of Illinois Press.

Sinek, S. (2009) Începe cu de ce. Cum ne inspiră marii lideri astfel încât să trecem la acțiune, București: Editura Publica.

Story, M. (2022) Au-delà des mots. Guide de la communication non verbale, Malakoff : Dunod.